



Climate migration -

preparedness informed policy opportunities
identified during field research in Bolivia,
Bangladesh and Maldives

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High levels of human mobility brought on by global megatrends such as population growth, urbanisation, globalisation, coastward migration, environmental degradation, resource depletion, and sprawling of slums in developing countries are likely to be reinforced by climate change, making it plausible that human mobility will increase significantly during the 21st Century. Within the academic, development and international community there is no uniform view how this potentiality should be faced, but projections typically agree that the majority of this migration can be expected to occur in developing countries characterised by high levels of poverty and vulnerability. Moreover, it can be observed that a significant amount of climate change related migration is already underway.

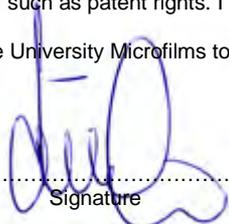
A review of the literature reveals knowledge gaps with respect to both *interdisciplinary* and *local-level* research that expressly invites the perspectives of climate migrants. This dissertation responds to these gaps both by drawing on literature in several fields of inquiry, and by intentionally engaging with migration affected populations to identify what preferred solutions they envisage. Taking a humanitarian preparedness approach, this research seeks to identify what migrants want so that appropriate policy instruments for equitable macro-managed migration processes can be discussed, developed, drafted and legislated well before they are needed. To this end, this research aims to learn from various forms of current migrations which may or may not all be climate induced. At its simplest, this thesis argues that policy preparedness is the *a priori* policy posture of choice.

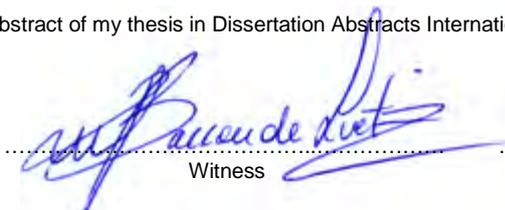
Drawing on fieldwork conducted in Bolivia, Bangladesh and the Maldives, this research repositions climate migrants at the centre of a scholarly debate that has largely marginalised or even patronised them. It concludes: (1) inviting the contributions of migrants leads to preferable migration outcomes; (2) policy maker foresight is an important success factor; (3) targeted service provision can enable more positive migration outcomes; (4) many migrants wish to stay in their countries/communities, thereby highlighting the importance of *in situ* adaptation; (5) nomenclature is a non-problem in the minds of most migrants; (6) accountable and responsive government institutions have a key role to play in enabling anticipatory migrations; (7) education is the *sine qua non* for all future migration preparedness.

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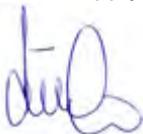
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For Noah

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- D.3 Ethics clearance confirmation (Approval No 10121) 27 September 2010
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G.6 Qasim Abdul Rahman, Berinmadhoo/Huvarafushi, 31 December 2011

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Johannes M. Luetz
Sydney, Australia (10 April 2013)

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List of Acronyms

3MT	Three Minute Thesis Academic Public Speaking Competition
ACC	“Access Challenged Children”
ADB	Asian Development Bank
ADP	Area Development Programme
AOSIS	Alliance of Small Island States
AR2	Second Assessment Report (IPCC)
AR4	Fourth Assessment Report (IPCC)
AR5	Fifth Assessment Report (IPCC)
ATM	Automated Teller Machine
AVB	Australian Visa Bureau
BBC	British Broadcasting Corporation
BC	Before Christ
BCAS	Bangladesh Centre for Advanced Studies
BMI	Bolivian Mountain Institute
BOB	Bolivianos (Bolivian Currency Unit)
BWBD	Bangladesh Water Development Board
CBO	Community Based Organization
CCEMA	Climate Change, Environment and Migration Alliance
CCT	Conditional Cash Transfer
CDMP	Comprehensive Disaster Management Programme
CDSP	Char Development and Settlement Project
CEGIS	Centre for Environment and Geographic Information Services
CEPAL	Comisión Económica para América Latina y el Caribe
CIESIN	Center for International Earth Science Information Network
CNA	Channel News Asia
CO ₂	Carbon Dioxide
COP	Conferences of the Parties [annual UNFCCC gatherings]
CPEB	Constitución Política del Estado de Bolivia
CRED	Centre for Research on the Epidemiology of Disasters
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAE	Department of Agriculture Extension
DoF	Department of Forest
DPHE	Department of Public Health Engineering
DPIH	Dutch Portal to International Hydrology
EACH-FOR	Environmental Change and Forced Migration Scenarios Project
ECLAC	Economic Commission for Latin America and the Caribbean
EJF	Environmental Justice Foundation
EJWG	Equity and Justice Working Group
EM-DAT	Emergency Events Database
ENSO	El Niño-Southern Oscillation
EOS	Earth Observatory Singapore
ERPF	Environment Related Push Factors
FAO	Food and Agriculture Organization of the United Nations
FOE	Friends of the Earth

Frontmatter

FSC	Forest Stewardship Council
FUBODE	Fundación Boliviana para el Desarrollo
FUNGLODE	Revista de la Fundación Global Democracia y Desarrollo
GAD	Gobierno Autónomo Departamental de Santa Cruz
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNP	Gross national product
GFMD	Global Forum on Migration and Development
GOV MAL	The Government of Maldives
GPGs	Global Public Goods
GPID	Guiding Principles on Internal Displacement
GWSP	Global Water System Project
HDI	Human Development Index
HFA	Hyogo Framework for Action (Marco de Acción de Hyogo)
HDI	Human Development Index
IACHR	Inter-American Commission on Human Rights
IAEA	International Atomic Energy Agency
IDP(s)	Internally Displaced Person(s)
IHL	International Humanitarian Law
IHRL	International Human Rights Law
ILO	International Labour Organization
INE	Instituto Nacional de Estadística
INGO	International Non-Governmental Organisation
INRA	Instituto Nacional de Reforma Agraria
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IRI	International Research Institute for Climate and Society, Columbia University
IUCN	International Union for Conservation and Nature
KADP	Kamalapur Area Development Programme (World Vision Bangladesh)
LDMT	Ley de Derechos de la Madre Tierra (2010) LEY N° 071
LECZ	Low Elevation Coastal Zone
LGED	Local Government Engineering Department
MAAI	Migrant Aspirations Aggregate Index
MAF	Mission Aviation Fellowship
MAO	Migrant Aspirations Overview
MB	Mega Byte
NASA	National Aeronautics and Space Administration
MB	Mega Byte
MEEW	Ministry of Environment, Energy and Water (Republic of Maldives)
MHUD	Ministry of Housing and Urban Development (Republic of Maldives)
MPND	Ministry of Planning and Development (Republic of Maldives)
NGO	Non-Governmental Organisation
MoL	Ministry of Land
MPND	Ministry of Planning and National Development
MTAC	Ministry of Tourism, Arts and Culture
NAPA	National Adaptation Program of Action
NB	nota bene: Latin expression ("note well")
NOAA	National Oceanic and Atmospheric Administration
NRC	Norwegian Refugee Council
NRPF	Non-Environment Related Push Factors
OAS	Organization of American States

OCHA	Office for the Coordination of Humanitarian Affairs (UN Office of)
OFDA	USAID's Office of Foreign Disaster Assistance
PDA	Programa de Desarrollo de Área (World Vision)
PDC	Population and Development Consolidation
PNG	Papua New Guinea
PNUD	Programa de las Naciones Unidas para el Desarrollo
RC	1951 Refugee Convention
SAMN	South Asia Media Net
SEARO	South East Asia Regional Office (WHO)
SENAMHI	Servicio Nacional de Meteorología e Hidrología
SIDP	Safer Island Development Program
SIDS	Small Island Developing States
SOEM	State of the Environment Maldives
SPI	Standardised Precipitation Index
STDs	sexually transmitted diseases
TIA	Tsunami Impact Assessment
TPO	The President's Office
UK	United Kingdom
UMSA	Universidad Mayor de San Andrés La Paz
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP RRA	United Nations Environment Programme Rapid Response Assessment
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Populations Fund
UN-HABITAT	United Nations Human Settlements Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
UNISDR	United Nations International Strategy for Disaster Reduction
UNITAR	United Nations Institute for Training and Research
UN-OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNSW	University of New South Wales
UNSW-TV	University of New South Wales (Television Studio)
UNU	United Nations University
UNU-EHS	United Nations University - Institute for Environment and Human Security
US	United States
USA	United States of America
USAID	United States Agency for International Development
USDS	U.S. Department of State
VMB	Visión Mundial Bolivia (World Vision Bolivia)
VPA	Vulnerability and Poverty Assessment
WB	World Bank
WBGU	German Advisory Council on Global Change
WDI	World Development Indicators
WEF	World Economic Forum
WHO	World Health Organization
WMO	World Meteorological Organization
WRI	World Resources Institute
WRP	Water Resources Programme (IAEA)
WVB	World Vision Bangladesh

Chapter I: Introduction

I.1 Research background and inception

This thesis is a follow-on study to a year of desk and field research on disaster risk reduction and climate change preparedness carried out for the international humanitarian and development organisation World Vision. The published report *Planet Prepare* (Luetz 2008) calls on policy makers, development organisations and donor governments to take a more proactive stance in dealing with the growing vulnerabilities of developing countries in the face of climate change. The study saw more than 200 islanders and coast dwellers interviewed in Bangladesh, Indonesia, Papua New Guinea and Cambodia, and raised a number of important questions and issues that ultimately led to the inception and conceptualisation of this PhD research. *Planet Prepare* also contains eyewitness accounts from across the Asia Pacific which suggest that climate change related migration has been occurring in numerous developing communities for quite some time. A research series of *Disaster Monitor* country fact sheets (Bangladesh, Indonesia, Papua New Guinea, Philippines and Myanmar) was also commissioned and published as part of the project which aimed to position both World Vision and communities in Asia Pacific for heightened disaster preparedness (Luetz 2008a-e).

In that project, “disaster preparedness” was conceptualised in the preamble which prefaced the 124-page report:

“The word ‘disaster’ is derived from the Greek pejorative prefix ‘dis-’ (bad) and ‘aster’ (star). According to the Oxford Dictionary, the word’s root in astrology literally denotes an ‘ill-starred’ event. [McKean 2005, p. 481] For many centuries people believed that a catastrophic event resulted under a ‘bad star’ – a *dis*-aster. But while natural disasters have occurred throughout history, today we know that they occur not as a result of a bad alignment of the stars, but when hazards and vulnerabilities combine. Recent decades have seen a steep increase in natural disasters across the world. While these events are largely unavoidable – and are projected to increase as a result of climate change – their impacts can be lessened through disaster ‘preparedness.’ Incidentally, the verb ‘prepare’ is derived from the Latin ‘prae’ (before) and ‘parāre’ (make ready). According to Chambers Dictionary of Etymology, to ‘prepare’ literally means to ‘make ready beforehand.’ [Barnhart and Steinmetz 1988, p. 833] The world needs to prepare for disasters *before* they occur, reducing risk, raising resilience and promoting *preparedness*.” (Luetz 2008, p. 1)

This Doctoral Study seeks to build upon this earlier work by adding a specific qualitative and quantitative dimension based on systematically applied methodology and empirically derived data. Ultimately, this research applies a “preparedness” paradigm to the

subject matter of climate change related human migration which aims to address problems *before* they materialise beyond reasonable hopes for human displacement and resettlement with dignity, and importantly, *before* deteriorating into a humanitarian emergency requiring *ad hoc* responses. All throughout this thesis, forced migration is viewed through the lens of an anticipatory research focus. This particular emphasis also represents an integral part of this dissertation's contribution to scholarship (Section 1.4).

The aim of this study is to explore options and opportunities for successful climate migration preparedness. Applying a case study methodology (Yin 2003), this research seeks to get a handle on some of the relevant questions and issues: What can we learn from current human migrations which may or may not all be climate induced? What can we learn from affected migrants as the true experts of climate migration? What are the global trends? What are the local opportunities? What are the climatic challenges? What are the human experiences? How can policy makers prepare?

Hesitation on the part of policy makers to support and fund early climate migration preparedness may be understandable. While it is arguably "more visible to fund a disaster, where results can be clearly demonstrated, as compared with funding resilience, where the result is that the disaster did not happen" (Venton et al 2012, p. 82), this thesis argues that early action is the *a priori* policy posture of choice. Further, migration is seen as only one strategy among other necessary contemporaneous *in situ* adjustments. To conclude Section 1.1 it should also be noted that the dissertation owes its developing country emphasis to previous research on global poverty reduction conducted as part of this author's Master Thesis (Luetz 2007).

1.2 Chapter overview

This chapter is subdivided into seven sections. Section 1.3 elaborates the research rationale and its humanitarian significance. Section 1.4 provides a short synopsis of what this research aims to contribute to scholarship. Section 1.5 offers a short summary of the main findings of this research. Section 1.6 discusses the dissertation structure and provides an overview of chapters and sections contained therein. Section 1.7 may be conceived as an instruction manual which contains some helpful "directions for use" pertaining to the presentation and design of this research, including introduction of unique, simplifying and additional dissertation features.

1.3 Research rationale: Why this research matters

There are indications that the world could be teetering on the brink of an era of large-scale human migration. Recent decades have already provided human mobility additional stim-

uli through current global megatrends, including population growth, unabating urbanisation, coastward migration, globalisation, sprawl of slums, etc (WBGU 2011, Hugo 2011, McGranahan et al 2007, UNDP 2009), and it appears possible, if not probable, that anthropogenic climate change could contribute to a further influx in human migration (Greer 2009, pp. 37-55; Brown 2011, Hamilton 2010). While civilisations have previously abandoned some locations in favour of others on account of climatic changes and related resource constraints (eg, Diamond 2005, Kolbert 2007, pp. 93-99; Weiss et al 1993, Wilford 1993, Stewart 2008, Marshall 2012, Ehrlich and Ehrlich 2013), the order of magnitude on which climate change could add to migration in the 21st Century appears unprecedented. This expectation does not appear implausible in light of aforementioned megatrends which have firmly established humanity as “a dominant factor within the Earth System, [heralding the] Anthropocene (‘The Age of Man’)” (WBGU 2011, p. 1; also Ehrlich and Ehrlich 2013; Greer 2009, pp. 37-55). Greer notes that “[m]ass migration is already a fact of life throughout the contemporary world, and the twilight of cheap energy promises to shift this into overdrive” (Greer 2009, p. 43; cf, UNDP 2009).

Human migration in the context of climate change is not a new phenomenon. Throughout history human communities, and even entire civilisations, have abandoned some locations in favour of others because of changing climatic conditions (Marshall 2012, Diamond 2005). In *Field Notes From a Catastrophe*, Kolbert (2007) cites research published by Weiss et al (1993) which concludes that the end of the Akkadian Empire was the product of a drought “so prolonged and so severe that it represented ... an example of ‘climate change’” (Kolbert 2007, p. 97; attributed to Weiss et al 1993). Since then the list of cultures whose demise is similarly linked to climate change has grown to include the Classic Mayan Civilisation (800 AD), Tiwanaku Civilisation near Lake Titikaka in the Andes (1100 AD), and the Old Kingdom of Egypt (2200 BC) (Kolbert 2007, pp. 97-98; Weiss 1993; also Schwartz 1957). More recently climate change has even been associated with the decline and fall of the Harrappan (1800 BC), Hittites (1200 BC), Mycenaens (1100 BC), Egyptian New Kingdom (1100 BC), Western Roman Empire (250-500 AD), Moche (600 AD), Tang Dynasty (907 AD), and the Khmer Empire (1300 AD) (Marshall 2012, p. 32-36; Diamond 2005).

Climate change related civilisation declines and resultant human migrations are therefore evidently not without historical precedent. To elaborate on the Mayan example, recent research by Medina-Elizalde and Rohling (2012) linked the collapse of the classic Maya Civilization to a “modest reduction in precipitation” (p. 956):

“The disintegration of the Classic Maya civilization in the Yucatán Peninsula and Central America was a complex process that occurred over an approximately 200-year interval and involved a catastrophic depopulation of the region. [...] [I]t is well established that *the civilization collapse coincided with widespread episodes of drought [...] We conclude that the*

droughts occurring during the disintegration of the Maya civilization represented up to a 40% reduction in annual precipitation..." (Medina-Elizalde and Rohling 2012, p. 956; emphasis added; see BBC 2012c for a discussion of this research in the popular press).

Kennett et al (2012) also concluded that the Mayan population collapse was caused by communal conflict which erupted over prolonged resource scarcity "in the context of an extended drought" (p. 788):

"High-density Maya populations were increasingly susceptible to the agricultural consequences of climate drying. We propose that a two-stage collapse commenced with the 660 C.E. drying trend. It triggered the balkanization of polities, increased warfare, and abetted overall socio-political destabilization. [...] [T]wo multi-decadal dry intervals ... further reduced agricultural yields and caused more widespread political disintegration between 800 and 900 C.E. This was followed by a second stage of more gradual population decline and then punctuated population reductions during the most extreme dry interval ... between 1020 and 1100 C.E." (Kennett et al 2012, p. 791; see Kluger 2012 for a discussion of this research in the popular press).

It may be inferred from the above research that socioeconomic processes of "collapse", "population decline" (Kennett et al 2012, p. 791) or "catastrophic depopulation" (Medina-Elizalde and Rohling 2012, p. 956) were accompanied by significant human out-migrations from agriculturally failing areas in ways akin to migration processes investigated during fieldwork for this Doctoral Study in Bolivia¹ (Chapter 4).

Greer expects that depopulations and resultant migrations could accelerate with the declining availability of cheap fossil fuels:

"Depopulation moves at different paces in different cultures and regions, and these and other factors can cause people to leave their homes and head elsewhere. Even in the absence of modern transportation, they can end up far from the places they started. Before Rome fell, for example, the ancestors of today's English lived in Denmark, the ancestors of today's Hungarians lived in central Asia, and the ancestors of today's Spaniards lived north of the Black Sea. Today, as tidal flows of refugees press at borders worldwide, the only thing preventing equal migrations is the fraying fabric of national sovereignty, backed by military forces dependent on fossil fuels. As the industrial age ends, those bulwarks will fail, and epic migrations will likely result." (Greer 2009, pp. 39-40)

While it is difficult to disaggregate the relative contribution of climate change to human mobility as elaborated in Section 2.3, it is generally accepted by most researchers that

1 This case study found significant evidence for the interplay of unabating population growth, more erratic precipitation, extreme weather events, ongoing environmental degradation, and increasing competition for scarce resources enhancing human migrations away from drought affected areas.

over the coming decades the contribution of climate change relative to other factors which may enhance environmental degradation and consequent migration could rise disproportionately. By compounding the effect of other existing pressures and constraining human populations to migrate elsewhere to meet their basic needs, climate change appears poised to contribute significantly to human migration in the 21st Century (Brown 2007, 2008a; Ehrlich and Ehrlich 2013; Brown 2011, Corlett 2008, Greer 2009, pp. 37-55).

Quantitative estimates of the likely scale and scope of climate migration are very difficult to make or defend, a problem which is discussed in detail in Section 2.4. However, with prognoses ranging in the dozens and even hundreds of millions of migrants, the “precautionary principle”² would seem to suggest that the possibility of massive-scale climate migration within or across international borders should not be too easily dismissed or misconstrued as fictitious or fantastic: the cumulative demographic, environmental and socioeconomic pressures could easily overwhelm collective communal coping capacities, destabilising nations internally, creating tensions within the international community and – in the absence of political forethought and management – become a formula for protracted, bloody conflicts and human misery (Stern 2007, p. 173; Australian Government 2009, WBGU 2007, Dupont and Pearman 2006; Christian Aid 2007, p. 3, critique by Bettini 2012 p. 66, and Hartmann 2010).

At the same time the issue should not be misconceived as a “future” problem. Indications are that climate change related impacts are already translating into people movements in a number of different geographic, ethnocultural, environmental and climatic contexts – so-called “hot spots” (Section 3.4) – which are the subject of analysis in this dissertation, including water stressed regions (Chapter 4), megadelta plains and megacities (Chapter 5) and small island environments (Chapter 6). Pertinent implications are explored next.

Among the more dramatic images projected by the media are scenarios of drowning small island states (Barnett and Campbell 2010, Burson 2010, Patel 2006). The displacement of islanders from this particularly vulnerable environmental context is not implausible. The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) projected a rise in global sea levels from thermal expansion (warmer water occupies more space) on the order of 18-59cm this century (IPCC 2007, pp. 8 and 45). However, given that these projections expressly exclude contributions of melt water runoff from disintegrating ice sheets of Greenland and West Antarctica

2 Defined by McKean (2005, p. 1333) as “the principle that the introduction of a new product of process whose ultimate effects are disputed or unknown should be resisted. It has mainly been used to prohibit the importation of genetically modified organisms and food.”

whose future is hard to predict (Vaughan and Arthern 2007), the IPCC itself acknowledges that “larger values cannot be excluded” (IPCC 2007, pp. 13 and 54).

A number of studies published since AR4 not only confirm the IPCC’s bleak outlook but suggest it may be overly optimistic: the IPCC seems to set out what many consider a lowest common denominator consensus, and headline risk numbers could err on the side of understatement (RealClimate 2010, Kerr 2007, McGrath 2009, Starke 2009, Copenhagen Diagnosis 2009, World Bank 2012). Moreover, positive feedback processes and the passing of tipping points could lead to irreversible and self-reinforcing warming of the Earth’s climate system and accelerate the melting of the Greenland and West Antarctic ice sheets (Alley et al 2005, Hansen et al 2007; Hansen 2008, 2009; Rahmstorf et al 2007, Lenton et al 2008). Furthermore, scientists have warned that sea level rises on the order of 2m this century are conceivable while cautioning that such sea level increases do not constitute worst-case scenarios (Hansen 2008, Copenhagen Diagnosis 2009). One study of coral fossils from the northeast Yucatán peninsula in Mexico found that in the past melting ice sheets had raised sea levels by as much as 3m in a matter of decades. Though preliminary and in need of independent confirmation at other similar sites where fossilised coral has been deposited, the study remains a warning that rapid sea level rises are not without historical precedent (Blanchon et al 2009). (A scientific discussion of sea level rise projections and other climate change impacts detrimental to small island environments is presented in Chapter 6.)

As noted in Section 3.6, an evacuation of low-lying islands due to sea level rise is presently underway in the Tulun Atoll in the South Pacific (Field 2003, Vidal 2005, Pacnews 2007, BBC 2008, Morton 2009, Monbiot 2009; also Luetz 2008, pp. 20-24). This contemporary human relocation from the Tulun Atoll made Bougainville / Papua New Guinea the location of choice for a pilot study which trialled the dissertation’s fieldwork data collection method in island communities of “origin” and “destination”; this pilot study also built on research conducted in the region in 2008³ (elaborated in Section 3.6).

Since low-lying islands can become uninhabitable long before their submergence due to rising demands of growing island populations imposed on diminishing local fresh water supplies (see Figures 6.20 and 6.21 in Section 6.5; quoted from Luetz 2008 p. 23), it is conceivable that many more island communities could be displaced in the future (Kaluwin et al, p. 97; Davies 2006, pp. 111-112; Mimura et al 2007, Patel 2006). The

3 During this research conducted on behalf of World Vision (Luetz 2008), this researcher carried out dozens of face-to-face interviews with sea level rise affected islanders in and around Buka, Bougainville, Papua New Guinea (March 2008). Among those interviewed was the islander and Tulele Peisa NGO founding director Ursula Rakova who also furnished additional information in a subsequent telephone interview (10 April 2008).

IPCC observes that “[b]y mid-century, climate change is expected to reduce water resources in many small islands, e.g. in the Caribbean and Pacific, to the point where they become insufficient to meet demand during low-rainfall periods” (IPCC 2007, pp. 12, 49 and 52). The United Nations Development Programme (UNDP) underscores the vulnerabilities of low-lying islands: “[f]or the Maldives, where 80 percent of the land area is less than 1 metre above sea level, even the most benign climate change scenarios point to deep vulnerabilities” (UNDP 2007, p. 100). In 2008 the Maldives announced the creation of a sovereign wealth fund to pool earnings from tourism to buy land elsewhere should rising sea levels inundate the country and necessitate the forced resettlement of the nation’s 300,000+ islanders (Ramesh 2008; Vince 2009a, pp. 37-39; cf, Schmidl 2009; UNDP 2009 p. 45, attributed to Revkin 2008; BBC 2008, Henley 2008, Lang 2009a, 2009b). (This small island state is featured as a case study in Chapter 6.)

Many other low-lying islands are similarly threatened by rising sea levels (Torchia 2005), including Tuvalu – the fourth-smallest country in the world and most commonly known for its internet domain .tv (Reed 2011, Patel 2006, Shukman 2008, Mortreux & Barnett 2008, Paul 2009). According to Pacnews (2008) “[t]he sea level is rising so much ... that [Tuvalu’s] water has become too salty to drink and to grow vegetables.” Moreover, Bohane (2006) reports that Tegua Island on Vanuatu has already become uninhabitable due to sea level rise, forcing the islanders to evacuate.

Although low-lying small island environments are most acutely vulnerable to rising sea levels and other climate induced problems such as coral bleaching (Chapter 6), a number of mainland coastal communities have also had to be abandoned because of unmanageable levels of erosion, including arctic communities in Alaska (Goldenberg and Sprenger 2013, Shearer 2012, Bronen 2010, Kolbert 2007 pp. 7-34, Drapkin 2006, UPG 2008), back-beach communities like Labutali⁴ in Papua New Guinea (Luetz 2008, pp. 24-25), or megadeltaic communities such as Dalakandi, Tajumuddin⁵ on Bhola in Bangladesh, discussed in Chapter 5 (cf, Luetz 2008, pp. 26-29). In all of the aforementioned community relocations climate change seems implicated as a causal factor.

With respect to climate change impacts on fast-urbanising coastal megacities, the German Council on Global Change (WBGU) has called for more interdisciplinary re-

4 Pertains to preceding research visit: with the assistance of accompanying guides Mondo Sigar (Chairman Labutali Community-Based Organisation), Thomas Warr (Village Development Trust NGO) and David Hapato (World Vision PNG) this researcher conducted site interviews in Labutali / Puwamo, Papua New Guinea (19 March 2008). Several dozen villagers were interviewed. The number of Labutali villagers was estimated by Mondo Sigar to be “about 2,500”. This back-beach community relocation is referenced in Luetz (2008, p. 24-25).

5 Pertains to preceding research visit: this researcher conducted a face-to-face interview with Abdul Mannan in Dalakandi on the Island of Bhola (Tajumuddin Upazila), Bangladesh (22 April 2008). The estimated population of Bhola is 1.6-2.2 million.

search while cautioning that “[c]limate change and urbanization are dominant trends of global change. The interplay of the two trends in the major coastal cities of the developing world could cause an almost unmanageable situation, particularly if the arsenal of responses is limited by social, economic and institutional deficits. There is an urgent need to conduct *interdisciplinary studies*⁶ in order to assess the severity of the problems for particularly critical megacities...” (WBGU 2006, p. 63; emphasis added)

While at present coastal megacities are predominantly magnets of *in*-migration, it has been suggested that climate change could effectively “de-urbanise ... major population centres ... along the coast” (Rajan 2008, p. 7; Byravan and Rajan 2008, p. 9; cf also World Bank 2007). As previously noted, the depopulation of cities and civilisations is not without historical precedent (Marshall 2012), and the emergence of more modern ghost towns is certainly not inconceivable (Banerji and Jackson 2012).

In sum, a future influx in human migration would seem likely *even in the absence of climate change*, a scenario also sketched by Greer who anticipates future grand-scale migrations which are broadly commensurable with nation-scale *Völkerwanderung* of the past:

“German historians of the 19th century coined a useful word for the age of migrations that followed the fall of Rome: *Völkerwanderung*, ‘the wandering of peoples.’ Drawn by the vacuum left by the implosion of Roman power and pushed by peoples from the steppes further east who were driven westward by climate change, whole nations took to the road. It took a thousand years before the migrations settled into a stable pattern, and by the time that happened very few of the peoples of Europe were living in the same places as before. This has happened many other times in the past when empires came apart. What makes it important here is that we are likely to see a repeat of the phenomenon on a grand scale in the near future.” (Greer 2009, p. 44)

Climate system inertia and more climate change “in the pipeline”

Unfortunately, it appears that the problem of climate change will not dissipate quickly. Given the inertia of the Earth’s climate system and the longevity of CO₂ in the atmosphere – one third remains in the air after a century and one fifth after a millennium (Hansen 2008, p. 28) – much unavoidable warming is already committed to based on past emissions. Since the industrial revolution in the late 18th Century global temperatures have already climbed by about 0.8°Celsius (IPCC 2007), but based on the cumulative amount of greenhouse gases globally emitted to date, the composition of the atmosphere will eventually lead to global warming of at least 1.3°Celsius. This amount of warming is already “in

6 As elaborated in Section 1.4, interdisciplinary research is integral to this Doctoral Study.

the pipeline” and will be borne out over the coming decades irrespective of mitigation efforts, contributing to erratic climatic conditions, sea level rises, enhanced precipitation trends, and other potentially adverse effects (World Resources Institute 2010, Woo et al 2011, WBGU 2009, World Bank 2006, 2007). Incidentally, in this respect it is little comfort that the planet is presently on 4°C warming trajectory (WBGU 2009a; World Bank 2012, <http://www.fourdegrees2011.com.au> ; New et al 2011, Stewart and Elliot 2013, Nicholls et al 2011; cf, Schellnhuber 2008, Vince 2009, Hamilton 2010, pp. 190-208).

Climate system inertia effectively means that the eventual temperature increases and resultant climate change impacts of today’s emissions will not be felt until the 2040’s (Hansen 2008, 2009; Woo et al 2011; UNDP 2007, p. 4). Seeing that climate system inertia thus implies a time lag of several decades between the “cause” (greenhouse gas emissions) and the “effect” (rising temperatures), it seems highly plausible that migratory movements of people could increase appreciably in the future, especially in the context of ongoing population growth and diminishing natural capital in many parts of the world (Ehrlich and Ehrlich 2013, Brown 2011, Greer 2009, Hansen 2009, Painter and Durham 1995).

The implications appear to be that no matter how assertive future mitigation strategies may be, near-term anthropogenic climate change and a growing potential for consequent migration may likely be hard to avert. This possibility is recognised in other research which suggests that “[n]o matter how aggressive future climate change mitigation strategies may be, we can be sure that by the end of the century there will be millions of ‘boat people’ from developing countries looking for safer ground” (Byravan and Rajan 2006, p. 248). A similar expectation is reflected in a research background paper for the 2007/2008 UN Human Development Report:

“...while the evidence for a distinctively anthropogenic ‘climate change signal’ in forced migration so far is circumstantial, it is mounting. And with all available scenarios predicting accelerating climate change impacting growing populations and more people living on marginal land, forced climate migration is certain to increase.” (Brown 2007, p. 18)

In sum, the order of magnitude on which anthropogenic climate change could impact on human populations and create climate migrants in the 21st Century appears unprecedented, wherefore the problem of “climate migration” constitutes a highly relevant focus of research interest. To promote anticipatory policy opportunities this thesis will therefore focus on “preparedness”, the conceptual framework of which is elaborated in Section 3.3. The research seeks to make a contribution to “manage the unavoidable, and to avoid the unmanageable.”⁷ The value of such a forward-thinking preparedness posture was

7 Expression borrowed from PIK (2007, p. 8). The same phrase is used by Lenton et al (2008).

also acknowledged by Marshall (2012) in his closing paragraph. Comparing our modern anthropocentric civilisation to past collapsed civilisations, Marshall cautions that

“[t]he growing complexity of modern society may make us more vulnerable to collapse rather than less. We do have one enormous advantage, though – unlike the Mycenaeans and the Mayas, we know what’s coming. We can *prepare* for what is to come and also to slow the rate of change if we act soon. So far, though, we are doing neither.” (Marshall 2012, p. 36; emphasis added)

The overriding preparedness focus will be developed in detail in Chapter 3 and therefore only briefly noted here as a matter of integral significance in relation to this dissertation’s contribution to scholarship.

1.4 Synopsis: What this research aims to contribute to scholarship

This thesis aims to redress the dearth of both *interdisciplinary* and *grassroots-level research* that specifically solicits the views of climate migrants. As a “preparedness” focused dissertation this thesis argues that migration related problems are best addressed *before* they materialise, or where pre-emption is impossible, *before* they manifest beyond reasonable hopes of resolution, or at the very least, beyond realistic prospects for displacement and resettlement with dignity, and critically, *before* deteriorating into a humanitarian crisis requiring *ad hoc* emergency intervention.

As elaborated in the literature review (Chapter 2), the context of academic scholarship in the area of this research is hallmarked by numerous difficulties, including definitional diversity (Section 2.2), multicausal “disaggregability” (Section 2.3), predictive problems (Section 2.4), legal limbo (Section 2.5), and most importantly, a discourse that is dominated by “experts” and lacking in both *local-level* and *interdisciplinary* research which expressly invites the experiences, perspectives, contributions and aspirational ambitions of climate migration affected individuals and communities (Sections 2.6 and 2.7). In point of fact, numerous scholars manage to draft entire articles or book chapters discussing “climate migrants”⁸ *ad abstractum* without so much as allowing a single contribution to be made *by* “climate migrants” (eg, Bettini 2012, Piguet 2013, Cournil 2011, Gemenne 2011, 2011a).

This Doctoral Study therefore responds to the *interdisciplinary* and *local-level research* gaps both by drawing on literature in several fields of inquiry, and by intentionally engaging with migration affected populations⁹ to identify how they understand the prob-

8 However they are to be conceptualised; the problem of nomenclature is developed in Section 2.2.

9 Including “host” and “guest” communities, and places of “origin” and “destination”.

lems of climate change related migration, and what preferred solutions they envisage. This research emphasis stands in marked contrast to a scholarly discourse where academic “experts” typically promulgate solutions without sufficiently soliciting the views of those concerned.¹⁰ Furthermore, throughout this dissertation it will be argued that from the point of view of migrating populations, preparedness informed anticipatory approaches tend to enable inherently more favourable migration processes and outcomes.

Expressed in simple language, the thesis seeks to identify what migrants want so that appropriate policy instruments for equitable macro-managed migration processes can be discussed, developed, drafted and legislated well *before* they are needed. In terms of promoting a culture of policy preparedness it is seen as crucial to learn lessons from various forms of contemporary migration. What do migrants want and need to succeed in their new location/s? What can policy makers learn from past and present migrations which may or may not be identified as “climate induced” to prepare for the possibility of larger-scale future climate induced migration? To answer these questions it is critical that migration affected communities are proactively invited to participate in the process of identifying policy solutions so that they do not remain passive subjects to be managed or feared, but rather, active teachers and partners to be consulted and engaged (Kenny 2011, Ife 2010, Chambers 1997, Bettini 2012, Luetz 2008, pp. 45-49).

Given that the study of climate change impacts involves speculative future scenarios that can be hard to project (Section 2.4), the thesis will seek to identify so-called “no regrets” policy approaches. According to Brunner and Lynch, “no regrets” policies “make sense regardless of climate change projections” (Brunner and Lynch 2010, p. viii), and according to the Intergovernmental Panel on Climate Change (IPCC), “[n]o regrets options ... are by definition ... options that have negative net costs, because they generate direct or indirect benefits that are large enough to offset the costs of implementing the options” (Markandya et al 2001, pp. 474-475). For the purposes of this dissertation, “no regrets policies” will be understood as policy priorities that are broadly beneficial irrespective of what particular scenarios are ultimately realised, and might even make sense in the complete absence of climate change. At its simplest, this thesis argues that policy preparedness is the *a priori* policy posture of choice.

A number of findings extend the boundaries of previous research in this area of multidisciplinary scholarship. These are briefly highlighted in the next section.

10 These are typically poverty constrained individuals or communities who “the experts” generally profess or assume to represent.

1.5 Summary: The main findings of this research

Based on evidence and scholarly discourse presented in this dissertation, this research advocates policy preparedness in seven areas: (1) inviting the contributions of migrating populations leads to preferable migration processes and outcomes; (2) policy maker foresight is an important success factor; (3) targeted service provision can enable positive or more benign migration outcomes; (4) many migrants wish to stay *in* their home countries, if at all possible, thereby highlighting the importance of *in situ* adaptation measures; (5) the scholarly “problem” of nomenclature (elaborated in Section 2.2) is a non-problem in the minds of most migrants; (6) stronger, more accountable and responsive government institutions have a key role to play in enabling anticipatory migration and proactive service provision; (7) education is the *sine qua non* for all future migration preparedness. These seven policy priorities are elaborated both in the relevant case studies (Chapters 4 to 6) and the concluding synthesis discussion (Chapter 7).

1.6 Dissertation structure: Overview, chapters and sections

This dissertation is organised into seven chapters. Chapter 1 introduces the research and previews its significance, approach and findings. Chapter 2 reviews relevant literature and establishes the research within the context of identified knowledge gaps. Chapter 3 discusses the conceptual framework of climate change related migration and elaborates the study’s “preparedness paradigm”. It also introduces the field research locations. Chapter 4 contains the study’s first case study, conducted in Bolivia. Chapter 5 contains the second, conducted in Bangladesh, and Chapter 6 contains the third and final case study, conducted in the Maldives. Chapter 7 offers a review, analysis and synthesis of the field research findings, assesses how research objectives have been met, discusses policy implications and concludes with a shortlist of tentative policy recommendations.

All chapters and sections of this dissertation are briefly previewed next. Each chapter is subdivided into seven sections:

Chapter 2 reviews relevant literature and establishes the research within the context of relevant knowledge gaps. Section 2.1 offers a succinct chapter overview. Sections 2.2 to 2.5 each deal with a different set of difficulties relating to climate change related migration. Section 2.2 introduces definitional predicaments relating to the choice and use of appropriate nomenclature. Section 2.3 discusses “disaggregational” dilemmas arising from the multicausality of climate change related human movement. Section 2.4 outlines predictive problems inherent in making (or defending or disproving) numerical projections of present or future climate change related migration. Section 2.5 discusses normative matters pertaining to the pervasive absence of a globally applicable and binding legal framework by means of which climate migrants could be uniformly protected. Section 2.6 provides a

synthesis discussion of the literature review presented in Sections 2.2 to 2.5. Section 2.7 reiterates and more narrowly defines the intended PhD contribution by establishing how this research addresses existing knowledge gaps identified in the literature review.

Chapter 3 discusses the conceptual framework of this study and elaborates its “preparedness paradigm”. It also introduces the field research locations. Section 3.1 offers a succinct chapter overview. Section 3.2 introduces the concept of climate change migration. Seeking “insight” for “foresight” from “hindsight”, this section looks back to look forward: analysing the very earliest IPCC assessment reports published in 1990 and 1992, this section concludes that early scientific knowledge in the area of climate migration research was substantial but did not translate effectively into corresponding policy “preparedness”. Section 3.3 builds on this finding and establishes the study’s conceptual framework and defines its preparedness focus. Section 3.4 introduces the research methodology and choice of case study locations. Section 3.5 discusses the local-level fieldwork approach and questionnaire design. Section 3.6 mentions a pilot study conducted on the Tulun and Nissan Atolls in the Pacific which led to slight revisions being made to the fieldwork methodology and questionnaire design. Section 3.7 lists miscellaneous methodologically relevant fieldwork features, including additional field research not included in this study, an Academia-NGO partnership, and references to the dissertation’s ethics committee clearance.

Chapter 4 contains the study’s first case study, conducted in Bolivia. Chapter 5 contains the second, conducted in Bangladesh, and Chapter 6 contains the third, conducted in the Maldives. These three case study chapters were uniformly structured for ease of cross-comparisons. Each case study is subdivided into seven sections.¹¹ Section one provides a succinct chapter overview. Section two discusses the climate change and human migration situation in the case study country concerned. Section three mentions methodological specificities and statistics relating uniquely to that case study. Section four discusses quantitative and qualitative fieldwork findings, including migration relevant environmental and non-environmental pressures¹² (“push factors”), and migrant aspirations (“pull factors”). Section five critically examines core issues raised by the research in that country. Section six contains a synthesis and key discussion. Section seven concludes with tentative policy recommendations which apply uniquely *in that particular* country context. This approach is explained further in Section 1.7 which introduces the study’s “unique and simplifying features”.

11 In rare instances sections are subdivided further into identifiable subsections. Such subdivisions seemed helpful or superfluous depending on case study specificities: where this applies subsections are highlighted (ie, italicised) to indicate topical transitions. Notwithstanding, as made clear in Section 1.6, the hierarchical organisation of material covered in this dissertation is kept intentionally flat, wherefore enumeration of multiple subsections and unnecessary layers of hierarchy and complexity are intentionally avoided.

12 Including those that may be related to climate change.

Chapter 7 presents a discourse on the dissertation's findings, discussion, synthesis and conclusions. Section 7.1 offers a succinct chapter overview. Section 7.2 discusses commonalities, differences and cross-cutting issues. Sections 7.3 covers "surprise matters" as a promising preparedness opportunity similarly relevant in all field research locations. Section 7.4 provides a short review of dissertation chapters and sections. Section 7.5 offers a synthesis of main research findings. Section 7.6 advances conclusions, analyses possible policy implications, and sketches the dissertation's primary contribution to scholarship, including research limitations and opportunities for further research. Section 7.7 concludes with a shortlist of policy recommendations.

1.7 Presentation and design: Unique and simplifying features

This thesis discusses a multidimensional and interdisciplinary research problem of extraordinary complexity. In an effort to add light and lucidity to an otherwise confoundingly complicated subject this thesis has sought to accommodate a number of unique, simplifying and additional features related to the presentation, design, or organisation of materials. These are briefly outlined below.

First, this thesis is deliberately organised into a flat hierarchy which reaches no deeper than chapters and sections.

Second, case studies are structured uniformly to facilitate cross-references and cross-comparisons between fieldwork locations and research findings (Section 1.6).

Third, all graphic materials which supplement this dissertation are uniformly labelled and identified as "Figures". This includes photos, tables, charts, graphs, and maps. In other words, apart from "Figures" there are no other categories of graphic materials that need to be cognitively traced by the reader. Figures are numbered chronologically by chapters. This uniform identification represents the intentional effort to simplify the reader's navigation through a substantial body of research.

Fourth, this thesis has sought to preserve as much originality, authenticity and contextuality as possible. As a consequence of this deliberate emphasis, this dissertation expressly incorporates longer, unedited and/or unabridged verbatim quotes, sourced both from the literature and from respondents. While the inclusion of longer verbatim quotes is not similarly accepted across disciplines, it should be stressed that *this research is interdisciplinary in nature* and places a special emphasis on *contextually authentic local-level respondent commentaries* (elaborated in Section 2.7). By accommodating a multiplicity of contextually authentic verbatim voices, this research emphasis represents the intentional effort to minimise interpretive bias and allow both literature and respondents to speak for themselves. This deliberate deference to contextually precise detail is also reflected in a

selection of tables which depict demographic respondent details, including number of children and educational attainment.

This emphasis on *contextually authentic local-level respondent commentaries* made it desirable that (whenever available) transcribed and translated respondent commentaries be preserved in their respective mother tongues. Regarding the Bolivia case study (Chapter 4), short Spanish verbatim citations are detailed in footnotes, and longer unabridged commentaries are featured in Appendix E. Respecting the Bangladesh case study (Chapter 5), selected Bengali verbatim citations are available in Appendix F, and respecting the Maldives case study (Chapter 6), Dhivehi verbatim citations are presented in Appendix G. This approach makes it possible for inquisitive readers versant in the relevant languages to query pertinent commentaries for additional nuances which typically get lost in translation.

Moreover, given the significant contextual dissimilarities between case study countries it also appeared to make sense that each case study chapter contain its own short subsection entitled “Research limitations and future research”. Positioning this very concise subsection at the end of each case study seemed to be most sensible in light of the fact that research was limited differently in each country context, and that each national situation appeared to lend itself uniquely and differently to opportunities for future research. For the same reason, each case study also contains its own contextually unique “Conclusions and tentative policy recommendations” (Sections 4.7, 5.7, 6.7).

As a result of this deliberate emphasis on contextual originality this dissertation is slightly more discursive than might otherwise have been the case. Notwithstanding, this emphasis is self-consistent and conceived of as an asset, not a liability.

Fifth, this thesis follows the spelling conventions of “British” English orthography.

Sixth, whenever local currencies are mentioned (especially in case study chapters), equivalency values are provided in U.S. dollars. Seeing that over extended time periods currencies can be subject to significant exchange rate fluctuations, currency conversions from local currencies into U.S. dollars are consistently calculated as at the time of the interview (ie, on the actual day when the interview took place). All currency conversions were derived uniformly online at [oanda.com](http://www.oanda.com)¹³ by selecting the relevant currencies and historical dates.

Seventh, an accompanying short video documentary (hereafter identified as: “Bolivia documentary, Luetz et al 2011”) supplements this thesis. This documentary was produced by UNSW-TV from original onsite fieldwork footage and is available online.¹⁴ This doc-

13 <http://www.oanda.com/lang/de/currency/converter/>

14 <http://tv.unsw.edu.au/video/bolivia-leaving-the-land> and <http://youtu.be/KBq2jNrD-yg>

umentary is frequently cited throughout Chapter 4 which discusses the Bolivia case study and may provide the reader a useful acquaintance with people and places discussed.

Eighth, this study does *not* adopt or advance a new (or consistent) definitional typology or terminology to refer to people who migrate in whole or in part because of climate change related reasons. This is in stark contrast to most studies which develop and then resort to self-consistent typologies (Section 2.2). Instead, this study will use various (and changing) terms that best reflect the unique circumstances and causes associated with the migration experiences described. Hence affected people will be variously referred to as “migrants”, “displaced people”, “forced migrants”, “evacuees”, “environmentally induced migrants”, “climate migrants”, or whatever other terms most accurately reflect the particular situation/s of the individual/s or community/ies concerned.

Ninth, this study benefited significantly from logistical support provided by the international and development organisation World Vision. This is gratefully acknowledged both in the Acknowledgments, and in Section 3.7 which elaborates methodologically relevant aspects pertaining to this Academia-NGO partnership. Most importantly, this support enabled fieldwork in remote and inaccessible localities that could not otherwise have been researched.

Tenth, this researcher owes particular recognition and gratitude to all migrants who willingly shared their stories, experiences, and aspirations, and who generally and generously gave permission to depict their photos and particulars. It is owing to these personal and generous-spirited contributions that this PhD dissertation has received a distinctly human face, and become so uncharacteristically colourful and personable (Section 3.7).

To conclude Chapter 1, the introduction to this dissertation is supplemented by a 3-minute thesis (3MT) speech which succinctly recounts the meaning of this research to an intelligent but non-specialist audience, and which was delivered by this researcher at the 2012 UNSW 3MT academic public speaking competition at Leighton Hall, John Niland Scientia Building, UNSW, on 25 September 2012.¹⁵ The ASPIRE award winning oratory research presentation was recorded on video by UNSW-TV and is publicly available online at two separate locations.¹⁶

Having thus concluded the introduction to this research, the next chapter will establish it within the context of academic literature.

15 <http://research.unsw.edu.au/three-minute-thesis-competition>

16 <http://tv.unsw.edu.au/video/2012-three-minute-thesis-aspire-award-johannes-luetz> and http://youtu.be/f9_RmUuBwmU (The following erratum should be noted: @ 0:33 (0:58) “small island state” should say: “On this atoll sea level...”).

Chapter 2: Literature Review

2.1 Chapter overview

This literature review is subdivided into seven sections. Sections 2.2 to 2.5 each deal with a different set of difficulties relating to climate change related migration. Section 2.2 introduces definitional predicaments relating to the choice and use of appropriate nomenclature. Section 2.3 discusses disaggregational dilemmas arising from the multicausality of climate change related human movement. Section 2.4 outlines predictive problems inherent in making or disproving numerical projections of present or future climate change related migration flows. Section 2.5 discusses normative matters pertaining to the pervasive absence of a globally applicable and binding legal framework by means of which climate migrants could be uniformly protected. Section 2.6 provides a synthesis discussion of the literature review presented in Sections 2.2 to 2.5. Section 2.7 defines the intended contribution of this Doctoral Study by establishing how this research aims to address existing knowledge gaps which are identified in the literature review.

2.2 Nomenclature: Definitional difficulties

Available literature on climate change induced migration is littered with contentious issues, but perhaps none more so than the question how those driven to move from their homes in response to climate change related problems should be labelled. As will be shown, the question of nomenclature or definition is far more delicate and laden with implications than first imagined by the climate migration novice. How are those driven from their homes to be called, conceived or conceptualised?

The list of suggestions is long and growing, and examples listed below are necessarily incomplete:

“climate refugees” (eg, Biermann and Boas 2010; FOE 2007, Walker 2009, EJF 2012), “climate change refugees” (eg, Docherty and Giannini 2009, p. 361; Bob Brown 2008, Sachs 2007), “refugees”¹ (Hansen 2008, p. 2), “environmental refugees” (eg, Ehrlich and Ehrlich 2013, p. 4; Brown 2011, pp. 72-83; Kent and Myers 1995, Bell 2004, Tickell 1989), “eco-refugees” (Cournil 2011, p. 359), “environmental and climate change refugees” (Dupont and Pearman 2006, p. 55), “sea-level refugees” (WBGU 2006, p. 61), “rising-sea refugees” (Brown 2011, pp. 73, 193), “desert refugees” (Brown 2011, p. 77), “water refugees” (Brown 2011, p. 79), “displaced persons (refugees)” (Westing

1 From 2m sea level rise.

1992), “ ‘climate refugees’ ”² (eg, McAdam 2012, Bettini 2012, Hartmann 2010), “environmentally-displaced persons” (Lopez 2007), “climate migrants” (eg, Gibb and Ford 2012, Leal-Arcas 2012, Rajan 2008), “climate change migrants” (Shamsuddoha and Chowdhury 2010, pp. 3-7), “climate exiles” (eg, Wei 2011), “climate change exiles” (Byravan and Rajan 2006), “environmentally-induced [displaced] populations” (UNHCR 1996), “environmental migrants” (eg, IOM 2007, p. 1 paragr. 6; IOM 2008, p. 399; also CEEMA 2010, p. 5), “climate evacuees” (Cournil 2011, p. 359), “environmental migrants/refugees” (Renaud et al 2007, pp. 14-17), “climate-change victims”³ (Popovski and Mundy 2012; UNU 2011), “ecomigrants” (Wood 2001, pp. 43f), “ecological migrants” (ADB 2012, p. 9), “environmentally displaced persons [or people]” (eg, Cournil 2011, p. 359; UNHCR 1996, p. 9; UNFCCC 2007, ADB 2012, p. 9), “[climate] displaced people” (eg, NRC 2009), “climate change-induced displaced people” (McAdam 2011, p. 18), “forced migrants” (Brown 2007, p. 8), “climate change forced migra[nts]” (Brown 2008, p. 31), “climate-induced displace[d people]” (Castles 2010), “persons displaced by climate change” (Kälin 2010, p. 97), “[people] forced to leave their homes due to sudden-onset climate-related natural disasters” (UN-OCHA 2009, p. 15); “survival migrants” (Betts 2010), “climigrants” (Bronen 2008b, p. 31; Bronen 2010, p. 89).

As shown, the list of proponents of varied terms and terminologies is long, and the arguments put forth in favour of some disambiguations over others plentiful. In a widely cited paper migration scholar Richard Black aptly synthesises that there could be “perhaps as many typologies as there are papers on the subject” (Black 2001, p. 1).

Indeed, with hundreds of articles and more than a dozen theses written about the subject (eg, Keane 2004, Rebert 2006, Cordes-Holland 2007, Ginnetti 2009, Wrathall and Morris 2009, Gemenne 2009, Shen 2009, Dun 2010) it appears little surprising that a universally agreed definition has so far remained elusive or impossible to rally around.

Definitions and typologies discussed below are therefore limited to the most prominent studies, organisations, think tanks, and schools of thought.

Campaigners and humanitarian NGOs have frequently used the terms “environmental refugee” or “climate refugee” to highlight the plight of climate displaced populations as a matter of urgency (eg, Environmental Justice Foundation 2012, Friends of the Earth 2007, Gaetano 2008, Shamsuddoha and Chowdhury 2010, Bauer 2010), and even Australian politicians have not shied away from labelling such groups of people “refugees”

2 Some scholars use the term climate refugee/s (or approximations) in inverted commas, ie, “climate refugees”, apparently capitalising on the populist nomenclature without conceding personal assent.

3 According to the authors, “climate-change victims are not necessarily displaced people, as many scholars and advocates suggest. Climate-change victims could be those who move, but they could equally be those who stay and suffer.” (Popovski and Mundy 2012, p. 9)

(eg, Sercombe and Albanese 2006, Bob Brown 2008). Proponents of the refugee label generally justify its use on the grounds that those displaced literally “seek refuge” from the impacts of climate change and are therefore rightly to be identified as “climate refugees” (Brown 2008, p. 13). Moreover, it is generally maintained that “[t]he word ‘refugee’ resonates with the general public who can sympathise with the implied sense of duress” (Brown 2007, p. 7) experienced by forcibly dislocated populations, and that this term also carries “strong moral connotations of societal protection in most world cultures” (Biermann and Boas 2010, p. 67).

Since the terms “evacuee” and “exile” imply temporary displacement and would therefore seem inapplicable in cases of permanent displacement (eg, sea level rise induced submergence of small islands), they have been less frequently proposed as suitable nomenclature (for the most notable exceptions see; Byravan and Rajan 2005a, 2005b, 2006, 2008, 2009, 2010; Wei 2011).

The term “migrant”, on the other hand, connotes a degree of “choice” and “free will” and may “imply a voluntary move towards a more attractive lifestyle.” (Brown 2008, p. 13, see also pp. 14-15: “Box 1: Refugee or Migrant?”) As a result, perpetuating the term “migrant” could consequently imply a reduced responsibility on the part of the international community for the welfare of this category of people, and also lower the liability for their forced fate (Brown 2008, pp. 13-15). Put simply, refugees may be seen to “run from” – migrants “run towards”; refugees are “pushed” by pandemonium – migrants are “pulled” by promise; refugees are “reactive” – migrants are “proactive”; refugees enjoy public “empathy” – migrants public “mistrust” (or vice versa), and so on. Moreover, it appears safe to synthesise that the classification “refugee” heightens the sense of “victimisation”, whereas “migrant” insinuates “opportunism”⁴ (eg, Brown 2007, 2008; see also Stavropoulou 2008, Dun and Gemenne 2008). Expressed in simple language the words “refugees” and “migrants” conjure up vastly different mental images and associations which seem to be, more often than not, indicative of the writers’ underlying agendas (Zetter 2007, Cournil 2011, pp. 359-360).

Debates surrounding the definitional or associational appropriateness of different terminologies appear to have broadly divided academics into two camps (Brown 2008, pp. 13-15), namely those favouring the term “refugee” (eg, Docherty and Giannini 2009), and those favouring the term “migrant” (eg, IOM 2010). While environmentalists have tended to portray migration as a form of failed climate change mitigation, migration re-

⁴ An exception to the semantic notion of “migrant opportunism” may be encountered in the conceptualisation of “survival migrants”, defined by Alexander Betts as “persons outside their country of origin because of an existential threat to which they have no access to a domestic remedy or resolution.” (Betts 2010, p. 362)

searchers have traditionally treated it as one of numerous potentially positive means of adaptation (Castles 2010; see also IOM 2008, 2009; Gemenne 2009). Despite academics arguing both sides of this terminological divide, consensus has remained notoriously elusive (eg, IOM 2009c, p. 397; Zetter 2007; CEEMA 2010, p. 4).

By perpetuating terms like “climate refugees” and “environmental refugees” the media have also played a role in propagating, popularising and lodging such terminology firmly in the public domain (BBC 2008, 2008a; Lawton 2009; MacFarquhar 2009; Vidal 2008, 2009, 2013; Swing 2009; Potter 2009; Morton 2009; Trent 2009, Schmidl 2009; Burgess 2012; Lam 2012). In the same vein a documentary released in 2009 and officially selected for the 2010 Sundance Film Festival was titled “Climate Refugees” (Nash 2009), and a German artist has shown his model “climate refugee” camp of roughly 1,000 miniature tents in city centres around the world (Hack, no date).

A brief excursion into the term’s etymology pays dividends. According to Richard Black (2001, p. 1) the term “environmental refugee” was first popularised by Lester Brown of the Worldwatch Institute in the 1970s, but failed to gain traction until a publication by the United Nations Environment Programme (UNEP) defined “environmental refugees” as

“... people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life.” (El-Hinnawi 1985)

Following publications and lectures by Jacobsen (1988) and Tickell (1989), Norman Myers and Jennifer Kent (1995) volunteered the following definition of “environmental refugees” in their 214-page landmark study *Environmental Exodus: An Emergent Crisis in the Global Arena*, referring to this category of people as

“... persons who can no longer gain a secure livelihood in their traditional homelands because of environmental factors of unusual scope, notably drought, desertification, deforestation, soil erosion, water shortages and climate change, also natural disasters such as cyclones, storm surges and floods. In face of these environmental threats, people feel they have no alternative but to seek sustenance elsewhere, whether within their own countries or beyond and whether on a semi-permanent or permanent basis.” (Myers and Kent 1995, pp. 18-19)

Their study firmly anchored the term “environmental refugees” both in academic literature and public policy discourse. Even more than 15 years later their publication still remains the most (if not the only) comprehensive quantitative assessment of the issue to

date (cf, Foresight 2011, p. 28), with numerical predictions of future “environmental refugees” calculated by Myers and Kent still widely cited and repeated (Section 2.3).

As a result of growing global awareness of climate change in the public domain, recent years have seen a gradual popularisation of the term “climate refugee” which more directly reflects the climatic “cause” of the environmental “effect” leading to forced migration. While the two terms “environmental refugees” and “climate refugees” have at times been used almost interchangeably, there is no unified view about the appropriateness of one term over another. Stavropoulou, for example, condones the term “environmental refugee” (though conceding its legal inaccuracy) as “more compelling than ‘environmental migrant’ because it evokes a sense of global responsibility and accountability, as well as a sense of urgency...” (Stavropoulou 2008, p. 12). Nevertheless, she stops short of endorsing the term “climate change refugee” which she views as “going too far [given that] it will generally be impossible to say whether a degradation in ecosystems leading to displacement has climate change as a major causative factor” (ibid). Similarly, a document prepared by the Climate Change, Environment and Migration Alliance (CEEMA) makes the point that

“it is difficult to clearly identify the relative role of environmental factors in a decision to migrate [and] isolating the role of climate change is even more difficult. Therefore, *terms containing a reference to the environment are preferable to those referring to climate change.*” (CEEMA 2010, p. 5; emphasis original)

Notwithstanding ongoing debate, if environmentalists like Myers (1993, 1996, 2002, 2005; Myers and Kent 1995) have been largely successful at coining the concept of “environmental refugees” and disseminating it in the public domain, migration researchers have repeatedly and resolutely rejected its assimilation (Black 2001, IOM 2008, IOM 2009 and 2009a; see also Stavropoulou 2008 p. 11).

In 1996 the United Nations High Commissioner for Refugees created the less controversial concept of “environmentally displaced persons”, defining this group of people as

“Persons who are displaced within their country of habitual residence or who have crossed an international border and for whom environmental degradation, deterioration or destruction is a major cause of their displacement, although not necessarily the sole one.” (UNHCR 1996, p. 9)

Notwithstanding, the strongest attempt at blocking the term “refugee” from gaining currency in public policy dialogue appears to have been the counter-proposal of a new terminology and typology advanced by the International Organization for Migration (IOM). At its 94th Council Session the organisation floated the following definition which uses the word “migrant” instead of “refugee”:

“Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad.” (IOM 2007, p. 1 paragr. 6; IOM 2008, p. 399; also CEEMA 2010, p. 5)

The proposed definition has since featured prominently in keynote speeches delivered by the IOM’s Director General Lacy Swing in Bonn (2008) and Copenhagen (2009) and has also found entry into the organisation’s 562-page *World Migration Report* (Swing 2008, 2009; IOM 2008, p. 399). Additionally, on its webpage the IOM openly discourages the use of the terms “environmental refugees” and “climate change refugees”, urging emphatically that their use “is to be avoided” (IOM 2010). The mention of a “growing consensus among concerned agencies, including UNHCR,” resembles an attempt to entrench their proposed typology and build momentum around this definitional approach (IOM 2010). However, despite the fact that the pragmatic focus on “forced migration” already appears to resonate well with some scholars as a suitable common denominator consensus (Brown 2007, 2008; Warner et al 2009, ADB 2009, NRC 2009, Bauer 2010), it seems unlikely to settle the decade-old refugee-versus-migrant debate once and for all. Indeed, recent publications condoning the “refugee” label (discussed and detailed below) seem to suggest that the debate is alive and well and that a universal definition is unlikely to be embraced anytime soon.

Not too long ago the German Advisory Council on Global Change (WBGU 2006) published a report which heightened the plight of islanders made homeless by sea level rise. Its landmark special report *The Future Oceans: Warming Up, Rising High, Turning Sour* contains the following description and definition of “sea-level refugees”:

“If a state is submerged, its citizens become stateless.^[5] ‘Refugees from sea-level rise’ will probably seek refuge in neighbouring countries, perhaps greatly exceeding these countries’ absorption capacities. WBGU therefore considers that formal provisions are required to regulate the legal status of these people. [...] In line with the non-refoulement principle, ... states should undertake not to return sea-level refugees to their country of origin if climate change has rendered these countries unsustainable.” (WBGU 2006, p. 61)

More recently, Harvard legal scholars Docherty and Giannini published a 54-page paper which defines a “climate change refugee” as

5 This assertion has since been questioned on the grounds that under international law, statelessness commonly occurs as a result of cessation, not disappearance of a state (eg, McAdam 2010a, Kälin 2010; cf, UNHCR 2009, Wei 2011).

“... an individual who is forced to flee his or her home and to relocate temporarily or permanently across a national boundary as the result of sudden or gradual environmental disruption that is consistent with climate change and to which humans more likely than not contributed.” (Docherty and Giannini 2009, p. 361)

Furthermore, research funded by the European Commission and spearheaded by Biermann and Boas (2010) has also come up in support of the “climate refugee” classification which the authors have consistently and convincingly upheld (eg, Biermann and Boas 2007, 2008, 2010). According to their classification, “climate refugees” are

“... people who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their natural environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity.” (Biermann and Boas 2010, p. 67)

Last but not least, a 352-page publication originally published in French under the title *RÉFUGIÉS CLIMATIQUES* (Reeves and Jouzel, 2007), and republished by the Massachusetts Institute of Technology under the English title – once more unapologetically in capital letter typeset – *CLIMATE REFUGEES* (Reeves and Jouzel, 2010), indicates the widespread acceptance of this term by members of the public, a fact also illustrated by websites⁶ and weblogs.⁷

In summary, there is no consensus on the definition of people forcibly displaced (either in full or in part) by the adverse environmental effects brought on by progressive climate change (ADB 2012, p. 9). Instead, different normative approaches and agendas have led scholars to propose a vast number of competing conceptualisations with overlapping yet dissimilar definitions. A recent IOM Policy Brief states it outright: “No internationally accepted term exists to date for persons moving for environmental reasons” (IOM 2009, p. 4; cf CEEMA 2010, p. 4). Legal scholar McAdam recently hinted she was “doubtful about whether there ever will be!” (McAdam 2010c, pers. comm.)

Obviously, the problem of nomenclature goes beyond simple semantic preferences as Brown points out: “which definition becomes generally accepted will have very real implications for the obligations of the international community under international law” (Brown 2008, p. 13).

6 Online availability last confirmed 22 February 2013: <http://www.refugiesclimatiques.com>, <http://www.climaterefugees.eu>, <http://www.climaterefugees.com/>

7 Online availability last confirmed 22 February 2013: <http://ddimick.posterous.com/?search=climate%20refugees> and <http://www.refugeesinternational.org/blog/climate-displacement-muddle-terminology>

The problem is also legally intricate. Given that the word “refugee” is a legal term which bestows privileges of protection which are *not* claimable by “migrants” (elaborated in Section 2.5), IOM and UNHCR expressly discourage any extraneous or expansive uses of the term “refugee” so as not to risk undermining the Refugee Convention (CEEMA 2010, p. 5). At the same time the situation is not remedied simply by using the term “migrant” instead. As Walter Kälin points out in his role as Representative of the UN Secretary-General on the Human Rights of Internally Displaced Persons, the term “migrant” appears to be similarly inept in situations where human movement is induced by environmental factors:

“There is no definition of ‘migrant’ in international law. The only definition that can be found in a universal treaty is that of a ‘migrant worker’, meaning ‘a person who is to be engaged, is engaged or has been engaged in a remunerated activity in a State of which he or she is not a national.’ [UNTC 2004] [...] At the same time, ... the notion of ‘migrant workers’ as defined by international law does not really fit, since even if such people find a job abroad, they are primarily in search of protection and assistance and their decision to leave is not just triggered by economic considerations.” (Kälin 2010, pp. 89-90)

In summary, what appears striking about the debate so far is that for more than two decades scholars have engaged in sometimes heated conceptual disputations (see, for instance, the emotive language in Black 2001) largely apart from engaging with the affected populations concerned. While “global experts” have conceptualised “environmental migrants”, “climate refugees” and a whole host of other categories to align the problem of coerced human movement with their own grids of perception, definitional preferences, normative approaches, agendas, ideological convictions or organisational mandates (Cournil 2011, pp. 359-360), few researchers seem to have actually dialogued with climate migration affected community members to ascertain how they see themselves, how they prefer to be addressed, or to what extent the matter of preferable nomenclature is of significance *to them*. This state of affairs may be legitimately regarded as a blatant shortcoming characterising this discourse to date (elaborated in Section 2.7).

This dissertation proposes a shift away from viewing climate migrants (however they are to be classified) as passive recipients of “scholarly wisdom” dished out by “global experts” to placing them at the centre of the debate, and engaging with them *en par* as the principal stakeholders and drivers of any equitable present or future migration processes. Therefore, this thesis argues that if a universally agreeable definition is to be arrived at as called for in research briefs (eg, Wrathall and Morris 2009), it needs to be solicited from and developed by (or at the very least with) the individuals most directly concerned.

In the view of this author the presumption of the majority of so-called “experts”⁸ to *speak on behalf of* climate migrants appears to be deeply deficient, if not outright condescending, and indeed seems characteristic of the narrowness of the entire normative debate to date. It is the persuasion of this author that global “experts” should spend far less time talking “about” climate migrants or “on their behalf” but rather allow climate migrants to *speak for themselves*, with the “experts” actively listening to and learning from those who have first-hand experience of the plight of climate change related migration. In this thesis such respondents are regarded as the *real* experts of climate change adaptation and related migration.

While some research appears to indicate that respondents from communities threatened by climate induced displacement may disapprove of labels such as climate “refugees” because of an evoked sense of helplessness which can run counter to cultural pride and self-sufficiency (McAdam and Loughry 2009, McNamara and Gibson 2008), the truth of the matter is that people affected by climate change related migration have essentially *not been heard* on the question of representation (Farbotko 2010, 2010a), including how they wish to be called, categorised, characterised or conceptualised. Do they even care about the academic intricacies of nomenclature presented above? This dissertation aims to find out (Sections 2.7 and 7.5).

As already made clear in Section 1.6, this study does not advance a self-consistent typology and will use different and changing terms to refer to migrating individuals and communities.

2.3 Multicausality: Disaggregational difficulties

As discussed in Section 2.2, over recent decades a growing body of literature has highlighted climate change related migration as an increasingly pressing issue for policy makers to address, both now and in the future. However, the nexus between climate change,

8 A document prepared for the Research Workshop on Migration and the Environment: Developing a Global Research Agenda (UNU-EHS 2008), held in Munich, Germany 16-18 April 2008, mentions the word “experts” 13 times. While “[t]he workshop attendance [was] by invitation only and limited to approximately 25 invited experts and about 15 participants from organising institutions” (p. 8), including the United Nations University, International Organization for Migration, Munich Re Foundation and United Nations Environment Programme, not a single climate migrant seemed to have been included among the group of self-heralded “experts”. The same situation was repeated at the conference Climate Change and Migration in the Asia-Pacific: Legal and Policy Responses organised by Professor Jane McAdam at NSW Parliament House, Sydney, 10-11 November 2011 (CCMAP 2011). This author (who was a delegate at said conference) can confirm the blatant absence of climate migrants among the convening group of global “experts”. Inquisitive readers wishing to confirm the names of invited scholarly expert speakers may access the online conference programme here: <http://www.gtcentre.unsw.edu.au/sites/gtcentre.unsw.edu.au/files/Conference%20Programme%20Amended9Nov11.pdf> (last accessed 27 February 2013)

environmental degradation and human migration is intricate and complex since cause-and-effect relationships can be difficult to establish. Any migrant's decision to move is invariably influenced by numerous and often interrelated factors. Attempts to dissect a migrant's resolve to leave, and disaggregating the mix of factors that underlie that decision into "environmental" and "non-environmental", "climate related" and "non-climate related", or "forced" and "voluntary" categories, can be daunting, if not impossible: to what extent is the migrant "pushed" out of his or her habitat by environmental degradation – or "pulled" away from it by the economic promise of a better life elsewhere? And to what precise extent is climate change implicated (and identifiable) as a primary driver in the environmental degradation necessitating the move? And, if these challenges are not already daunting enough, how should the mixture of perceived causal factors be disentangled and proven? (Myers and Kent 1995, Renaud et al 2007, Warner et al 2009, McAdam 2010, Brown 2008, 2008a, IOM 2009 p. 205, Stern 2007, p. 199; cited in Bettini 2012, p. 67)

Moreover, the classifications are connected and interrelated: environmental degradation can trigger migration – but migration can also trigger environmental degradation (Myers and Kent 1995, Le Breton 2000, IOM 2009). Ethan Goffman aptly articulates that "[o]ne classification may cause the other or, more likely, each drives the other in a vicious cycle of reinforcing degradations" (Goffman 2006, p. 6; cf Brown 2007, p 29). In the simplest of terms, it is very difficult to draw a clear dividing line between "forced" and "voluntary" migration in relation to environmental degradation or slow onset climatic changes. While this may be possible theoretically or conceptually (eg, "migration, [is] voluntary, and displacement ... is forced"⁹), it appears to be impossible practically. Instead, in the view of the International Organization for Migration (IOM) it is more expedient to imagine the issue of migration on a continuum "from clear cases of forced migration to clear cases of voluntary migration, with a large grey zone between" (IOM 2009, p. 5). And since geographical, economic, sociocultural and/or political dissimilarities do not make it easier to deconstruct the issue into a one-size-fits-all conceptualisation, the IOM advocates a "holistic, human security-oriented approach to environmental migration" (ibid) which addresses human mobility comprehensively.

Seeing that it is difficult to establish a "direct causal link" of linear nature between environmental degradation and population displacement, demonstrating "relative causal attributions" seems to be an even more vexing challenge (Foresight 2011, ADB 2012). Moreover, causality is easily obscured by statistical "noise" as all people movements take place within the wider context of global trends, including population growth, urbanisa-

9 Attribution: ADB (2012, p. 9); linked to Foresight (2011).

tion, sprawl of slums, globalisation, etc (Ehrlich and Ehrlich 2013, WBGU 2011, Hugo 2011, Foresight 2011). Ascribing the entire urban drift to climate change derived degradation would be untenable, but dismissing climate change as a causal factor would be just as absurd (elaborated in Section 2.4). On the contrary, while contributory causes cannot be uncoupled or neatly divided asunder, it seems unmistakable that “evidence for a distinctively anthropogenic ‘climate change signal’ in forced migration ... is mounting” (Brown 2007, p. 18). This synthesis appears plausible, if not unequivocal, in light of recent publications on the evolving climate science and its implications (World Bank 2012; IPCC 2007, 2012; Copenhagen Diagnosis 2009; Lovelock 2009; Hansen 2009; Schellnhuber 2008; WBGU 2006, 2007, 2009, 2010, 2011, 2011a; UNISDR 2011). Hence there is widespread agreement among researchers around a quasi-universal lowest common denominator consensus, namely that climate change will increasingly emerge as a driver of environmental degradation, compounding existing pressures, exacerbating human vulnerabilities, and leading to potentially fast-swelling numbers of displaced people (eg, Brown 2007, 2008; UN-OCHA 2009; CCEMA 2010, p. 3; Foresight 2011, p. 9). Notwithstanding, accepting climate change as a *contributing* cause of migration rather than as a *single* one should not ultimately be seen as problematical as most migration literature argues for multiple causes (eg, Hugo 1996, 2010; Suhrke 1993).

In summary, while aggregated migration causality is not easily disaggregated, the role of climate change in inducing or enhancing migration – relative to other contributory causes – is both perceptible and growing, and the fallout in numerical terms can be expected to be both enormous and unprecedented. We turn to the problem of numerical predictions next.

2.4 Projections: Predictive problems

A number of researchers have published numerical predictions about people pushed to migrate on account of climate change induced or enhanced environmental degradation. Research estimates vary significantly, ranging from dozens to hundreds of millions of people. This section will discuss selected numerical predictions about *future* climate migrants. It is limited to the most prominent scholars and studies.

(1) Norman Myers, British environmentalist and Foreign Associate of the National Academy of Sciences, CMG, and research associate Jennifer Kent, posited:

“[A]s increasing numbers of impoverished people press ever harder on over-loaded environments [and] if predictions of global warming are borne out ... as many as 200 million people [could be] put at risk of displacement.” (Myers and Kent 1995, p. 1)

Figure 2.1: “People at risk in a greenhouse-affected world” (Myers and Kent 1995, p. 149)

Country or Region	Total People at Risk (millions)
Bangladesh	13
Egypt	16
China	73
India	20
Island States	1
Agriculturally-Dislocated Areas	50
TOTAL	173

Source: Myers and Kent 1995, p. 149, Table IX.1

This 200-million-figure¹⁰ is subsequently broken down by country/region and displayed in a table (Myers and Kent 1995, p. 149; cf, Figure 2.1).

Ten years later, and conceding that 1995 was still the “latest date for a comprehensive assessment” (Myers 2005, p. 1), Myers repeated the figure in a paper published for the OECD: “there could be as many as 200 million people overtaken by disruptions of monsoon systems and other rainfall regimes, by droughts of unprecedented severity and duration, and by sea-level rise and coastal flooding” (ibid). According to Cam Walker, in 2006 Myers further increased his forecast figure to 250 million during a public seminar in Australia (Myers 2006, cited in Walker 2007 p. 14). Moreover, referring to an interview conducted with Myers on 14 March 2007, the NGO Christian Aid also claims that “Dr Myers now believes that the true figure will be closer to 250 million” (Christian Aid 2007, p. 48, endnote 10; also cited in Biermann and Boas 2010, p. 68).

(2) James Hansen, Director NASA Goddard Institute for Space Studies and Adjunct Professor Columbia University Earth Institute, said:

“In my opinion, if emissions follow a business-as-usual scenario, sea level rise of at least two meters is likely this century. Hundreds of millions of people would become refugees. No stable shoreline would be reestablished in any time frame that humanity can conceive.” (Hansen 2008, p. 2)

(3) A World Bank Report drafted by Susmita Dasgupta, Benoit Laplante, Craig Meisner, David Wheeler and Jianping Yan estimated that

10 The figure is “based on an 18-month research project carried out in consultation with representatives of governments, intergovernmental bodies, United Nations agencies, the World Bank, and dozens of NGOs including refugee organizations.” (Myers and Kent 1995, p. 1, footnote) An e-mail sent to Norman Myers by this author on 24 June 2010 in an attempt to reconcile mathematical ambiguities and perceived discrepancies remained without reply.

Figure 2.2: “Migrants (assuming phased movement)” (Rajan 2008, p. 10)

India			
Time	1m SLR	3m SLR	5m SLR
2050	4.4 million	6.1 million	7.9 million
2100	24 million	33.6 million	43.3 million

Bangladesh			
Time	1m SLR	3m SLR	5m SLR
2050	5.7 million	8.0 million	10.3 million
2100	41.6 million	58.3 million	74.9 million

Source: “Estimates of migrants displaced by sea-level rise from Bangladesh and India” (excerpted from Rajan 2008, p. 10)

“... global warming could well promote SLR [sea level rises] of 1m-3m in this century, and unexpectedly rapid breakup of the Greenland and West Antarctic ice sheets might produce a 5m SLR. [...] For ... countries [like] Vietnam, A.R. of Egypt, The Bahamas ... the consequences of SLR are potentially catastrophic. For many others ... (e.g. China), the absolute magnitudes of potential impacts are very large. [...] [T]he overall magnitudes for the developing world are sobering: Within this century, hundreds of millions of people are likely to be displaced by SLR; accompanying economic and ecological damage will be severe for many. The world has not previously faced a crisis on this scale, and planning for adaptation should begin immediately. [...] To date, there is little evidence that the international community has seriously considered the implications of SLR for population location and infrastructure planning in developing countries.” (World Bank 2007, pp. 2, 44-45)

(4) Sudhir Chella Rajan, researcher and scholar at the Indian Institute of Technology Madras (IIT) predicted that

“as many as 120 million people could be rendered homeless by 2100 in both countries of India and Bangladesh. Given the proximity of Bangladesh to India and the large land area that would be inundated, it is also likely that the bulk of these people will end up being migrants in India, particularly in large cities in the interior that are already likely to face resource stress due to climate change and over-exploitation of groundwater and other ecosystem services.” (Rajan 2008, p. 10)

Two time snapshots (2050 and 2100) are excerpted from Rajan’s tabular presentation of potential future forced migrants (Figure 2.2). The projections are that in the event of sea level rises of 1m, 3m or 5m, 65.6 million, 91.9 million or 118.2 million people, respectively, could be rendered homeless in Bangladesh and India by 2100 (Rajan 2008 p. 10, see also Byravan and Rajan 2008, pp. 13-20).

(5) The United Nations Development Programme (UNDP) addresses human displacement in its 2007/2008 Human Development Report *Fighting climate change: Human solidarity in a divided world*:

“Sea levels could rise rapidly with accelerated ice sheet disintegration. Global temperature increases of 3-4°C could result in 330 million people being permanently or temporarily displaced through flooding. Over 70 million people in Bangladesh, 6 million in Lower Egypt and 22 million in Viet Nam could be affected. Small island states in the Caribbean and Pacific could suffer catastrophic damage. Warming seas will also fuel more intense tropical storms. With over 344 million people currently exposed to tropical cyclones, more intensive storms could have devastating consequences for a large group of countries. The 1 billion people currently living in urban slums on fragile hillsides or flood-prone river banks face acute vulnerabilities.” (UNDP 2007, p. 9)

(6) Jeffrey David Sachs, Director Earth Institute at Columbia University, Professor at Columbia’s School of International and Public Affairs, and School of Public Health, Special Advisor to United Nations Secretary-General Ban Ki-Moon, American economist, said:

“As global warming tightens the availability of water, prepare for a torrent of forced migrations. Human-induced climate and hydrological change is likely to make many parts of the world uninhabitable, or at least uneconomic. Over the course of a few decades, if not sooner, hundreds of millions of people may be compelled to relocate because of environmental pressures. [...] We are just beginning to understand these phenomena in quantitative terms. Economists, hydrologists, agronomists and climatologists will have to join forces to take the next steps in scientific understanding of this human crisis.” (Sachs 2007, p. 43)

(7) Hans Joachim Schellnhuber CBE, Director Potsdam Institute for Climate Impact Research, Chairman German Advisory Council on Global Change (WBGU), Senior Advisor to the German Government, put it this way:

“When we talk about a one metre rise in global sea level we are also talking about 500 million people who are going to have to look for new homes. And so far we do not have any instruments to manage this.”¹¹ (Schellnhuber 2009, p. 77)

(8) The Stern Review *The Economics of Climate Change* also highlights the issue:

11 Cited verbatim in German: “Wir reden bei einem Meter Meeresspiegelanstieg von 500 Millionen Menschen, die sich langfristig eine andere Bleibe suchen müssen. Und wir haben bislang keinerlei Instrumente, um das zu machen.” (Schellnhuber 2009, p. 77) Professor Schellnhuber confirmed his 500-million estimate during a personal meeting with this author at the Potsdam Institute for Climate Impact Research (PIK) on 21 April 2009.

“By the middle of the century, 200 million more people may become permanently displaced due to rising sea levels, heavier floods, and more intense droughts, according to one estimate.”¹² [p. 56] “Estimates in this area, however, are still problematic. Norman Myers uses conservative assumptions and calculates that climate change could lead to as many as 150 - 200 million environmental refugees by the middle of the century (2% of projected population). This estimate has not been rigorously tested, but it remains in line with the evidence presented throughout this chapter that climate change will lead to hundreds of millions more people without sufficient water or food to survive or threatened by dangerous floods and increased disease.” (Stern 2006, p. 77)

(9) Lord Nicholas Stern also refers to the issue in his own role and right as Fellow of the British Academy (FBA), IG Patel Professor of Economics and Government, Chair of the Grantham Research Institute on Climate Change and the Environment at the London School of Economics (LSE), and 2010 Professor of Collège de France, saying:

“You’d see hundreds of millions people, probably billions of people who would have to move and we know that would cause conflict, so we would see a very extended period of conflict around the world, decades or centuries as hundreds of millions of people move.” (Lord Nicholas Stern addressing 2,500 researchers and economists in Copenhagen, and commenting on the possible fallout from 5°C runaway climate change; cited in McGrath (2009); cf, Stewart and Elliot (2013) who quote Stern as saying: “I got it wrong on climate change – it’s far, far worse.” cf also Ackerman et al 2009)

(10) In its Second Assessment Report (AR2) in Chapter 3 of Working Group 3 the Intergovernmental Panel on Climate Change (IPCC) repeats projections calculated by Myers:

“If such projections [of extreme vulnerabilities] prove true, climatic change will create ‘environmental refugees.’ Even without the worst projected impacts, problems of both domestic and international migration are likely to be exacerbated. Myers (1993, 1994¹³) cites estimates that there are about 10 million environmental refugees at present, and on the basis of a survey of projected impacts in vulnerable regions, estimates that this figure could rise to 150 million by the middle of the next century as a result of climate change. He sketches the immense social, economic, and political costs implicit in such movements, ‘pushing the overall cost far beyond what we can realistically envisage in the light of our experience to date ... it requires a leap of imagination to envisage 150 million destitutes abandoning their homelands, many of them crossing international borders.’ Again, the poor seem most likely to suffer, though clearly such move-

12 A closer look at the report reveals that the number is borrowed from Myers and Kent (1995).

13 Attribution: Myers, Norman (1994) Environmental refugees and climate change: Estimating the scope of what could well become a prominent international phenomenon, presented at IPCC Workshop on Equity and Social Considerations, Nairobi, July. (Inaccessible/unverifiable source as at 25 February 2013.)

ments might also trigger broader ethnic or even international conflicts that could envelop whole societies.” (IPCC 1995, p. 98; cf p. 199)¹⁴

(11) Moreover, in its *Fourth Assessment Report* (AR4) the IPCC concedes in Chapter 11 of Working Group 2 that

“[c]limate change may contribute to destabilising unregulated population movements in the Asia-Pacific region, providing an additional challenge to national security (Dupont and Pearman, 2006; Preston et al., 2006). Population growth and a one-metre rise in sea-level are likely to affect 200-450 million people in the Asia-Pacific region (Mimura, 2006). An increase in migrations from the Asia-Pacific region to surrounding nations such as New Zealand and Australia is possible (Woodward et al., 2001). Displacement of Torres Strait Islanders to mainland Australia is also likely (Green, 2006b).” (Hennessey et al 2007, p. 522)

(12) The International Organization for Migration (IOM) also borrows and repeats projections published by Myers:

“The most widely cited figure is one put forward by Norman Myers of Oxford University, who suggests that up to 200 million people could be on the move due to environmental factors by 2050.” (IOM 2009a, p. 1; cf CEEMA 2010, p. 3)

(13) The United Nations Framework Convention on Climate Change (UNFCCC), offered an estimate for 2010 when its Executive Secretary, Yvo de Boer, announced:

“According to some estimates, there are already almost as many environmentally displaced people on the planet as traditional refugees. As the impacts of climate change strike home, the numbers are likely to rise considerably, possibly as high as 50 million by 2010.” (UNFCCC 2007; also repeated by Biermann and Boas 2010, p. 68)

(14) The NGO Christian Aid offered a prediction on the high end of the scale in its report *Human tide: the real migration crisis*, projecting one billion displaced people by 2050:

“We estimate that, unless strong preventative action is taken, between now and 2050 climate change will push the number of displaced people globally to at least 1 billion.” (Christian Aid 2007, p. 22; see also pp. 1,5)

(15) In its fourth meeting in Mexico in 2010 the Global Forum on Migration and Development duly noted that

¹⁴ Also referenced by Black 2001, p. 7.

“exact impacts of climate change on migration and development are difficult to predict because of the wide variation in estimates of global numbers of people that could potentially be affected, and because of terminological differences. For example, estimates of people affected by climate-induced disasters between 2000 and 2004 mention some 240 million or 62 million a year. Another prediction suggests that up to 1 billion people may be forced to move between 2007 and 2050, which sounds a lot but, at some 23 million a year, is fewer than the estimates of 62 million a year for the period 2000-2004.” (GFMD 2010, p. 38)

(16) According to Lester Brown of the Earth Policy Institute in Washington,

“The most vulnerable country is China, with 144 million potential climate refugees. India and Bangladesh are next, with 63 million and 62 million respectively. Viet Nam has 43 million vulnerable people, and Indonesia 42 million. Also in the top 10 are Japan with 30 million, Egypt with 26 million, and the United States with 23 million. Some of the refugees could simply retreat to higher ground within their own country. Others – facing extreme crowding in the interior regions of their homeland – would seek refuge elsewhere.” (Brown 2011, p. 75; attributed to Granaham et al 2007¹⁵)

(17) The 234-page *Foresight* report criticises current numerical projections of future climate migrants, cautioning that

“[e]xisting estimates of ‘numbers of environmental migrants’ tend to be based on one or two sources [referring to Jacobsen (1988; 10 million) and Myers and Kent (1995; 150 million)]. [...] Furthermore, the methodology used in Myers (1995) has been criticised [Castles 2002; Castles 2011; Gemenne 2011] [because] it seems to negate the ability of those in low-income countries to cope with environmental events, presenting a relatively deterministic connection between risk and migration. [...] By trying to count those who move, those who stay behind or are trapped in the context of environmental change may be overlooked...” (Foresight 2011, p. 28)

Additional sources and quantitative projections could be mentioned, but this appears neither necessary, nor even beneficial. By now two things have clearly emerged. First, numbers, authorities, methodologies (and conditionalities) are divergent. Second, and importantly, all numbers are inconceivably large. (Selected data are in Figure 2.3).

As observed in Sections 2.2 and 2.3 which highlighted definitional and disaggregational difficulties, translating the fallout from climate change (including *future* climate change) into precise predictions of climate change induced migrants appears similarly fraught with problems. In a paper for the United Nations High Commissioner for Refu-

15 This research is elaborated in Section 5.2.

Figure 2.3: Selected commonly quoted figures

Source	Displaced People	Timeframe
IPCC (1995, p. 98; attributed to Myers)	150 million	2050
Myers and Kent (1995, p. 1)	200 million	2050
Christian Aid (2007, p. 48; attributed to Myers)	250 million	2050
Nicholls (2004, pp. 69-86)	50-200 million	2080
IOM (2009; attributed to Myers)	200 million	2050
Stern Review (2006, p. 77; attributed to Myers)	150-200 million	2050
Christian Aid (2007, pp. 1,5,22-23)	"at least" 1 billion	2050

Sources: selected figures quoted from Walker (2007, p. 14) and Walker (2009, pp. 176-177), and contested, eg, by Gemenne (2011, p. 45) and Foresight (2011, p. 28)

gees (UNHCR) migration researcher Richard Black asserts that “[a]t first glance, the data available on environmental refugees appears quite impressive, ... [but] the strength of the academic case put forward is often depressingly weak” (Black 2001, p. 2). Other scholars make similar observations: “[e]stimates ... are divergent and controversial” (Warner et al 2009, p. 2; cf Gemenne 2011).

There seem to be at least four reasons why razor-sharp numerical predictions of future climate migrants are inherently problematic to make, defend or disprove.

First, human mobility takes place within the wider context of global megatrends, eg, population growth, urbanisation, coastward migration, sprawl of slums, etc (WBGU 2011a, Hugo 2011, McGranahan et al 2007), and it appears virtually impossible to isolate the “climate-change-only” contribution to consequent human movement. To elaborate, in 2007 the world entered a new era: the urban millennium. For the first time in history the majority of people now live in cities (UN Habitat 2006). With rapid urbanisation presently continuing unabated the United Nations Human Settlements Program projects that by 2030 5 billion people could be living in cities, with slum populations expected to double from 1 billion to 2 billion (UN Habitat 2006). Much of this growth takes place within the context of coastward migration which sees more and more people crowding together in coastal megacities (eg, Nicholls and Small 2002, WBGU 2006, Small and Nicholls 2003). According to the United Nations Atlas of the Oceans, “[e]ight of the top ten largest cities in the world are located by the coast” (UN 2004), and according to other research, “21 per cent of the world’s human population live less than 30km from the sea” (Cohen et al 1997, Gommès et al 1998; cited in WBGU 2006, p. 40). With coastal population growth rates given at approximately “twice the global average” (Bijlsma et al 1996; cited in WBGU 2006, p. 40), researchers estimate that by the year 2030, about half of the world’s population could be living within 100km of the sea (Small and Nicholls 2003; cited in WBGU 2006 p. 40). (Coastal migration is exemplified and elaborated in the Bangladesh case study in Chapter 5.) In short, and as already noted in

Section 2.3, ascribing this entire urban and/or coastal drift to climate change would be absurd, but arguing that climate change is therefore not implicated as one of the principal migration enhancing drivers would seem to be an even more untenable position.

Second, demographic data is often old, poor or incomplete. More to the point, census data are rarely detailed enough to provide nuanced insights into population displacements, especially those that are internal and/or induced by slow-onset causes (Myers and Kent 1995, Brown 2008, 2008a). This problematic is exemplified and elaborated in the Bolivia case study in Chapter 4 which provides a current example of inadequate census data in the context of drought related migration (Section 4.5).

Third, dealing with future scenarios invariably involves elements of speculation and uncertainty. Brown asserts that computer modelling techniques have not yet been developed to account for the combined impact of individual choice, varied future emissions and meteorological scenarios, and international climate change action (Brown 2007, p. 16; cf, Brown 2008a). Stated in another way, the multiplicity of issues involved creates an enormous challenge for quantitative data collection, management, analysis and synthesis.¹⁶ Precisely, how is divergent human vulnerability (and resilience) to be measured, compared, computed and integrated into what would amount to a massive compound mix of data and variables, comprising climates, local communities, economies (and inequalities), cultural customs, religious traditions, social classes, colonial legacies, gender relations, changeable adaptive capacities (including ongoing learning), and evolving policy formulations, to name just a few? (Piguet 2013, p. 157; attributed to Tacoli 2009) Moreover, how are their interdependent relationships to one another to be understood or computed? (Several of these issues and interrelationships are exemplified and elaborated in the Bolivia case study in Chapter 4).

Fourth and finally, the scope and scale of *future* climate change induced migration depends largely on actions taken *today* (eg, mitigation), wherefore estimates of future climate migrants would necessarily be subject to caveats, conditionalities *and evolutionary changes*. Since the future is hard to foresee and non-static, the question arises whether static numerical predictions even make sense, especially if scenarios involve more distant futures which are naturally subject to greater uncertainty? (Brown 2008, p. 25) In short, and as the Danish physicist Niels Bohr (1885-1962) famously said, “[p]rediction is very difficult, especially about the future.” (cited in Brown 2008, p. 21)

16 The Special Report on Emissions Scenarios (SRES) which contributed to IPCC assessments lends itself as an example of the complexities involved in developing plausible future emissions and climate change scenarios which make different assumptions about greenhouse gas emissions, land-use changes and other driving forces such as technological and economic development (IPCC 2007, see pp. 80, 87; see also Nicholls (2004) and Brooks et al (2006, p. 18) for different sea level rise scenarios resulting in different country-level impacts.)

In light of the above mentioned challenges and caveats it seems to be little wonder that numerical projections of future “environmental refugees” have apparently involved “rough and ready reckoning” (Myers and Kent 1995, p. 148), and even “heroic extrapolations” (attributed to Myers, cited in Brown 2007 p. 6; Brown 2008 p. 12; Brown 2008a, p. 8; Hartmann 2010, p. 235). Notwithstanding, the range of infinite possibilities/probabilities and infinitesimal certainties appears to result in the following lowest common denominator consensus agreed, namely that

“[t]he avalanche of statistics above translates into a simple fact – that on current trends the ‘carrying capacity’ of large parts of the world, i.e. the ability of different ecosystems to provide food, water and shelter for human populations, will be compromised by climate change [and] that the international community has to face up to the prospect of large-scale displacement caused by climate change.” (Brown 2008, pp. 17, 41)

Given the apparent prediction problems discussed above, in the view of this author it seems to be essentially impossible to make or maintain accurate, verifiable and defensible projections of people made homeless by progressive climate change. Notwithstanding, the figures nevertheless seem to serve an important purpose as they demonstrate that, concurrent with contemporary global megatrends (WBGU 2011a, Hugo 2011), the 21st Century forced migration potential is enormous and could sorely test humanity’s collective adaptive capacity as progressive climate change unfolds in the decades ahead.

Expressed in simple language the bottom-line message seems to be aptly summarised by the UN Office for the Coordination of Humanitarian Affairs (OCHA): “[c]limate change is likely to lead to increasing rates of displacement.” (UN-OCHA 2009, p. 15)

To conclude Section 2.4, although *indisputable estimates* regarding the number of people at risk from climate change related displacement appear impossible to make, this does not mean that *best guesstimates* are superfluous or do not have an important role to play in alerting policy makers to prepare for potentially extraordinary and unprecedented impending sociodemographic changes. As the ancient philosopher wisely said,

“It is the mark of an educated mind to rest satisfied with the degree of precision which the nature of the subject admits and not to seek exactness where only an approximation is possible.” (Aristotle, Greek philosopher and scientist; 384-322 BC)

Or to put it in the words of the famous physicist and Nobelprize winner,

“Not everything that counts can be counted,
and not everything that can be counted counts.”
(Attributed to Albert Einstein; cited in Garfield 1986, pp. 156, 311)

2.5 Frameworks: Legal Limbo

Any student of climate change related migration will be quick to stress that in strictly legal terms expressions such as “environmental refugee” or “climate refugee” are misnomers: the word “refugee” was never instigated to address environmental or climatic issues but rather situations involving “persecution”. Under international law climate induced forced migrants do *not* enjoy the rights and privileges of convention refugees (Myers and Kent 1995; McAdam 2008, 2009, 2010, 2011, 2012; Kälin 2010; Stavropoulou 2008; Warner et al 2009; Bauer 2010; Biermann and Boas 2010; Docherty and Giannini 2009; Byravan and Rajan 2008; IOM 2008, Cournil 2011).

Although this thesis does not aim to make a contribution in the arena of international law (Section 2.7), it seems beneficial to present a short overview of existing international instruments and legal frameworks that may apply in situations where populations are displaced on account of climate change related causes (or effects).¹⁷ This section will briefly introduce them, and thereafter conclude with a synthesis of the main normative protection gaps.

(1) *United Nations Framework Convention on Climate Change (UNFCCC)*

The UNFCCC, an international treaty produced at the UN Conference on Environment and Development (UNCED), informally known as the Earth Summit in Rio de Janeiro (3-14 June 1992), is perhaps the most obvious starting point. Since 1995 the parties to the convention have met annually in so-called Conferences of the Parties (COPs) to promote global-level progress on climate change.¹⁸

Given the comprehensive role of the UNFCCC in coordinating multilateral international action on climate change mitigation and adaptation, a number of scholars have seen this global convention as best suited to provide a new framework architecture for the protection of “climate refugees” or “climate migrants” (eg, Biermann and Boas 2007, 2008, 2010; Gibb and Ford 2012; Shamsuddoha and Chowdhury 2010, p. 7). Other

17 Some scholars distinguish between climate change “causes” and “effects”. Walter Kälin, for example, states that “climate and climate change per se do not trigger the movement of people, but some of their effects, in particular sudden and slow-onset disasters, have the potential to do so.” (Kälin 2010, p. 84) In the view of this author it is not clear how climate change could possibly cause the “effect” of human movement apart from being implicated in the process as an apparent “cause”. This footnote is mere acknowledgment of the fact that some legal scholars without background in climate science appear to regard this distinction worthy of mention.

18 For example, in 1997 the Kyoto Protocol established legally binding obligations for developed countries to reduce greenhouse gas emissions.

scholars appear to be opposed to a new universal treaty (eg, McAdam 2011, pp. 6; cf p. 18).

Either way, the UNFCCC does *not* include any specific guarantees of assistance or protection for those displaced by climate change related displacement (eg, UNFCCC 2008), and there are no compelling reasons to believe that this is about to change. Bauer (2010) mentions that in the run-up to the Copenhagen conference in 2009 (COP-15) an *ad hoc* working group drafted an “Action Plan on Adaptation” which addressed the issue:

“To enhance adaptation action at international level, all Parties [shall] [should] [may] implement ... [a]ctivities related to national, regional and international migration and displacement or planned relocation of persons affected by climate change, while acknowledging the need to identify modalities of inter-state cooperation to respond to the needs of affected populations who either cross an international frontier as a result of, or find themselves abroad and are unable to return owing to, the effects of climate change.” (AWG-LCA 2009 pp. 5-6, paragr. 12c; cited in Bauer 2010, p. 15)

In light of the failed Copenhagen Summit¹⁹ (COP-15) this mere mention can hardly give rise to naïve hopes that global consensus on international climate migration governance is within reach, yet Bauer views it as a proverbial “foot in the door” to further global action on managing climate change related migration (Bauer 2010, p. 15).

More recently a draft document generated during the similarly underwhelming Doha summit (COP-18) addressed “loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change” (UNFCCC 2012, p. 1). Particularly, the document acknowledged the need “to advance the understanding of and expertise on loss and damage, which includes, inter alia ... [h]ow impacts of climate change are affecting patterns of migration, displacement and human mobility” (UNFCCC 2012, pp. 2-3).

In view of recent global COPs which were overwhelmingly characterised by lacklustre leadership (Luetz 2010), there appears to be a growing sentiment among island states that some communities are already “past the mitigation (emissions cuts) and adaptation eras [and] already into the era of re-location” (Harrabin 2012). Interpreting the minuscule progress of the latest UNFCCC summit (COP-18) the Spokesman of the Alliance of Small Island States (AOSIS) said that “[t]he Doha caravan seems to be lost in the sand” (ibid).

19 The sentiment that COP-15 essentially failed appears to be shared by other forced migration scholars, including Kälin (2010, p. 103) and Castles (2010, p. 239); see also Lawton 2009.

In the absence of a protection framework *specifically* tailored to address climate change and related migration, the international community is presently left with only partially applicable frameworks which were designed to address entirely different problem situations. These include: The Guiding Principles on Internal Displacement, International Human Rights Law, International Humanitarian Law, and the Refugee Convention (eg, Kälin 2010, p. 92; CCEMA 2010 p. 4). Of these, the following two protection frameworks seem to be most relevant or applicable:

(2) *The Geneva Convention relating to the status of refugees*

According to the 1951 Refugee Convention being read in conjunction with the 1967 Protocol, under international law a “refugee” is

“[a] person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country, or who, not having a nationality and being outside of the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.” (1951 Convention relating to the Status of Refugees, Art. 1A(2), 28 July 1951, as modified by the 1967 Protocol; see also, eg, Cournil 2011, pp. 363-364; Kneebone 2003, Goodwin-Gill 1985, McAdam 2012, Curran and Kneebone 2003, Curran 2003)

(3) *The Guiding Principles on Internal Displacement*

The currently accepted definition of “internally displaced persons” (IDPs) describes this category of people as

“... persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border.” (Guiding Principles on Internal Displacement, E/CN.4/1998/53/Add.2.)

To synthesise, while UNFCCC negotiations have not yet produced a *new* framework approach, the existing Refugee Convention does *not* apply to human movement that is environment related and/or internal, and the Guiding Principles on Internal Displacement constitute non-binding (soft) law which does *not* apply to cross-border movement (McAdam 2011a).

Figure 2.4: Applicable Frameworks and potential normative protection gaps)

Imaginable Scenarios	Protection Gaps
Rapid onset disasters	(+) HR (+) GP (-) RC (if border crossed)
Slow onset environmental degradation	(+) HR (-) GP (-) RC (if border crossed)
Loss of state territory (eg, sea level rise)	(+) HR (+) GP (-) RC (statelessness?)
Armed conflict over shrinking resources	(+) HR (+) GP (+) RC

Legend: (+)= applicable; (-)= inapplicable; HR=International Human Rights Law; GP=Guiding Principles on Internal Displacement; RC=Refugee Convention. (Adapted from UNFCCC 2008)

According to the tabular overview adapted from a working paper entitled *Climate Change, Migration and Displacement: Who Will be Affected?* prepared for the Inter-Agency Standing Committee (IASC), forced migration may result from four conceivable scenarios: (1) rapid onset disasters; (2) slow onset environmental degradation;²⁰ (3) permanent state territory losses;²¹ (4) violent conflict over diminishing resources (UNFCCC 2008). Applying the existing frameworks to these four climate migration scenarios allows potential protection gaps to emerge (Figure 2.4). Incidentally, Kälin includes a fifth scenario: (5) government designated zones deemed “too dangerous” for human habitation. His scenarios are elaborated in Kälin (2010, pp. 86-92) and UNHCR (2008, p. 3) but not included in Figure 2.4.

Importantly, and as already made clear above, the word “refugee” is a legal misnomer for the classification of environmentally displaced people: under the 1951 Convention and 1967 Protocol relating to the status of refugees the word “refugee” is strictly reserved for those fleeing “persecution” (UNHCR 2001, UNHCR 2007, McAdam and Saul 2008, McAdam 2008, McAdam 2009, McAdam 2010). Thus the definition of “refugee” precludes its *de jure* application in cases where “flight” is induced (or enhanced) by climate change related causality (McAdam 2012, CEEMA 2010).

In summary, the striking synthesis appears to be this: displaced people in dire straits seem to be afforded the most legal protection the more a degenerated or desperate environmental situation spirals into violent chaos, given that such conditions seem to be most conducive to triggering and sustaining “persecution”. Thus there is a danger to wait for a situation to worsen (because there are no legal instruments to address the situation pre-

20 In addition to the protection gap following cross-border movements there is also “a lack of criteria to distinguish between voluntary and forced movements in hazard related disaster settings.” (UNFCCC 2008, p. 2).

21 Statehood may be in question (WBGU 2006, UNFCCC 2008, UNHCR 2009, McAdam 2010a, Kälin 2010).

emptively) and deal with it after it has erupted into full-blown violence, armed conflict and “persecution” (because legal instruments are now in place that squarely fit the bill). This legal limbo is a major barrier to the paradigm or premise of preparedness advocated in this dissertation (Section 3.3).

The truth is, the problem of patching up legal protection gaps has yet to be tackled in earnest, a point also reflected in other policy research, including by the German Advisory Council on Global Change which recommends “provisions under international law with respect to the reception of ‘sea-level refugees’, the payment of compensation, and burden-sharing in line with the ‘polluter pays’ principle.” (WBGU 2006, p. 63) The chapter’s concluding sentence urges operative appraisals that “evaluate the capacity of the existing United Nations institutions to cope with refugee flows, especially given that needs will presumably grow exponentially in the future.” (ibid)

To conclude Section 2.5, “forced climate migrants fall through the cracks of international refugee and immigration policy. There is no ‘home’ for forced climate migrants, either literally or figuratively.” (Brown 2008, p. 36)

2.6 Synthesis discussion of the literature review

As Sections 2.2 to 2.5 have shown, significant difficulties persist in each of the four problem areas discussed above:

First, and as discussed in Section 2.2, definitional difficulties have created a situation where there is no agreed nomenclature. Zetter argues that the concept of labelling reflects a “political discourse of alienation and resistance to refugee claims [where] legitimate and objective processes are in fact pernicious tools which fraction the claim to a fundamental human right” (Zetter 2007, p. 188). The final paragraph of his article “More Labels, Fewer Refugees: Remaking the Refugee Label in an Era of Globalization” ends on a sobering note, namely that labelling creates “convenient images, while keeping the refugees and other dispossessed people at a distance” (ibid, p. 190).

Second, and as discussed in Section 2.3, there is no agreement on how difficulties of multicausality and relative attribution can be overcome. While disaggregating the myriad motivations of a migrant’s decision to move will necessarily remain impossible as a matter of course, the question what to do about it has yet to be answered. As Myers and Kent point out, if a migrant is “putatively driven 60 percent by environmental factors and 40 percent by economic factors, or the other way round, this issue is not nearly so important as the fact that he or she is impelled to migrate and to seek refuge elsewhere – whereupon society at large should feel inclined if not obliged to do something about his

or her plight rather than to debate the precise factors in the underlying motivation.” (Myers and Kent 1995, p. 29)

Third, and as made clear in Section 2.4, predictive problems have created a situation where there is no agreement among researchers on how to collate and translate data into widely acceptable numerical model projections of future forced migrants. Notwithstanding, however difficult to “prove” climate change induced migration may be, “absence of evidence about a problem does not imply evidence of absence of a problem” (Myers and Kent 1995, p. 33), wherefore numerical projections of future climate migrants (although in the view of this author impossible to measure with precision) may be understood to be large and growing, as the above mentioned voices and studies have clearly suggested.

Fourth, and as shown in Section 2.5, legal gaps have still not been patched, and there are few signs that promising global efforts are presently underway. In this context it is sobering that this issue raised by Myers and Kent in the 1990s (“Environmental refugees are still to be officially recognised as a problem at all”; Myers and Kent 1995, p. 8), and repeated by Myers ten years later (“To repeat a pivotal point: environmental refugees have still to be officially recognized as a problem at all”; Myers 2005, p. 3), in 2013 has *still* to be tackled in earnest by the international community, a point also underscored by Walter Kälin, Representative of the UN Secretary-General on the Human Rights of Internally Displaced Persons:

“As a first step, it is important to reach a global consensus that displacement is an important aspect of adaptation, and that affected states need to be supported in their efforts to prevent climate change-induced displacement, address the protection and assistance needs of the displaced and find durable solutions for them. [...] The 2009 UN Climate Change Conference in Copenhagen would have provided an opportunity to reach such consensus but, at the time of finalising this chapter, states parties to the UNFCCC had failed to negotiate and adopt any new legal framework to replace and further develop the present climate change regime. However, the issues [of climate change induced displacement] are too pressing and important to be dropped from the climate change agenda and must be revisited in future rounds of negotiations.” (Kälin 2010, p. 103).

Expressed in simple language the problem analysis is this: there is no agreed nomenclature, no agreed way of disaggregating causality, no agreed predictions of the likely quantitative dimension, and no agreed framework approach regarding legal protection gaps. While this represents the contemporary reality respecting the state of global knowledge surrounding the problem, this thesis will limit its focus to a small number of issues which in the eyes of this author are most pressing and most neglected. These will be discussed next.

2.7 Knowledge gaps and contribution of this study

Before touching on this dissertation's contribution to scholarly discourse it is expedient to highlight what this Doctoral Study does not do.

First, it does not seek to create a new definitional characterisation or typology of people who migrate (in whole or in part) because of problems that may be linked to climate change. Second, it does not seek to examine or substantiate causal relationships between climate change and forced resettlement. Third, it does not seek to provide, assess or contest estimates of the numbers of people that may move due to environmental problems that may be linked to climate change. Fourth and finally, it does not seek to create or argue for a new or amended legal framework by means of which existing protection gaps might be filled. As discussed, while this study could go any number of ways,²² the knowledge gaps identified below are deemed most pressing.

In the concluding chapter of *Climate Change and Displacement: Multidisciplinary Perspectives* (McAdam 2010), Stephen Castles revisits the chapters penned by the 15 scholars, summarising their main points and analysing or synthesising the implied meaning of their contributions. His concluding recommendations are insightful. As one of his final points Castles states that “[s]trategies that treat [climate migrants] as passive victims are counterproductive, and protection of rights should also be about giving people the chance to deploy their agency” (Castles 2010, p. 245). He goes on to stress that it is “urgent to carry out *in-depth micro-level empirical research* to understand the changes that are taking place, how they affect various groups, and what response strategies these groups adopt.” (ibid; emphasis added) Moreover, referring to a chapter penned by Zetter, Castles makes the point that

“migrants have some degree of agency, even under the most difficult conditions. Strategies that treat them as passive victims are counterproductive, and protection of rights should also be about giving people the chance to deploy their agency. The objective of public policy should not be to prevent migration, but rather to ensure that it can take place in appropriate ways and under conditions of safety, security and legality.” (Castles 2010, p. 245; attributed to Zetter 2010)

The book's closing paragraph is telling in that it seems to signal a needed move away from meeting the needs (and complying with the dictates) of top-down managerial-style bureaucracies (in the Global North) towards greater grassroots self-governance of affected communities (in the Global South). After all authors' contributions are reviewed,

22 Indeed, the dozens of studies outlined in the literature review above usually come together in total agreement only on the need for further research.

Castles closes the final chapter of the multidisciplinary book with these final two sentences:

“Top-down bureaucratic rationality may not achieve much when it comes up against very different ways of thinking and living. All the more reason why *we need far more local-level research* to inform strategies for responding to climate-induced displacement.” (Castles 2010, p. 246, emphasis added)

Furthermore, scholars and international organisations have recurrently highlighted the need for “more detailed cross-disciplinary research” (Hugo 2008, p. 49; cited in Piguet 2013 p. 156), or “true inter-disciplinary research” (IOM 2011, p. 7).

“[A] multidisciplinary perspective on climate change and migration ... is a first step in drawing together different disciplinary approaches, [yet ultimately, understanding] requires true *interdisciplinarity*.” (McAdam 2010, pp. 3-4; emphasis added)

This thesis aspires to address both of these knowledge gaps by focusing expressly on *local-level* and *interdisciplinary* research. This objective seems to necessitate an approach characterised by two emphases. First, incorporating different disciplines and drawing on the literature in multiple fields of inquiry (including anthropology, migration studies, climate science, and development studies). Second, focusing the spotlight on those people most immediately affected by climate change induced (or enhanced) migration.

Of course, talking to migrants is not new – the whole of migration research is based on talking to migrants and non-migrants (eg, Hugo 1996, Suhrke 1993, Bélanger and Rahman 2013, Dannecker 2013). However, with respect to *climate* migration the picture is more nuanced and far less well-informed by local-level perspectives. As already made clear in Section 2.2, while academics, researchers and journalists have talked and written extensively *about* climate migrants, comparatively fewer of them have talked *to* them (for some of the more notable exceptions see Warner et al 2008, 2009; Warner 2009; EACH-FOR 2009²³; cf Castles 2010, p. 243; Foresight 2011; other examples include Gibbons and Nicholls (2006) who discuss the relationship between sea level rise and population decline for abandoned Holland Island in Chesapeake Bay, USA; and Landry et al (2007) who explore “return migration” in the wake of Hurricane Katrina.)

As shown throughout this chapter, while the bulk of research has centred on vulnerable locations, likely numbers of people at risk, the relationship between environmental

23 “Environmental Change and Forced Migration Scenarios” (EACH-FOR) was a two year long policy oriented research undertaking conducted on behalf of the European Commission. The project ended in May 2009 and contributed local-level perspectives on forced migration. <http://www.each-for.eu/index.php?module=main>

factors and migration, the constraints of projecting out-migration from vulnerable places, and a portfolio of definitional, normative, ethical and policy issues, there remain unresolved “challenges in scaling from local examples to global estimates and measures” (McLeman and Hunter 2010, p. 458). Moreover, in the scholarly literature, there has been relatively little work of an ethnographic nature or comparative research across multiple sites, although analogs have been summarised by McLeman and Hunter (2010). In summary, this scholarly literature context represents very fertile ground for this research.

Therefore, this thesis argues two points:

First, communities where climate change related displacement is either already taking place (or projected to occur in the future) must be moved from the periphery to the *centre* of the climate change migration debate if meaningful and equitable resettlement solutions are to be arrived at which meet the needs and aspirations of displaced individuals and/or communities. This requires close and personal consultation *with people and communities concerned*.

Second, it is hypothesised that present and future forced human movement, including that which may be related to climate or environmental change, will cause the least disruption and suffering if dealt with *before* its manifestation and possible deterioration into a humanitarian crisis requiring *ad hoc* emergency intervention. In this regard the emphasis on “preparedness” (developed in Section 3.3) represents a pivotal conceptual framework element underpinning this dissertation.

To meet these objectives, this study will carry out grassroots level fieldwork in three environmental and climatic contexts which are identified in Section 3.4. Moreover, the methodological approach – personal on-site engagement with individuals and/or communities experiencing climate change related migration, or threatened thereby – will constitute as much a focal point of this study as some of the questions which this study will ask them:

- Where do you²⁴ / climate migrants go / wish to go?
- What challenges do you / climate migrants face? What solutions do you / climate migrants seek? What assistance do you / climate migrants desire? What have you / climate migrants learned from the experience of moving? What would make the experience more benign? What advice would you / climate migrants like to give policy makers / scholars / NGOs / etc seeking to address the plight of moving individuals or communities?

24 May include “migrants”, “hosts” and “experts” in “origin” and “destination” communities and cities.

- To what extent is appropriate nomenclature important to you / climate migrants? (This question derives its significance uniquely from the academic debate and search for a common definitional denominator (Section 2.2). Taking on more of a probing nature, this question will try to assess whether / how much terminological considerations ultimately matter to climate migrants.)

Questions and questionnaire design are elaborated in Section 3.5. Pilot study design, execution and fieldwork adjustments are discussed in Section 3.6. Miscellaneous matters pertaining to the field research are noted in Section 3.7.

To conclude Chapter 2, in the simplest of terms the key driving question in this dissertation is to find out *what climate migrants want*. This approach appears to be in stark contrast to the question what scholars or policy makers may want *for them*. The conceptual framework and its anticipatory paradigm of preparedness, including fieldwork approach and methodology will be discussed next (Chapter 3).

Chapter 3: Framework and Methodology

3.1 Chapter overview

This chapter is subdivided into seven sections. Section 3.2 introduces the concept of climate change and migration. Section 3.3 establishes the study's conceptual framework and "preparedness" focus. Section 3.4 introduces the research emphasis, methodology, and case study locations. Section 3.5 discusses fieldwork approach and questionnaire design. Section 3.6 mentions the rationale for and summary of a pilot study conducted on the Tulun and Nissan Atolls in the Pacific which led to slight revisions being made to the fieldwork methodology and questionnaire design. Section 3.7 lists miscellaneous methodologically relevant fieldwork features, including additional field research not included in this study, an Academia-NGO partnership, and references to the dissertation's ethics committee clearance.

3.2 Hindsight, insight, foresight: Climate change and migration

There is overwhelming agreement among scientists that climate change is increasingly implicated among environmental impacts faced by human populations (World Bank 2012; IPCC 2007, 2012; Copenhagen Diagnosis 2009; Lovelock 2009; Hansen 2009; Schellnhuber 2008; WBGU 2006, 2007, 2009, 2010, 2011, 2011a; UNISDR 2011). However, as noted in Chapter 2, the notion of climate change migration is neither unproblematic nor uncontested but appears bedevilled by at least four vexatious problems which have so far remained impossible to overcome, namely: definitional (in)appropriateness (Section 2.2); multicausal (in)divisibility (Section 2.3); quantitative (un)predictability (Section 2.4); and legal framework (in)applicability (Section 2.5). These seemingly intractable problems will be briefly recapitulated. Thereafter this section will explore a novel approach: seeking "insight" from "hindsight" for "foresight". This conceptual approach will be promptly explained after the following succinct recapitulation of the aforementioned intractable impediments.

First, definitional difficulties (Section 2.2) have led scholars to propose long lists of competing conceptualisations with overlapping yet dissimilar definitions that more often than not appear characteristic of the political preferences, normative approaches, agendas, ideological allegiances, organisational mandates and/or preferred futures of the individuals or institutions involved (Cournil 2011, p. 359-360).

Second, disaggregational difficulties (Section 2.3) arising from the multicausal indivisibility of multiple interrelated migration issues have hindered the lucid and verifiable

attribution of causality, thus frustrating progress on universally acceptable conceptualisations, and consequently hindering collaborative and united responses.

Third, predictive problems (Section 2.4) have created a situation where there is no agreement among researchers on how to collate and translate data into widely acceptable numerical model projections of future forced migrants. This has obscured and obfuscated the issue, making the “incalculable” inconceivable, intractable and thus, for policy makers *insoluble*.

Fourth, persisting legal protection gaps (Section 2.5), in part arising from the aforementioned impediments, have prolonged the steady-state of “legal limbo” characterised by divergent institutional interests, agendas and mandates. As mentioned before, the legal definition of a “refugee” precludes the possibility of immediate “environmental” or “climatic” causality (McAdam 2010, McAdam 2012, CEEMA 2010).

It remains to be seen whether this Gordian Knot of four intractable problems can be successfully disentangled in the future.

Notwithstanding, even if “it is difficult to isolate ‘climate change’ as a *cause* of movement” (McAdam and Saul 2010, p 238; emphasis added), it is impossible to ignore it as a significant *contributor* to movement, especially as its cumulative impact on forced migration – relative to other contributing causes – appears to be growing. A thematic paper written for the United Nations Human Development Report 2007/2008 highlights this point:

“[P]ublicised examples of forced migration caused by anthropogenic climate change are more anecdotal than empirical, affecting a few hundred or thousand people at a time. The urge to grab the headlines has tended to obscure the fact that we know that climate variation has influenced human population distribution for thousands of years. But while the evidence for a distinctively anthropogenic ‘climate change signal’ in forced migration so far is circumstantial, *it is mounting*. And with all available scenarios predicting accelerating climate change impacting growing populations and more people living on marginal land, *forced climate migration is certain to increase*.” (Brown 2007, p 18; emphasis added)

The following analogy by a Bangladeshi government official illustrates how climate change appears to be increasingly adding to the cumulative burden already shouldered by millions of poverty stricken subsistence farmers in countries of the developing world that are most acutely vulnerable to impacts of climate change:

“Let’s say for example, one person is able to carry only 40kg on his shoulders. That’s his limit, and he’s a poor man. Now on the top of that, I come and give him one kilogram on top of that. So now the question will be: who is responsible for killing him? Is this the

40 kilograms he was already carrying on his head, or the one kilogram I have now put on the top of that?" (Abal M Kamal Uddin, Comprehensive Disaster Management Programme (CDMP); cited in McAdam and Saul 2010, p. 240)

In the language of this analogy climate change is the additional load increasingly being added to the cumulative burden of global poverty, with its proportional contribution – relative to all other aggregate causes – gradually building. Although it is difficult to dissect a migrant's resolve to move into climate change and non-climate change related factors as noted above and elaborated in Chapter 2, the nexus between climate change impacts and forced migration has nevertheless been recognised time and again by the Intergovernmental Panel on Climate Change (IPCC) in numerous reports published since its inception by the United Nations Environment Programme (UNEP) and World Meteorological Organization (WMO) in 1988.

This section will now review a selection of references made by the IPCC in regard to climate change as a contributing cause of forced migration. As already noted, the emphasis in this dissertation is neither on attempting to isolate climate change as a cause of movement, nor on "proving" or "disproving" the climate change - forced migration nexus. Rather the emphasis shall remain on understanding forced migration as inherently embedded within the wider context of global megatrends among which climate change unequivocally represents a significant and growing force (WBGU 2011a, Hugo 2011, World Bank 2012). Although the concept of forced migration is also amply applied to animal and plant species (eg, migratory birds, mosquitoes, shifting vegetation regions), for the purposes of this study both term and concept shall refer exclusively to "human" migration.

Even though the climate change and migration relationship has been a consistent focus in IPCC assessments for more than 20 years, Section 3.2 will limit the discussion to a review of the very *earliest* assessment reports published in 1990 and 1992. There are two reasons for this approach and its deliberately limited temporal purview. First, it will emerge that scientific knowledge in this area of multidimensional study was significant even 20 years ago. Second, it will heighten the sense that early scientific knowledge did not translate effectively or sufficiently into corresponding preventative and/or preparatory action at the policy level. As previously alluded to, this section aims for "insight" from "hindsight" for "foresight".

The analysis and synthesis will then form the frame of reference for Section 3.3 which discusses the framework of and rationale for this study's "preparedness" paradigm. This dissertation takes the view that such a paradigm is essential if appropriate preparedness based policy instruments are to be developed in a timely manner. This hypothesis is further reinforced by field research findings (discussed in Chapters 4 to 6) which reflect and

confirm that policy development in the area of migration preparedness and management has failed to live up to scientific synthesis divulged by the IPCC more than two decades ago.

To begin, already in its opening summary for policy makers the IPCC's First Assessment Report (AR1) highlights relevant interlinkages between climate change vulnerabilities in human settlements and corresponding human migration potential:

“The most vulnerable human settlements are those especially exposed to natural hazards, eg coastal or river flooding, severe drought, landslides, severe wind storms and tropical cyclones. The most vulnerable populations are in developing countries, in the lower income groups, residents of coastal lowlands and islands, populations in semi-arid grasslands, and the urban poor in squatter settlements, slums and shanty towns, especially in megacities. In coastal lowlands such as in Bangladesh, China and Egypt, as well as in small island nations, inundation due to sea-level rise and storm surges could lead to *significant movements of people*. [...] As similar events have in the past, these changes could initiate *large migrations of people*, leading over a number of years to *severe disruptions of settlement patterns and social instability in some areas*.” (IPCC 1990, p. 3; IPCC 1992, pp. 55, 89; emphasis added)

With regard to impacts on oceans and coastal zones the report states that

“[g]lobal warming will accelerate sea-level rise, modify ocean circulation and change marine ecosystems, with considerable socioeconomic consequences. These effects will be added to present trends of rising sea-level, and other effects that have already stressed coastal resources, such as pollution and overharvesting. A 30-50 cm sea-level rise (projected by 2050) will threaten low islands and coastal zones. A 1m rise by 2100 would render some island countries uninhabitable, *displace tens of millions of people*, seriously threaten low-lying urban areas, flood productive land, contaminate fresh water supplies and change coastlines. All of these impacts would be exacerbated if droughts and storms become more severe.” (IPCC 1990, p. 4; IPCC 1992, p. 89; emphasis added)

The report also highlights secondary or “[i]ndirect impacts on agriculture” (IPCC 1990, p. 53) which could render the prospects of sustainable subsistence agriculture in some areas obsolete. These secondary effects could also spawn forced migration in situations where farming practices can no longer be adapted to changing environmental conditions.

“In many coastal regions indirect or secondary impacts of rising sea-level may have far-reaching significance for agriculture. Costs of protection of vulnerable farmland would escalate. In addition to improvement of coastal defences, the higher level of rivers approaching the sea would necessitate adjustment of dykes, sluices and pumping systems. This is especially so where the general land level is no longer rising because flood protection schemes prevent any further silt accumulation. [...] Saltwater intrusion

into surface water and groundwater could have deleterious effects. Deeper tidal penetration could increase the danger of flooding causing salinisation of farmlands and reducing the value of river water for irrigation. Aquifers could be recharged with sea water if abstraction occurs to below sea-level. Rising sea-levels could raise underground saltwater levels to reduce the depth of overlying fresh groundwater. In areas of low relief, such as atolls, freshwater reservoirs of less than 1 m depth could disappear in dry seasons, as water tables fall to saltwater levels, leaving no useful irrigation supply.^[1] Threats of inundation could lead to relocation of farming and farming employment. If this is feasible there are obvious implications for land acquisition, land preparation, infrastructural changes and farming modifications. *But relocations could be prohibitively large scale as in Bangladesh where some 20% of farmland and population could be affected by a 1 m sea-level rise (UNEP, 1989). Often relocation could be difficult ... Sometimes, relocation would be impossible, as in the Maldives where half the land would be lost as a result of a 1 m sea-level rise and the remaining half would be within a vulnerable 1 m of sea-level (Delft Hydraulic Lab, 1986). Out-migration of population would be the only solution for many small oceanic islands.*" (IPCC 1990, pp. 53-54; emphasis added)

The report also suggests that human migration could be spatially and socially differentiated, cautioning that "*{c}limate change could translate into migration of impoverished people from rural to urban areas (developing countries), from coastal lowlands (particularly densely inhabited delta areas) to inland areas, and possibly across national boundaries. The most vulnerable populations are those exposed to natural hazards*" (IPCC 1990, p. 189; emphasis added). Moreover, "*{p}overty and hunger resulting from drought may cause migration and degradation, or change of diet. Land degradation may produce either abandonment of the land or, where investment capacity and knowledge are available, change in cultivation practices to improve yields and arrest land degradation (Mortimore, 1989)*" (IPCC 1990, p. 186; emphasis added). The report further suggests that drought induced human migration is possible, and that some future precipitation scenarios are commensurable with climatic conditions experienced during the devastating 1930s drought in the U.S.:

"Farmers in the Great Plains are particularly vulnerable to climate variability and the drought of the 1930s was so devastating, serving as the impetus for a *large-scale social migration*. [...] The largest predicted summer season precipitation deficit is nearly 5 mm/day, ... which is of the same order of deficit experienced during the devastating drought of the 1930s" (IPCC 1990, p. 149; emphasis added).

It is also noteworthy that the report establishes the climate change - migration nexus not merely through primary effects (eg, temperature increases, sea level rises, etc) and secondary effects (eg, eroding agricultural livelihoods, etc), but also through resultant ter-

1 See Figures 6.20 and 6.21 in Section 6.5.

tiary effects (eg, changes in global market conditions, etc) which could depress prospects for economic activities in certain areas and thereby trigger migration:

“In developing countries, changes in commodity prices or foreign trade practices may trigger *large-scale migration*. The declining demand for natural rubber reportedly caused significant migration in Thailand, Malaysia and Indonesia (Simmons et al, 1977). *Migration may occur following a decline in living standards or a total loss of livelihood following land degradation (itself possibly due to an earlier migration toward marginal land unable to support overcultivation) or a major ‘natural’ disaster like flooding or drought*. The vulnerability of human settlements to climatic events is particularly great in developing countries, where high population densities and growing urban congestion are likely to increase the sensitivity to and potential magnitude of natural disasters. [...] *Resettlement itself raises considerable new problems for newcomers and possibly for local inhabitants*. In cities, it places additional burdens on existing housing, medical care facilities and various essential urban services and infrastructure. *From the point of view of health, migration and resettlement could cause the following situations to occur in developing countries* (modified from Lee, 1985):

- Insufficient capacity of health services and lack of physical or economic access to them;
- Sanitary facilities and housing could become quickly overburdened in the receiving area, enhancing the spread of communicable diseases;
- Both residents and newcomers may be exposed and susceptible to new diseases (introduced by new arrivals or inversely);
- More directly, resettlement is known to be the cause of psychological strains (loss of connection with the original land and traditions) further inducing health problems.” (IPCC 1990, pp. 187-188; emphasis added)

Importantly, these health related follow-on problems of climate change induced rural-urban migration were amply discussed by respondents during fieldwork conducted in Bolivia (Chapter 4). The rampant rural-urban spread of Chagas disease appears to be a fitting example of the kinds of health impacts flagged by the IPCC more than two decades ago (Section 4.5).

In view of these and other changes the IPCC report concedes the potential for millions of “environmental refugees” (IPCC 1990, p. 188):

“‘Environmental refugees,’ people displaced by degradation of land, flooding or drought, are becoming a much larger factor in many developing countries (Jacobsen, 1989; Tickell, 1989; Debrah, 1989). *Even a modest rise in global sea-levels could produce tens of millions of such refugees*. Population movements from blighted agricultural regions could result in areas where crop productivity may be cut by prolonged drought or temperature stress on vulnerable crops.” (IPCC 1990, p. 188; emphasis added)

During fieldwork in Bangladesh (Chapter 5) multiple respondents mentioned migration relevant secondary and/or tertiary climate change effects as issues of mounting concern, including erosion of livelihoods, rising population densities, proliferation of urban sprawl in informal slum settlements, and the inability of service supplies to keep pace with unsustainable rates of rural-urban in-migration to Dhaka estimated to be on the order of 400,000 newly arriving migrants per year (Baker 2007, pp. xi, xiii; Muriel 2012). Details are discussed in the Bangladesh case study (Chapter 5).

Further, the IPCC's inaugural assessment report suggests that "[m]igration and resettlement may be the most threatening short-term effects of climate change on human settlements" (IPCC 1990, p. 187), that "[f]orced migration and resettlement would be the most severe effects of climatic change as a result of natural disaster and loss of employment" (IPCC 1990, p. 188), and that people may be expected to migrate following multiple climate change related causes, including "loss of housing because of river or sea flooding or mudslides); loss of living resources (like water, energy and food supply or employment affected by climate change); loss of social and cultural resources ([eg,] neighbourhood or community networks...)" (IPCC 1990, p. 187).

Another oft-cited IPCC reference dates back to a report entitled *Climate Change: The 1990 and 1992 IPCC Assessments*. It warns that

"[t]he gravest effects of climate change may be those on human migration as millions are displaced by shoreline erosion, coastal flooding and severe drought. Many areas to which they flee are likely to have insufficient health and other support services to accommodate the new arrivals. Epidemics may sweep through refugee camps and settlements, spilling over into surrounding communities. In addition, resettlement often causes psychological and social strains, and this may affect the health and welfare of displaced populations." (IPCC 1992, p. 103)

IPCC predictions also indicate that migration may become both an undesirable consequence of climate change, as well as a possible (or preferable) adaptive response to the same: "[t]he expected rise in global temperatures will affect ... migration patterns" (IPCC 1990, p. 179), and "[m]igration may be a preferred response to threatened loss of housing or employment" (IPCC 1990, p. 188).

As already indicated, this selection of reasonably old and articulate IPCC predictions appears to suggest two things. First, scientific knowledge in this area of multidisciplinary study was significant even 20 years ago. Second, early scientific knowledge apparently did not translate effectively or sufficiently into corresponding preventative and/or preparatory action at the policy level, leaving the poorest countries disproportionately affected. Similar synthesis views are reflected in secondary literature.

A research paper by the International Organization for Migration (IOM) observes that

“[t]he available science, summarized in the latest assessment report of the IPCC [ie, IPCC 2007], translates into a simple fact: on current predictions the ‘carrying capacity’ of large parts of the world will be compromised by climate change, [which means that] the burden of providing for climate migrants will be borne by the poorest countries – those least responsible for emissions of greenhouse gases.” (Brown 2008, p. 9)

The Climate Change, Environment and Migration Alliance (CEEMA) similarly mentions “IPCC forecasts [which] suggest that climate change is likely to be an increasingly important variable” (CEEMA 2010, p. 3) within the aggregate mix of causes which are linked to climate migration.

In concluding Section 3.2 it may be summarised that while IPCC warnings from two decades ago have contributed to the research of some migration scholars (eg, Hugo 1996, 2010; Suhrke 1993), they do not seem to have had much impact on broader processes of policy development. This loss of time is deeply unfortunate given today’s dearth of essential preparedness based climate migration policy. As already mentioned, this view appears to be reinforced by field research findings (discussed in Chapters 4 to 6) which indicate that policy preparedness in the area of migration management has manifestly failed to live up to the scientific synthesis divulged by the IPCC more than two decades ago. This conclusion forms the frame of reference for Section 3.3 which will discuss the rationale for this study’s conceptual framework and preparedness paradigm.

This dissertation essentially takes the view that such a paradigm is non-negotiable if appropriate preparedness based policy instruments are to be developed without further delays. Indeed, it would appear that in the absence of concerted preparedness action the mere generation of more (or more refined) knowledge will fail to produce the kind of forward-thinking policy preparations which the following section argues are urgently needed if humanitarian scale mass-migrations are to be successfully forestalled or managed.

3.3 Conceptual framework and “preparedness” paradigm

As already noted in Chapters 1 and 2, people displaced by the adverse effects of climatic and/or environmental change face numerous hardships. Sometimes changes can be so sudden, severe, degenerative and self-reinforcing that temporary relocation and/or permanent resettlement are unavoidable. Without political forethought and related preparedness practice large scale displacements of people could have the potential to destabilise nations internally, aggravate existing tensions between states, and cause un-

necessary suffering both among forced migrants and in communities of destination. This section will now elaborate the dissertation's conceptual framework and preparedness paradigm which seeks to mitigate the potentially afflictive outcomes just described.

As alluded to in Section 2.7, this thesis will not contribute to debates between “alarmists” and “sceptics” over whether climate change ultimately “causes” migration, and if so, to what extent, whether or not (or how) this can be proven (or disproven), and so forth (Gemenne 2009, Piguet 2013). With respect to preparedness the question what “causes” human movement is inherently less interesting than the question how to manage it well (Myers and Kent 1995, p. 29). Therefore, the issue of causation – whether triggered by sudden acute or slow onset events – will not constitute a major focal point of interest. Instead, in this dissertation climate migration is hypothesised to cause the least disruption and suffering if dealt with *before* its manifestation and potential deterioration into a humanitarian situation requiring *ad hoc* emergency interventions.

While paradigms of prevention, prudence, precaution, preemption and preparedness² appear quite well established in disaster management circles (UNISDR-UNDP 2012; Luetz 2008; IOM 2009; UNISDR 2011; Venton et al 2012), the value of approaching climate change related migration through a similar paradigm is also increasingly gaining traction in research initiatives sponsored by international organisations (IOM 2011, p. 6; CCEMA 2010, p. 6). Four examples are reproduced next.

First, according to the Foresight report *Migration and Global Environmental Change: Future Challenges and Opportunities*, prepared by the UK Government Office for Science, proactive migration management and preparedness informed policy attention may lead to more benign future migration scenarios:

“Giving urgent policy attention to migration in the context of environmental change now will prevent a much worse and more costly situation in the future [...] Proactively facilitated and managed migration should lead to improvements in each of the future scenarios. [...] [M]igration will continue to occur in the future and can either be well managed and regular, or, ... unmanaged, unplanned and forced.” (Foresight 2011, pp. 10, 16-17)

Second, the report *Addressing Climate Change and Migration in Asia Pacific*, prepared by the Asian Development Bank (ADB 2012), suggests that anticipatory preparedness measures taken today may forestall humanitarian crises tomorrow:

2 See Anderson (2010) and Diprose et al (2008) for discussions of how principles of preemption, precaution, preparedness and prudence can influence the construction of the future in the present. See Luetz (2008) for humanitarian perspectives on the principle of preparedness in practice.

“[E]nvironmental events are already causing people to move in [the] Asia and Pacific region. By taking actions today, governments can reduce the likelihood of future humanitarian crises and maximize the possibilities that people can remain in their communities or – should deteriorating environmental conditions make that impractical – that they have the real option to relocate to a more secure place with livelihood options.” (ADB 2012, p. ix)

Third, the International Organization for Migration (IOM) advocates forward-thinking preparedness measures as “the best way to prepare” for *future* climate change migration:

“Environmental factors will be an increasingly important component of people’s migration decisions over the course of the 21st century. While it remains crucial – morally and practically – to be aware of the long-term threat from climate change, the best way to prepare for the consequences of climate change in 2050 or 2100 is to improve the ability to deal effectively with ... existing vulnerabilities now.” (IOM Bangladesh 2010, p. x)

Fourth and finally, the United Nations High Commissioner for Refugees (UNHCR), with support from the International Organization for Migration (IOM) and the Norwegian Refugee Council (NRC), advises a number of anticipatory measures with which humanitarian crises could be deflected:

“The early introduction of educational and other measures to prepare for such displacement, such as labour migration schemes, could serve not only to increase the resilience and ability to adapt in the host country, but also provide further resources and reinforce the resilience of the population remaining ... Although complete relocation of the entire population would be a measure of last resort, *early preparedness could also help avert a humanitarian catastrophe* by promoting orderly movements of affected populations and increasing the viability of the move.” (UNHCR 2009, p. 3; see also Leighton 2012, p. 718; emphasis added)

Consequently, and in keeping with this forward-thinking policy focus, throughout this dissertation migration will be viewed through the humanitarian lens of “preparedness” which is anticipatory in nature and seeks to make adequate preparations *before* these are needed. Moreover, it is argued that the humanitarian paradigm of preparedness is well-suited to ensure more equitable migration management processes and outcomes.

Before concluding this section one final yet very important point about preparedness appears to be in order, namely that there seems to be less harm in preparing for the “worst” (and then celebrating if things turn out better) than there would be in hoping for the “best” (and then suffering harm because of *un-* or *ill-*preparedness). This precautionary principle previously alluded to in Section 1.3 is also reflected in the literature regarding climate change adaptation: “[h]oping – and working – for the best while preparing for the worst, serves as a useful first principle for adaptation planning” (UNDP 2007, p. 198).

This argument is developed further in Section 5.2 and revisited in the concluding synthesis discussion of Section 7.6.

Pursuant to this preparedness paradigm a future influx in human movement is assumed and accepted as a logical *starting position* of this research. Throughout this discourse this assumption forms the point of departure, not the point of destination. Consequently, the purpose of this study is not to demonstrate causation (or adduce evidence to that effect) but to identify policy opportunities for anticipatory problem solving. Hence this thesis is not merely concerned with producing tangible evidence of what is already happening at present, but also with inferential speculations about what may potentially transpire in the future.

In this thesis preparedness is understood as taking mitigative and adaptive actions to address climate migration *before* benign options and opportunities are foreclosed, and importantly, *before* ultimate certainties arise about vulnerable locations and likely numbers of people at risk. Expressed in simple language, preparedness seeks to identify what solutions and policies may be needed *before* they are needed, seeing that long lead times will delay uptake and mainstreaming of solutions even after implementation has commenced. In this respect it seems crucial that the views of migrating communities are adequately reflected in solutions proposed (Kenny 2011, Chambers 1997, Ife 2010, Luetz 2007, 2008, pp. 45-49). Emphasis and methodology of this approach are discussed next.

3.4 Research methodology and choice of case study locations

In accordance with the research focus just described, three case studies were conducted in three different countries (and climatic contexts) that have been highlighted as “hot spots”³ for climate migration, namely Bolivia (Chapter 4), Bangladesh (Chapter 5), and Maldives (Chapter 6). These countries were carefully selected to ensure the inclusion of broadly dissimilar climate change issues and resultant migration responses. More specifically, case study locations were chosen to incorporate three distinct geographical, topographical and sociocultural regions that may be typified as combining heightened climate change vulnerabilities and consequent human migration potential (cf, Yin 2003), namely:

1. **Cities and communities in Bolivia** exemplifying mountainous and agricultural regions susceptible to drought / water stress / water insecurity, aridification, desertification, deforestation, land degradation, including rapid declines in the availability of Andean glacial meltwater

3 More recently the concept of “hot systems” has been suggested to recognise that “a crisis potentially can be manifested in locations other than the location of origin” (Shen et al 2010, p. 14).

discharge (Figures 3.1 and 3.2).⁴

2. **Megacities and coastal communities in Bangladesh** exemplifying densely settled megadelta regions susceptible to cyclonic storm surges, massive scale flooding events, and processes of erosion, salt water intrusion, land subsidence and sea level rises (Figures 3.1 and 3.3).

3. **Small island communities in Maldives** exemplifying Small Island Developing States (SIDS) susceptible to sea level rises, coastal erosion, storm surges, freshwater depletion, sea surface temperature increases and consequent coral bleaching / reef system degradation (Figures 3.4 and 3.5)

Case study site selection was broadly based on “hot spots” identified in other research (based on Nicholls et al 2007, p. 327; Ericson et al 2006; WBGU 2007, p. 4; UN-DESA 2010, p. 11; McGranahan et al 2006, p. 26; Maplecroft 2007, p. 17). Pertinent vulnerabilities are reflected in Figures 3.1 to 3.5 and elaborated in corresponding captions. Case study communities were chosen based on recommendations of local key informants. A consolidated map detailing some fieldwork sites is available: <http://goo.gl/maps/byNOF>

Climate change is a global problem, but it is experienced at the local level. In many countries of the world its impacts are already being suffered. However, global statistics have a tendency to be meaningless in the context of local environments where impacts and vulnerabilities can diverge significantly from global trends (eg, local level deviations from global average temperature increases). Therefore, a fine-grained picture is needed which takes stock of prevailing specificities encountered in local environments. Contextuality is an important dimension that will ultimately define adaptive governance options:

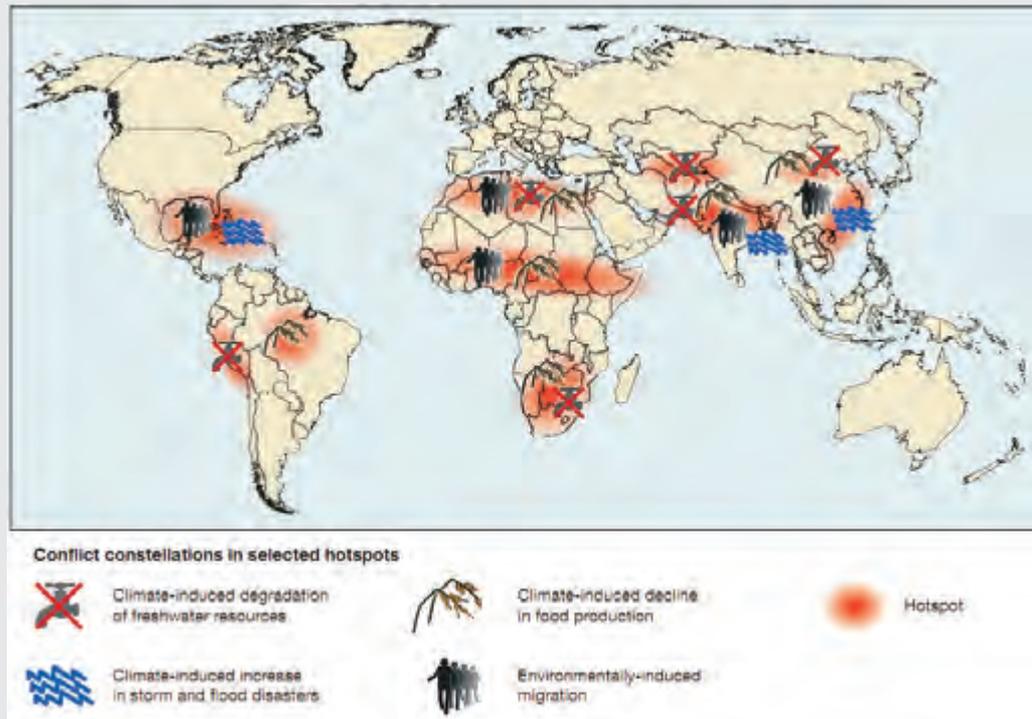
“There is no ‘one best way,’ no ‘best practice’ that fits all circumstances, but there are improvements over historical baselines or other norms that fit particular circumstances – if they can be found. Empowerment of a local community can be initiated by researchers who engage people on the ground and expand the range of informed alternatives available to them.” (Brunner and Lynch 2010, p. 241)

In the absence of decentralised or “bottom-up”⁵ decision making there is the likelihood

4 Figure 3.2 quoted from UNISDR (2011, p. 58). Attribution: “IRI (International Research Institute). 2010. 6-month SPI: April-September 2010. Palisades, USA: International Research Institute for Climate and Society, Columbia University.” (UNISDR 2011, p. 169; root source unverifiable 19 Feb 2013)

5 Conversely, the concept of charging for the use of “global public goods (GPGs)” or “global commons” (eg, oceans, air space) may be seen as a centralised or “top-down” approach to tackling global issues (WBGU 2002, pp. 1-5; see also WBGU 2009). Note: In this instance the example refers to mitigation, not adaptation. The concept of decentralised decision making is elaborated in Chapter 7.

Figure 3.1: Selected hot spots depicting regions of the world where “[s]ecurity risks associated with climate change ... could develop into crisis hotspots” (WBGU 2007, p. 4). Cf. Clark 2007.



Map quoted from WBGU (2007, p. 4); WBGU – German Advisory Council on Global Change (2007) *World in Transition: Climate Change as a Security Risk. Summary for Policy-Makers*. Berlin. WBGU.

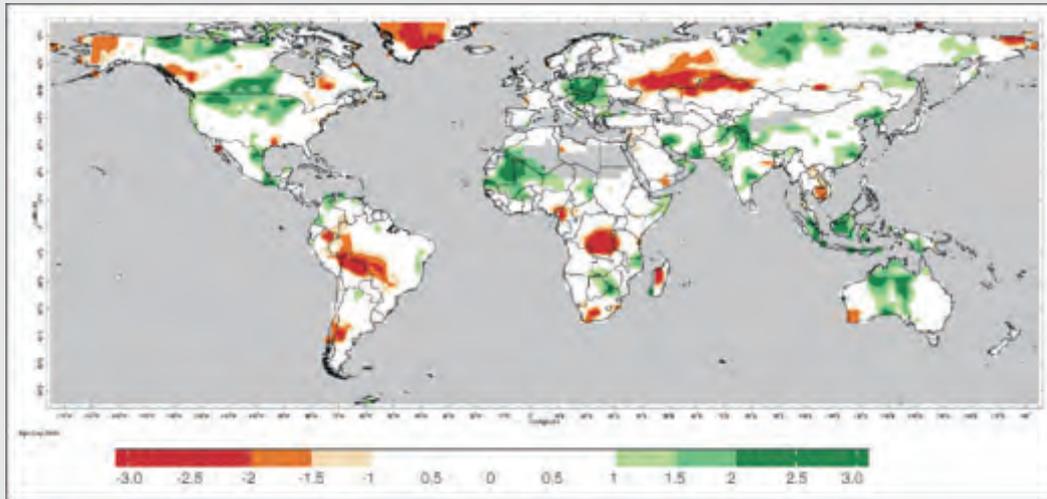
See also Rabatel et al 2013 and BBC 2013 discussing rapid melting of Andean glaciers. This theme will be developed in Chapter 4.

that adaptation measures are needlessly delayed or disproportionately burden the poorest and most vulnerable, and thereby become “maladaptation” measures (Barnett and O’Neill 2010, Brunner and Lynch 2010, pp. 235-260).

“Because no one can understand the global problem [of climate change] completely or completely objectively – or even come close – it is prudent to factor the global problem into simpler parts, community by community. [...] Decentralization makes it feasible to bring people in local communities into the process of evolving better policy responses adapted to their own circumstances.” (Brunner and Lynch 2010, p. 102)

Given that the above mentioned case study sites were deliberately selected to be dissimilar in terms of climatic conditions and cultural contexts, it appeared more sensible to discuss related climate change and migration issues within the case study chapters themselves, rather than drafting an additional chapter with all places and issues mingled. This approach also seemed more logical in view of distinctly dissimilar demographical data between case study locations visited. On the flipside this approach also explains why case study chapters contain comparatively longer introductory sections which set forth the contextually unique climate change and migration situations in each of the three countries.

Figure 3.2: This global map reflects dryness/wetness “using a 6-month Standardized Precipitation Index (April-September 2010)” (UNISDR 2011, p. 58). The map highlights areas of “extreme dryness” in Bolivia.



SPI	Category	Number of occurrences per 100 years
0 to -0.99	Mild dryness	33
-1.00 to -1.49	Moderate dryness	10
-1.5 to -1.99	Severe dryness	5
<-2.0	Extreme dryness	2.5

Source: IRI 2010, Sivakumar 2010, cited in UNISDR (2011, p. 58).

Following a pilot study which resulted in slight methodological adjustments (described below in Section 3.6), fieldwork data for case studies were sourced during site visits in Bolivia (24 November 2010 to 20 January 2011), Bangladesh (27 November to 8 December 2011), and Maldives (19 December 2011 to 3 January 2012), and are supported by observations made and conversations conducted during that time, as well as during months of preparation and follow-up.

Moreover, each case study visit was aided by an additional preceding research visit to each country (Bolivia, 14 December 2009 to 12 January 2010; Bangladesh, 19-26 April 2008; Maldives, 23-31 May 2009) which facilitated strategic partnerships in areas of translation / interpretation, logistics, and overall research support. Given these earlier research visits it also appeared sensible to return to some of the same sites and, where possible, interview some of the same experts again to try and gauge if/how conditions in the localities and the experts’ individual perspectives had evolved or changed. This proved particularly fascinating in Dalalkandi, Tajumuddin, a coastal community in Bangladesh’s biggest Island Bhola where two informants contacted in 2008 were revisited for additional commentaries on erosion and displacement processes and ultimately confirmed that the places where interviews had occurred in 2008 (Luetz 2008, pp. 26-28)

Figure 3.3: Selected hot spots in the world indicating the “[r]elative vulnerability of coastal deltas as shown by the indicative population potentially displaced by current sea-level trends to 2050 (Extreme = >1 million; High = 1 million to 50,000; Medium = 50,000 to 5,000; following Ericson et al., 2006).” (Nicholls et al 2007, p. 327)



Source: Nicholls et al 2007, p. 327; cf, slide 13, below.
 Map quoted from <http://www.ipcc.ch/graphics/ar4-wg2/jpg/fig-6-6.jpg> (last accessed 10 Oct 2013);
<http://www.ipcc.ch/pdf/presentations/briefing-geneva-2007-05/climate-changes-impact-coastal.pdf>

had already “disappeared” (Q6/Exp/Migr/Orig/20111129). In short, the previous acquaintance with people and places greatly helped in the identification and incorporation of issues of special interest to this study (eg, cultural, environmental, socioeconomic vulnerabilities) and also lowered the potential for contextually inappropriate approaches (Devereux and Hoddinott 1992, pp. 38-39).

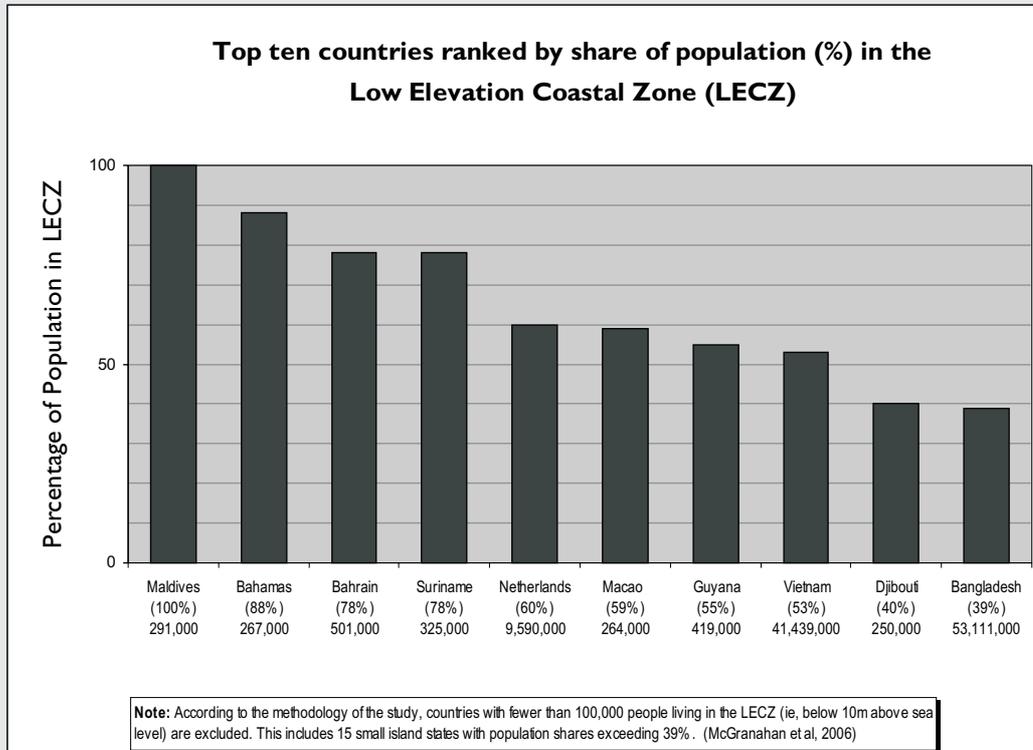
During fieldwork relevant interview data were sourced from three groups of respondents: “migrants”⁶ (those who had already moved), “non-migrants” (those living in communities affected / surrounded by human movement, including host communities), and “experts” (those professionally involved with migration, climate change, environmental issues and/or relevant preparedness policy and practice.) Key informant⁷ interviews sought to establish not only the extent to which climatic and/or environmental change (including natural disasters) may be implicated in the displacement or migration of human populations, but also how such people movements may be better managed in view of minimising negative impacts on individuals and communities.

As already mentioned, this study placed a deliberate emphasis on hearing from people “directly” affected by migration vis-à-vis experts primarily knowledgeable “about” them. Incorporating this focus called for a semi-structured on-site interview process (elaborated

6 Here the term “migrant/s” is intended to be as inclusive as possible, conveying the sense of “mover/s”.

7 Key informant interviewees included civil servants, local government officials, academics, journalists, religious workers, policy makers, NGO representatives, etc

Figure 3.4: “[Small Island Developing States] are especially vulnerable to climate change due to their small size, narrow resource base, high susceptibility to natural hazards, low economic resilience, and limited human and technological capacity for mitigating and adapting to the effects of climate change [attributed to Nurse and Sem 2001]. The very existence of low-lying atoll nations, such as Kiribati, Maldives, Marshall Islands, and Tuvalu, is threatened by climate change-induced sea-level rise” (UN-DESA 2010, p. 11).



(Source: UN-DESA 2010, p. 11; McGranahan et al 2006, p. 26)

According to the United Nations,

“[t]he small size and extremely low elevation of the coral islands that make up the Maldives place the residents and their livelihoods under threat from climate change, particularly sea-level rise. [...] Given the severity of anticipated sea-level rise, population relocation is viewed as inevitable. The government has planned to begin diverting a portion of the country’s annual tourism revenue for the establishment of an investment fund, with a view to purchasing ‘dry land’ to ensure a safe haven for future evacuation. Maldives’ planned evacuations in anticipation of loss of land will inevitably impact sovereignty and national identity.” (UN-DESA 2010, p. 12)

below in Section 3.5) which entailed face-to-face engagement with respondents. On rare occasions follow-up questions were asked by e-mail, phone or via skype.

Field research consistently sought to appreciate the migration experience over time and space, spanning the entire spectrum of human movement from initial displacement or departure, to temporary or permanent relocation. Hence to the extent feasible, field research typically engaged respondents in both communities of “origin” and “destination”, thereby aiming to promote a comprehensive understanding of the whole migration journey and human experience. This holistic migration perspective seemed crucial in view of the study’s emphasis on enhancing equitable preparedness based policy and practice.

Figure 3.5: The 20 countries most vulnerable to natural disaster induced economic losses (based on Maplecroft Natural Disaster Economic Loss Index, 2007)

Rank	Country	Index	Category
1	Tokelau	0.00	Extreme
2	Montserrat	1.39	Extreme
3	Cayman Islands	2.38	Extreme
4	Grenada	2.42	Extreme
5	Bermuda	2.46	Extreme
6	Saint Kitts and Nevis	2.46	Extreme
7	Saint Lucia	2.47	Extreme
8	Maldives	2.47	Extreme
9	American Samoa	2.47	Extreme
10	Antigua and Barbuda	2.48	Extreme
11	Cook Islands	2.49	Extreme
12	Tonga	2.49	Extreme
13	Samoa	2.49	Extreme
14	Guam	2.49	Extreme
15	Anguilla	2.50	Extreme
16	Saint Vincent and The Grenadines	2.50	Extreme
17	Virgin Islands (US)	2.50	Extreme
18	Armenia	2.50	Extreme
19	Dominica	2.50	Extreme
20	British Virgin Islands	2.50	Extreme

Note: Of the 20 countries most vulnerable to disaster induced economic losses, 19 are small island states. (Source: adapted from Maplecroft 2007, pp. 17-18)

Maplecroft's Natural Disaster Economic Loss Index

"highlights the impacts of natural disasters on development. [...] While absolute damage costs tend to be greatest in developed and emerging economies, these losses generally account for a small proportion of GDP and therefore have a relatively small effect on the economy of those countries. [...] When damage costs are adjusted for each country's wealth (using GDP data), a different picture emerges. The countries where relative economic losses are high are predominantly developing nations and many are islands. [...] In countries such as Montserrat, Armenia, Grenada, Tokelau and Samoa, natural disasters are responsible for annual economic losses of up to 30% of GDP. [...] Small Island Developing States (SIDS) are at the highest risk. These countries are often particularly exposed to natural hazards, especially wind storms – the most destructive natural hazards in economic terms – and also have high vulnerability. Much of the infrastructure in these countries is in coastal regions, where it can be particularly heavily hit by storms and floods." (Maplecroft 2007, p. 17)

According to the Intergovernmental Panel on Climate Change (IPCC), "[a]ll vulnerability indices consistently identify small states – sometimes more specifically small island states – as being more economically vulnerable than larger states." (Nurse and Sem 2001, p. 866)

The Maldives exemplifies the inherent vulnerabilities of Small Island Developing States (SIDS). The 2004 Indian Ocean Tsunami severely affected one third of the country's population, displaced more than 20,000 islanders (7% of the population), caused estimated total damages equal to 62% of the nation's Gross Domestic Product, and compromised the livelihoods of thousands. In short, "the Maldives experienced a disaster of national proportion." (WB ADB UN 2005, pp. 3-4)

Given that individual interviewees were frequently encountered in groups, a number of planned and impromptu “focus group”⁸ discussions were accommodated, with one interviewee typically assuming the role of the principal respondent, and his or her by-standing acquaintances elaborating on issues discussed or volunteering their own personal experiences. Given the range of definitive “advantages provided by interaction among [interview] participants” (Morgan and Krueger 1993, p. 15), focus group discussions proved particularly helpful whenever complex aspirational issues were explored such as the motivation to migrate (*ibid*, p. 16). The numerous benefits of promoting interaction among respondents are also reflected in the literature:

“By comparing the different points of view that participants exchange during the interactions in focus groups, researchers can examine motivation with a degree of complexity that is typically not available with other methods. [...] Many of the behaviors we might wish to understand are not matters of conscious importance to the research participants. At the beginning of a focus group, such participants will not be immediately able to express all their feelings or motivations on a topic. As they hear others talk, however, they can easily identify the degree to which what they are hearing fits their situation. By comparing and contrasting, they can become more explicit in their own views [and become] aware of things that they had not thought about before. Thus in contrast to surveys in which one is frequently warned against asking about a topic if people do not have prior opinions, the interaction in focus groups often creates a cuing phenomenon that has the potential for extracting more information than other methods.” (Morgan and Krueger 1993, pp. 16-17)

Earl Babbie further notes that “group dynamics frequently bring out aspects of the topic that would not have been anticipated by the researcher and would not have emerged from interviews with individuals” (Babbie 2010, p. 323). Given that all three case studies had benefited from preceding research visits which had established strategic local level relationships in areas of translation, logistics and research support, the availability of locally sensitive interpreters significantly assisted this researcher in moderating these group discussions in an atmosphere of “meaningful interaction, ... humane sensitivity, ... respect for opposing views, [and general] friendliness” (*ibid*, p. 18). In the view of this researcher it is owing to the availability of this local level support offered by skilful and sensitive assistants that focus group discussions recurrently highlighted qualitative data of “high face validity” (Babbie 2010, p. 323; attributed to Krueger 1988, p. 47).

“In-depth” qualitative data gathering in focus group conversations (Babbie 2010, p. 323) also led to a number of unanticipated discoveries (eg, the correlation of low levels of

8 According to Earl Babbie, a focus group is “[a] group of subjects interviewed together, prompting a discussion.” (Babbie 2010, p. 322)

education and low levels of income noted in Dhaka, Bangladesh; discussed in Chapter 5), and contributed significantly to overall successful social research outcomes (Morgan 1993, Ellis 1994, pp. 125-126, Babbie 2010, pp. 322-323). Finally, accommodating numerous focus group discussions also implied that the cumulative total of participating informants significantly exceeds the number of paper questionnaires completed.

The majority of interviews generally lasted about one hour, although some were as short as five minutes, and others lasted as long as several days, intermittently carried out at diverse times and/or in multiple locations. On a number of occasions respondents invited this researcher to the relevant home/village for an extra “knowledge top up”, and one time an invitation to a 58th birthday celebration was extended by a respondent – and accepted by this researcher.

Despite a few exceptional interview situations, typically the average interview duration of approximately one hour appeared well suited to the developing country contexts within which the fieldwork occurred. This interview duration is also advocated by Casley and Lury who “recommend one hour as the desirable limit on any one single interview” conducted in developing countries (Casley and Lury 1987, p. 76). On average three interviews were conducted daily. The overall aim of conducting at least 30 semi-structured interviews during each case study country visit was slightly exceeded.

One important caveat should be noted. Given the deliberate emphasis on qualitative data in this research (detailed below in Section 3.5) which allowed respondents great latitude and liberty to elaborate on issues they deemed important and relevant, rather than rapidly rushing through consecutive questionnaire sections to complete as many questionnaires as possible in the time available, not every section was ultimately addressed or completed by every respondent. While this approach allowed for rich conversations to develop from which unique qualitative insights and perspectives emerged, it also explains why some quantitative sections can have comparatively smaller sample sizes.

Despite this deliberate quest for qualitative data characterised by “high face validity” (Babbie 2010, p. 323; attributed to Krueger 1988, p. 47), quantitative data derived from relatively smaller samples should not be dismissed or discounted. In the view of this researcher quantitative data derived from smaller samples may be best interpreted as complementary rather than primary, and as indicative rather than determinative.

There seems to be some merit ascribed to this approach in the literature:

“some researchers refuse to count someone as a respondent unless he or she answers each and every question on the questionnaire. More enlightened researchers [see foot-

note⁹] have concluded that it is much more useful to think about response rates in terms of individual items rather than questionnaires. This approach allows use of all data obtained even though some information comes from partially completed questionnaires.” (Birdie et al 1986, p. 43)

For the purposes of this research approach it should be noted that there were neither non-responses nor any interviews that were ultimately discounted as unprofitable. On the contrary, the vast majority of respondents were overwhelmingly engaged throughout the entire interview process, more often than not going to great lengths to make themselves and their situations understood.

To summarise, by exploring the views, experiences, felt needs, aspirations and preferred solutions of migrating individuals and communities, this study aimed to advance human knowledge and understanding of migration push / pull factors (distinguishing between environment / climate related issues, and non-environment / non-climate related issues) in order to raise options for more equitable migration processes and outcomes. To this end, fieldwork sought to source, collate, analyse and synthesise relevant empirical data at micro-level so that approaches, strategies and solutions for more equitable management of human movement might be identified and implemented at macro-level. In the simplest of terms, this study expressly invited micro-level perspectives to inform and enhance macro-level policy responses.

Fieldwork approach, questionnaire design and semi-structured interview process are discussed next.

3.5 Local-level fieldwork approach, questionnaire design, validation

This field research was informed by a semi-structured interview process which used a paper questionnaire to broadly focus conversations on seven areas of interest: (1) interviewee demographics; (2) the migration situation generally; (3) migration push factors; (4) migration pull factors; (5) preferred migration destinations; (6) preferred migrant self-image/s (nomenclature); (7) preferred migration management and/or solutions

9 Two substantiating sources and author commentaries are cited in the “Annotated Bibliography” (Birdie et al 1986, pp. 75, 107-108): a) “Birdie, Douglas R., and Anderson, John F. ‘Mail questionnaire response rates: updating outmoded thinking.’ *Journal of Marketing*, January 1976, 40 (1), 71-73. The authors look at the shortcomings of several commonly used response-rate ratios and suggest the ‘Item Response Rate Index’ as an alternative approach to reporting response rates.” (Birdie et al 1986, p. 75). b) “Francis, Joe D., and Busch, Lawrence. ‘What we know about ‘I don’t know’s.’ *Public Opinion Quarterly*, Summer 1975, 39 (2), 207-218. Females, nonwhites, low-educated, low-income and noninvolved respondents with feelings of low political efficacy give a high number of ‘don’t know’ responses. These responses should not be treated as random. Survey researchers should be careful not to exclude these respondents from analysis or combine them with other response categories lest bias be introduced.” (Birdie et al 1986, pp. 107-108)

sought. These seven sections are briefly elaborated below. The questionnaire is available in Appendix D.2.

The first section on interviewee demographics included data such as interview date and location, respondent name, sex, age, nationality, ethnicity, religion, marital status, number of children, household size and highest level of education. This section was generally completed towards the end of conversations after a level of trust had been established between interviewer and interviewee/s. Hence interviews typically commenced with section two.

The second section asked respondents to describe the general migration situation in their communities, what they had personally seen, heard and/or experienced, and why people were moving and where to, and what role environmental factors played in shaping people's decisions to stay or leave, etc.

The third section included two tables listing potentially relevant environment and non-environment related pressures ("push factors") that may or may not have been contributing to migration in areas of investigation. Respondents were asked to rate these potential push factors as either "unimportant" OR "important" OR "very important" in terms of each factor's role in contributing to migration. Respondents were also prompted to add and rate additional factors as relevant. Collated responses are displayed in two vertical-bar graphs called "Environment Related Push Factors (ERPF)" and "Non-Environment Related Push Factors (NRPF)" which feature in all case studies (Sections 4.4, 5.4 and 6.4).

The fourth section included a table listing possible migrant aspirations ("pull factors") and sought to gauge what relative priority respondents ascribed to each potential attraction in terms of its contributing role played in inducing human movement. Hence respondents were asked to reflect on what migrants want/seek most and then rate each listed potential aspiration as having a "very high priority" OR "high priority" OR "medium priority" OR "low priority" OR "very low priority". Respondents were also prompted to add and rate additional migrant aspirations as relevant. Comparative levels of prioritisation respondents ascribed to each category are presented in two graphic overviews: (1) a vertical-bar graph called "Migrant Aspirations Overview (MAO)" which reflects responses, and (2) a table called "Migrant Aspirations Aggregate Index (MAAI)" which reflects weighted averages.¹⁰

One further note about the quantitative analysis derived from the third and fourth sections appears helpful. Given varying sample sizes both across and within case studies,

10 Weighted average calculated from assigned values: very high priority = 5 points; high priority = 4 points; medium priority = 3 points; low priority = 2 points; very low priority = 1 point.

N was not averaged but displayed in brackets to allow meaningful interpretation of quantitative data displayed in vertical-bar graphs ERPF, NRPF and MAO: Q represents the total number of paper questionnaires partially or fully completed as part of the case study (eg, Q=34); FG represents the total number of focus group participants (eg, Q=82); N gives the sample size in brackets of the total number of respondents who answered a particular question as part of the case study (eg, N=[]).

The fifth section sought to establish where people go, went, and/or wish to go when compelled to move. Questions about favoured migration destinations included both *de facto* destinations (where people actually go/went), and *hypothetical* destinations (where migrants would elect to go in the absence of restrictions, eg financial, political or otherwise).

The sixth section asked respondents to rate different labels used in the literature¹¹ to characterise forced migrants based on their personally subjective emotional response to these terms as “good” OR “bad” OR “don’t know”. Respondents were also prompted to suggest and rate additional terms as relevant.

The final section solicited qualitative data on preferred migration management options and solutions and asked respondents to think about what would make the experience of moving a more positive one, how policy makers, NGOs, migrant and/or host communities could help, whether migrants valued maintaining the integrity of their community (vis-à-vis the prospect of experiencing assimilation/dissolution in the new place of destination), and what respondents (if their migration experiences had the benefit of hindsight) had personally learned from the process, before, during and after the move. In short, the final section asked respondents to reflect on personal lessons learned and to suggest better migration management approaches and solutions as identified from their unique individual vantage points.

During fieldwork the same standard questionnaire was similarly used during interviews with “migrants” (those who had already moved), “non-migrants” (those living in communities affected / surrounded by human movement, including host communities), and “experts” (those professionally involved with migration, climate change, environmental issues and/or relevant preparedness policy and practice). Hence given that a standard questionnaire tool guided conversations with respondents from widely divergent educational backgrounds it was important that questions be “worded as simply as possible” (Berdie et al 1986, p. 31) and nonetheless retain the capability to extract responses characterised by a level of complexity.

11 Popular terms used in the literature include refugees (or variations of climate / climate change / environmental refugees), migrants (including variations of “forced / voluntary” migrants), evacuees, exiles, victims, displacees / dislocatees, etc (Section 2.2).

As already indicated, for the semi-structured interview process to work smoothly it appeared critical to couch questions in simple language and allow respondents time and space to talk about issues they deemed important and relevant, rather than rapidly rushing through consecutive questionnaire sections to complete as many questionnaires as possible in the time available. A number of respondents also regarded quantitative questionnaire elements, including “scaling questions” and/or “forced choice questions” as too tedious, time-consuming or awkward to answer (Atkinson 1971, pp. 56-94). Hence it seemed critical to respond flexibly to divergent local conditions, simplify the wording of questions as the situation required, and/or transpose the order in which issues were being discussed.

This approach allowed for rich conversations to develop from which unique qualitative insights and perspectives emerged. On the other hand, and as already conceded, it also explains why not every section was addressed or completed by every respondent and why some quantitative sections can have comparatively smaller sample sizes. Given the parameters of conducting fieldwork in developing countries an emphasis on qualitative data appeared to be in order (Casley and Lury 1987, Devereux and Hoddinott 1992). As made clear in Section 3.4, quantitative data derived from smaller samples may be best interpreted as complementary rather than primary, and as indicative rather than determinative.

In this regard, pre-testing the original (first-generation) draft questionnaire tool (reproduced in Appendix D.1) during an early pilot study (elaborated below in Section 3.6) was very constructive during the formative stages of the methodological development of this field research, and led to the incorporation of simplifying features into the final questionnaire design. The final questionnaire version used in all case studies (reproduced in Appendix D.2) ultimately seemed well suited for this PhD research which needed to balance concerns of simplicity and complexity.

Analogous to the EACH-FOR fieldwork methodology which explored linkages between environmental change and migration at 23 international field study sites (IOM 2009a, pp. 203-212), this PhD field research similarly approached the identification of interview subjects through a “non-probability sampling”¹² technique. This method appeared most appropriate given the lack of available statistical data on climate migration and the inconspicuous nature of the population of interest (Babbie 2010, pp. 192-196; Sedlack and Stanley 1992, pp. 125-153). Indeed, this sampling method is commonly used in “most social science studies” (Ellis 1994, p. 171) and is perceived as especially useful “in the context of other studies of the same topic” (ibid).

12 According to Earl Babbie, non-probability sampling represents “[a]ny technique in which samples are selected in some way not suggested by probability theory. Examples include reliance on available subjects as well as purposive (judgmental), quota, and snowball sampling.” (Babbie 2010, p. 192)

Throughout fieldwork respondents were chosen using the “snowball sampling”¹³ method, with each interviewee asked to suggest other potential respondents. This referral process led to second- and third-generation respondents being approached and invited to participate as interviewees. Where possible, the selection of respondents was also guided by the motivation to create a broadly balanced pool of interviewees in respect of symmetrical ratios (ie, expert-migrant/non-migrant, origin-destination, etc), and in respect of distributed demographic data (ie, gender, interviewee ages, and socioeconomic backgrounds, etc). This implied that care needed to be taken “to ensure that the initial set of respondents was sufficiently diverse so that the sample was not skewed excessively in any one particular direction” (IOM 2009a, p. 211; attributed to Tansey 2006¹⁴, p. 12). Given that population registries were typically unavailable in remote fieldwork sites, random registry sampling did not play a role in the identification and selection of possible respondents.

Although in snowball sampling “[t]he likelihood is low that this sampling method will yield a representative sample” (Ellis 1994, p. 172), snowball sampling nevertheless appeared to make sense for a number of reasons. First, the method is particularly suited in situations “when the members of a special population are difficult to locate, such as homeless individuals, migrant workers, or undocumented immigrants” (Babbie 2010, p. 193). Second, the “sampling design is especially useful in those areas of study in which the normative aspects of the larger culture have little moment” (Sedlack and Stanley 1992, p. 145). Third, “[t]he advantage of this sampling method is that it can build up sample sizes quickly” (Ellis 1994, p. 172). Fourth and finally, the referral approach “paves the way for the researcher by helping to identify appropriate persons for study and by helping to establish the researcher’s credibility to the potential respondent or respondents” (Sedlack and Stanley 1992, p. 145).

Moreover, Sedlack and Stanley also note the benefits of snowball sampling for field research among clandestine or inconspicuous respondents of interest:

“Referral samples are often the only way to do certain types of social research, particularly in an area of social deviance. For example, suppose one was interested in an exploratory study of drug addicts to assess the nature of the drug subculture. Since drug usage is frowned upon and is illegal, those persons who participate in the drug subculture are likely to be covertly involved or discovered and undergoing punishment or receiving

13 According to Earl Babbie, snowball sampling describes “[a] nonprobability sampling method, often employed in field research, whereby each person interviewed may be asked to suggest additional people for interviewing.” (Babbie 2010, p. 193)

14 This document was no longer available at the location specified but was retrieved and referenced instead as “Tansey, 2007”.

treatment. If one wanted a representative sample of drug addicts, a list of known offenders, if available, would not be representative because the persons on this list would only be those detected, labeled, and subjected to some type of rehabilitation or punishment. Clearly, those participants who have yet to be arrested and/or convicted would not be on anyone's formal list and, therefore, would not be available for selection. Hence, the referral, or snowball, sample would be most appropriate." (Sedlack and Stanley 1992, p. 145)

Although "nonprobability samples do not permit a statistically valid estimate of sampling error" (Sedlack and Stanley 1992, p. 125) and are "unlikely to yield representative samples" (Ellis 1994, p. 171), they nonetheless offer "major advantages" (Sedlack and Stanley 1992, p. 144), and are typically "more economical" (*ibid.*). In sum, this sampling method relies

"strongly on the researcher's knowledge of the research situation. [...] The researcher's expertise – which has been gathered through a lifetime of study – should not be discounted. Such knowledge conscientiously applied can result in highly representative samples from which logically inductive extrapolations to sampling frames can be made." (Sedlack and Stanley 1992, p. 145)

Hence this method also appeared suited in view of this researcher's prior fieldwork experience in all case study countries where PhD fieldwork took place.

Key commentaries follow a simple in-text referencing system that ensures respondent anonymity (unless attribution by name was expressly agreed or requested by the respondent/s), and nonetheless reflects genuine interview context details. Upon specifying the questionnaire number (eg, Q14) the in-text referencing system distinguishes between migrants (Migr), non-migrants (NMigr), host communities (Hst), and experts (Exp); communities of origin (Orig) and destination (Dest); and interview locations (eg, Hani-madhoo) and interview dates in the format YYYYMMDD (eg, 20111209). This system makes it possible for both researcher and reader to perceive contextually significant interview details with ease and also limits the use of footnotes and endnotes. The following key informant commentary pertains to an authentic interview situation encountered in Maldives and exemplifies the in-text citation method:

"So we find life here in Huvarafushi better compared to life in Berinmadhoo. I feel people are friendlier, and the unity among people is stronger here. Compared to life in Berinmadhoo, in all aspects, economically, socially, we have access to better facilities and resources. So I can say we are living a more satisfied life in Huvarafushi than in Berinmadhoo." (Q25/Exp/Migr/Dest/Huvarafushi/20111231)

In all three case study locations the majority of interviews were conducted in the relevant country's *linguae francae*, namely Spanish (Bolivia), Bengali (Bangladesh), and Dhivehi

(Maldives). Key informant or “expert” interviews were mostly carried out in English (except for two in German). In view of the strong grassroots nature of this research the help of local guides and interpreters proved critical to the success of the interview process. To minimise the potential for interpretative bias, and to enable genuine responses that were not guided into predetermined cognitive frameworks, the issue and language of “climate change” was mostly avoided or de-emphasised, and “environmental factors” highlighted instead. Moreover, questions were posed in a “neutral” way and with “no hint as to what the ‘right answer’ should be.” (Sedlack and Stanley 1992, p. 226)

Given this dissertation’s emphasis on hearing from climate migration affected individuals and communities over and above people knowledgeable about them, it appeared appropriate that the research feature a multitude of respondents in a personable and accessible way, including authenticating evidence in the form of photographs and unabridged key commentaries. This deferential regard for the views of these individuals and communities is quite intentional insofar as the respondents are seen as the *real* experts of climate change adaptation and related migration (eg, *vis-à-vis* eminent international academics and jet-setting conference speakers who presume to speak on their behalf). The prominent focus on migrants as pre-eminent experts, the inclusion of extended key commentaries, and the depiction of numerous personal and “untreated” photographs taken during fieldwork also explain why case study chapters are somewhat longer than might otherwise have been the case. Notwithstanding, in the view of this author these commentaries are among the core contributions of this dissertation, wherefore they are purposely incorporated and deliberately unabridged (Section 1.7).

In short, the research aimed to mine data from a pool of respondents that was sufficiently representative in terms of sample size, amply credible in terms of relevant expertise, and fundamentally, adequately authoritative in terms of personal migration experience.

A few clarifying comments about validation of scales (ie, ERPF, NRPF, MAO, MAAI) appear necessary. Although questionnaires are “the most frequently used data collection method [to] gather information on knowledge, attitudes, opinions, behaviors, facts, and other information” (Radhakrishna 2007), research by Radhakrishna, Leite and Baggett (2003) discovered that “a third of the studies reviewed did not report procedures for establishing validity (31%)” (cited in Radhakrishna 2007). Given the obvious concern that research findings could be skewed by “measurement error/s”, defined by Groves (1987) as “the discrepancy between respondents’ attributes and their survey responses” (p. 162), the development and use of a “valid and reliable questionnaire” tool was clearly “a must” (Radhakrishna 2007).

In developing suitable constructs it was important that latent qualitative variables (eg, perceptions, attitudes, priorities, etc.) were accurately translated into quantitative

measures which could be plotted on scales (Netemeyer et al 2003; DeVellis 2012). The questionnaire development process broadly followed the five steps outlined by Radhakrishna (2007), and validity was ensured by accommodating feedback and input from the research community, ethics community (Section 3.7), and pilot community (Section 3.6). The research community comprised two PhD supervisors and several other subject matter experts who gave critical input into both the choice of questions and overall questionnaire design. The ethics community guided the field research with respect to ethnographic/anthropological concerns, and the pilot community ensured that the scale being developed was usable, comprehensible and made meaningful distinctions. Taken together this process assured that the scale had, at a minimum, face validity and content validity (Bland and Altman 2002). Upon validity testing necessary modifications were made. Selected fieldwork adjustments and questionnaire amendments are discussed next.

3.6 Pilot study design, execution and selected fieldwork adjustments

Fieldwork for this PhD dissertation commenced in September 2010 through a 17-day pilot study (20 October to 6 November 2010) which was conducted on the Tulun and Nissan Atolls in the South Pacific (ie, Bougainville, Papua New Guinea), an atoll island region where forced migration is presently underway.

The purpose of this pilot study was to trial the questionnaire tool and data collection method among experts and sea level rise displaced islanders in atoll “communities of origin” (ie, Tulun Atoll, also known as the Carteret Islands), as well as among *de facto* relocated atoll islanders in mainland “communities of destination” (eg, Tinputz, Bougainville). More specifically, pilot testing was conducted in the following locations, namely Port Moresby (20-22 October 2010); Buka (23-25 October); Tulun/Carteret Atoll (26-28 October); Buka/Tinputz/Maran Village (28-30 October); Nissan Atoll (31 October to 3 November); Buka (4-5 November); Port Moresby (6 November). A total 28 questionnaires were completed. This section will not elaborate at length the processes, outcomes and findings of this pilot study. However, piloting did lead to significant insights and produced methodological amendments which are briefly discussed.

The rationale for conducting pilot studies is amply noted in the literature (Olsen 1992 p. 67; Hoddinott 1992 p. 81; Casley and Lury 1987 p. 76; Lockwood 1992 p. 168; da Corta and Venkateshwarlu 1992 p. 102). According to Casley and Lury, “*{q}uestionnaires must be tested in the field. This is normally done in the course of a pilot survey*” (Casley and Lury 1987 p. 76; emphasis original). Moreover, Hoddinott reports that “[p]ilot testing made a huge difference. It led to substantial amendments and improvements to all the questionnaires. Failing to pilot the surveys would have resulted in major gaps in the data collected that could not have been easily rectified.” (Hoddinott 1992 p. 81)

Although the original questionnaire tool did prove largely effective during piloting, its application in daily interviews nonetheless highlighted the need for minor revisions, methodological adjustments, and simplifying structure and phraseology. The most important questionnaire amendment was undoubtedly the inclusion of aspirational and motivational considerations. More specifically, the pilot study used a questionnaire that contained environment / climate related and non-environment / non-climate related “push factors” but was basically devoid of questions relating to aspirational pursuits and relevant “pull factors”. (The pilot study questionnaire is reproduced in Appendix D.1.) Following this pilot study the questionnaire tool was revised to reflect this pivotal insight. (The final questionnaire tool used during case study visits in Bolivia, Bangladesh, and Maldives is reproduced in Appendix D.2.)¹⁵

Finally, given the tremendous media publicity surrounding the relocation process of the 2,500-strong Tulun Atoll island community to mainland Bougainville (Field 2003, Vidal 2005, Pacnews 2007, BBC 2008, Morton 2009, Monbiot 2009; also Luetz 2008, pp. 20-24), this researcher was led to believe that terminological considerations were a more important element than – in hindsight – they actually turned out to be (Section 7.5).

3.7 Additional fieldwork, humanitarian partnership, ethics clearance

In concluding this chapter, this section briefly mentions methodologically relevant fieldwork features, namely, additional fieldwork not included in this study, an Academia-NGO partnership, and the study’s ethics committee clearance.

(1) Additional fieldwork not included

Before concluding Chapter 3 it is appropriate to mention that field research was also conducted in two additional countries, namely India (8-19 December 2011) and the Philippines (8-22 January 2012). Given that inclusion of additional case study chapters did not prove feasible within the budgetary constraints of time and resources available for this study, including dearth of essential translation and transcription support,¹⁶ a short synthesis report of key findings from these two country visits is available in Appendix A (India) and Appendix B (Philippines).

15 This includes fieldwork conducted in India (Appendix A) and the Philippines (Appendix B) which is only partially featured in this dissertation (Section 3.7).

16 Financial support from UNSW on the order of \$4,500 to pay for essential research translation and transcription work was helpful and is gratefully acknowledged. However, the amount fell far short of covering the Philippines and India legs of the field research visits.



Figure 3.6 This Mission Aviation Fellowship (MAF) operated Cessna Caravan 8 passenger capacity turbine float plane was used to travel from Dhaka to Bhola Island. Photo: Johannes Luetz, Bhola Island, 28 November 2011.

(2) Humanitarian research partnerships

It is also appropriate to acknowledge that this fieldwork was supported by the humanitarian and development organisation World Vision International which maintains ongoing local-level development programming in some of the research locations visited. Although grateful acknowledgment of humanitarian support is duly noted in the Acknowledgments and in Section 1.7, a few additional comments appear to be in order. The NGO significantly aided the research by facilitating access to respondents and communities which were sometimes encountered in remote and inaccessible localities, and by providing essential logistical support (eg, through local drivers, guides, interpreters, and/or provincial transportation arrangements, including an MAF¹⁷ operated Cessna Caravan 8 passengers turbine float plane which can land and take off on water, and which reduced a 14 hour arduous journey by car and ferries from Dhaka to Bhola Island to just 45 minutes of point-to-point flying time; Figure 3.6) The Academia-NGO partnership was established around a common research interest and seemed mutually beneficial both in terms of identifying critical issues at micro-level, as well as in terms of disseminating key findings at international fora.¹⁸ The partnership did not represent a conflict of interest. Given

17 The acronym MAF stands for “Mission Aviation Fellowship”. Eligibility for these flights is limited to “NGOs, donors and agencies involved in relief and development projects” (MAF 2011).

18 The INGO invited the researcher to present research findings at international fora:
(1) Invited speaker London, UK 5-9 September 2011 World Vision International Global Resilience Forum: Community Resilience & Disaster Risk Reduction and Natural Environment & Climate Issues Groups joint conference. Bolivia field research presentation. Download/s: forum information (600 KB) available @ http://luetz.com/docs/GRF2011_agenda.pdf ; presentation (63 slides, 6.2 MB) available @ http://luetz.com/docs/GRF2011_presentation.pdf ; group photo (117 KB) available @ http://luetz.com/pix/GRF2011_participants.jpg
(2) Invited speaker Ottawa, Canada 5-11 May 2010 World Vision International Global Relief Forum. Humanitarian Imperative: Towards Destination 2020. Humanitarian & Emergency Affairs (HEA) global gathering. Research presentation. Download/s: conference agenda (50 KB) available @ http://luetz.com/docs/GRF2010_schedule.pdf ; abstract (600 KB) available @ http://luetz.com/docs/leadership-wanted_abstract.pdf ; presentation (99 slides, 10.7 MB) available @ http://luetz.com/docs/leadership-wanted_slides.pdf
(3) Invited keynote speaker, panellist: Bangkok, Thailand, 11-12 Feb 2010, Multi Emergency

that World Vision International does not maintain a programming presence in the Maldives, research in the Indian Ocean archipelago benefited primarily from support offered by assistants associated with the Maldives environmental NGO Bluepeace.

(3) Dissertation ethics committee clearance

This fieldwork was granted a one-year ethics clearance (Approval No 10121) by the Arts, Humanities & Law Human Research Ethics Advisory Panel on 27 September 2010 (Appendix D.3), which was extended for another year on 27 September 2011 (Appendix D.4). A copy of the Participant Information Statement and Consent Form is available (Appendix D.5). In keeping with the institution's guidelines, confidentiality formed the basis for all interviews. Notwithstanding this default disposition, a significant number of respondents expressly agreed or even requested to have their photos included and testimonies attributed to them by name. The researcher owes particular recognition and gratitude to all these migrants who willingly shared their stories, experiences, and aspirations, and who generally and generously gave permission to depict their photos and particulars. It is owing to these personal and generous-spirited contributions that this PhD dissertation has received a distinctly human face, and become so uncharacteristically colourful and personable. This is exemplified in the following chapter which contains the first case study conducted in Bolivia.

Learning Event: World Vision Asia Pacific Regional Consultation. Humanitarian framework PhD research presentation. Panel discussion. Download/s: event agenda (90 KB) available @ http://luetz.com/docs/asia-pacific-realities_event-agenda.pdf; keynote abstract (600 KB) available @ http://luetz.com/docs/asia-pacific-realities_keynote-abstract.pdf; presentation (83 slides, 9.5 MB) available @ <http://luetz.com/docs/AsiaPacificRealities.pdf>

Chapter 4: Bolivia Case Study

4.1 Case study summary and chapter overview

Drawing on field research conducted in Bolivia from November 2010 to January 2011, this case study examines the relationships between climate change and human movement in the context of drought and water stress. Seeking to raise policy options for more equitable migration management through exploring the aspirations and concerns of Bolivian migrants in the context of growing water insecurity, climate variability, unremitting urbanisation, ongoing population growth, rising vulnerability and risk exposure, and competition for resources amid rapid environmental degradation, this research suggests that climate change is already impacting on human migration in Bolivia. Six climate change related areas of interest are discussed which seem to impact on human migration, namely the issues of (1) water management; (2) transmission of diseases; (3) deforestation and land tenure; (4) matters relating to history, culture and education; (5) rights fulfilment; and (6) financial and social cost of movement. Migration is viewed in this case study through the humanitarian lens of preparedness which by definition seeks to raise anticipatory rather than reactionary policy options. More migration in future seems highly likely. With appropriate measures in place, migration may be experienced as a positive change by communities of origin and destination.

As pointed out in Section 1.7, a short video documentary produced by the University of New South Wales (UNSW) from footage supplied by this author (hereafter identified as “Bolivia documentary”, Luetz et al 2011) supplements this thesis.¹ This documentary is frequently cited in this chapter, offering a helpful introduction to people and issues discussed. A reprint of a Spanish language publication on this research² (Luetz and Barrón 2012) is available in Appendix C.

In keeping with the research questions posited in Sections 2.7 and elaborated in Section 3.5, this case study does not seek to argue for or against the nexus between migration and climatic and/or environmental change. To the contrary, it conceptualises both present and future forced human movement, including that which may be related to cli-

1 This documentary was edited by UNSW-TV from original fieldwork recordings and is available at <http://tv.unsw.edu.au/video/bolivia-leaving-the-land> and <http://youtu.be/KBq2jNrD-yg>. A number of similar audio-visual publications from other producers are also available online (eg, Vidal 2011, Rosenthal and Delviscio 2009, Shukman 2009, Hager and Rosenthal 2009, AP 2009a, 2009b; DW-TV 2010).

2 Luetz, J M and Barrón W (2012) Sorprendido por la sorpresa: Investigación realizada en las comunidades guaraníes del Chaco boliviano desplazadas por la sequía. *Revista de la Fundación Global Democracia y Desarrollo (FUNGLODE)*. No 46. Páginas 46-53.

mate change, as causing the least disruption and suffering if dealt with *before* its manifestation.

As one of three international case studies that deal with climate change related migration the Bolivia research sought to assess the contributing role that drought or water stress may have on human movement. As explained in Sections 3.4 and 3.5, the objective was to conduct grassroots level field research across the whole spectrum of drought induced (or drought enhanced) human migration, incorporating both communities of origin and destination (Section 4.3). Moreover, there was a special emphasis on hearing from people *directly* affected by migration over and above people primarily knowledgeable *about* them.

This chapter is subdivided into seven sections. Section 4.2 discusses the climate change and human migration context in Bolivia. Section 4.3 mentions methodological specificities relating to the Bolivia research. Section 4.4 discusses quantitative and qualitative field research findings, including migration relevant environmental and non-environmental pressures (“push factors”), and migrant aspirations (“pull factors”). Section 4.5 critically examines core issues raised by the research. Section 4.6 contains a synthesis of the key discussion. Section 4.7 highlights policy implications and concludes with tentative policy recommendations.

As noted in Section 1.7, selected transcribed and translated key commentaries are available in Spanish. Short verbatim citations are detailed in footnotes, longer unabridged commentaries are preserved in Appendix E.

The next section introduces the climate change and migration context in Bolivia.

4.2 Climate change and migration in Bolivia

In Bolivia human movement appears to be influenced both by environmental and climatic change together with traditional labour and seasonal migration patterns. This section will commence with an introduction of Bolivia’s demography, migration and climate change context. Next, it will discuss the linkages between water stress, climate variability and migration in Bolivia. Finally, it will delineate the migration implications of water stress related to glacial melting.

(1) Introduction: demographic issues, migration, and climate change

According to the United Nations Development Programme (UNDP 2011) Bolivia is a Medium Human Development country with approximately 10 million citizens and a

Figure 4.1: Share of urban population in Bolivia (%) for selected years

1960	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011
36.76	39.78	45.45	55.58	61.83	64.19	64.63	65.07	65.52	65.96	66.40	66.81

(Source: World Bank 2011a, World Development Indicators WDI, 2011)

rank of 108 (out of 187 countries) on the Human Development Index (HDI).³ Despite significant recent advances in poverty reduction⁴ achieved principally “by ignoring the Washington Consensus”⁵ (Navarro 2012), the U.S. State Department still considers Bolivia as “one of the least developed countries in South America. Almost two thirds of its people, many of whom are subsistence farmers, live in poverty” (USDS 2012). A few years ago the country was known to have “some of the highest income disparities in the world” with even basic needs beyond the reach of around 60% of the population (ECLAC 2006, cited in WBGU 2007 p. 152; cf, CEPAL 2010).

Internal rural-urban migration has long shaped the Bolivian population (Andersen 2002, Mazurek 2007, Mariscal et al 2011), making it known as a “society based on mobility” (Mazurek 2007 p. 1; see also Thomas and Wittick 1981). In the short space of a few decades Bolivia effectively transformed itself from a largely rural to a predominantly urban society. With urbanisation accelerating in the 1980s Bolivia steadily increased the percentage of its urban population from 25% (1950)⁶ to 42% (1976)⁷ to 58% (1992)⁸ to 62% (2001)⁹ and to 67% (2011)¹⁰, with migration seen to have “enabled a greater degree of agency for vast sectors of the population” (Molina and Yañez 2009, p. 1; cf, Figure 4.1 based on World Bank 2011a).

3 <http://hdrstats.undp.org/en/countries/profiles/BOL.html>

4 Navarro (2012) enumerates: “[b]etween 2005 and 2010, the proportion of those in moderate poverty went down from 60% to 49.6%, while extreme poverty fell from 38% to 25%. Likewise, the unemployment rate decreased from 8.4% to 4%. The United Nations Development Programme (UNDP) points out that Bolivia is the top country in Latin America in terms of transferring resources to its most vulnerable population – 2.5% of its GNP. According to Alicia Bárcena, executive secretary of the UN Economic Commission for Latin America and the Caribbean, ‘Bolivia is one of the few countries that has reduced [the] inequality ... gap between rich and poor.’”

5 The term “Washington Consensus” was coined by Williamson in 1989 “to refer to the policy reforms imposed when debtor countries in Latin America were called on to ‘set their houses in order’ and ‘submit to strong conditionality’ – what Latin America needed, according to Washington. By ‘Washington,’ Williamson meant the political Washington...” (Peet and Hartwick 2009, p. 84; attributed to Williamson, 1990, 1997).

6 Mariscal et al (2011, p. 36)

7 Molina and Yañez (2009, p. 3)

8 INE (2001), cited by Araújo-Jorge and Medrano-Mercado (2009, p. 238)

9 Molina and Yañez (2009, p. 3)

10 UNDESA (2010)

Together “[t]he cities of La Paz/El Alto, Cochabamba and Santa Cruz today make up two thirds of the [country’s] total population, [with] Santa Cruz and El Alto [showing] the highest population growth in recent years” (Molina and Yañez 2009, p. 3). With a very large number of approximately 52-53% of heads of households identified as “life-time migrants”, Molina and Yañez (2009, pp. 1, 7-8) have expounded a trend which profoundly altered Bolivia’s demographic profile since the 1970s. The sustained flow of large numbers of household heads migrating alone, at first, and then being “followed by other members” (pp. 7-8), created an impressive “3 million first- or second-generation migrants [who today] make up a new demographic middle [or] ‘moving middle’” (p. 1).

Significantly, this so-called “migration ‘explosion’” (Mariscal et al 2011, p. 20) which accelerated in the 1980s is linked in the literature to two exogenous shocks – a nationwide prolonged drought (1982/1983-1985) and an economic growth collapse (1985/1986-1990). The first shock which triggered migration is perhaps particularly important in this discussion because it is understood by Mariscal et al (2011) as “the moment when climate change started to manifest itself” (p. 10), and Molina and Yañez (2009) citing “considerable qualitative literature on the rapid influx of displaced rural migrants (Sandoval, Albo and Graeves, 1981, 1982, 1983 and 1987), and the growth of the outskirts of the cities of La Paz and Santa Cruz” (Molina and Yañez 2009, p. 4). “From that moment onwards, migration has become part of life for Andean communities” (Mariscal et al 2011, p. 10; cf, Papadopoulou 2010, p. 38).

“In 1983 an El Niño event caused a drought without precedent in climate history ... The drought lasted until 1985. Its impact was so devastating that it disrupted the agricultural cycle: not even seeds were left. The unanimous response of the inhabitants of Northern Potosí was mass migration in two directions: i) to the large cities of La Paz, Cochabamba and Santa Cruz, the men to work in whatever jobs they could find and the women to beg in the streets; and ii) to rural areas of the departments of Santa Cruz (to Montero to work in the sugar cane harvest or to San Julián to obtain land), ... The people who migrated to rural areas hoped to solve their problems by gaining access to new land. Many did not manage to adapt to the environment in the tropics. When they heard at the end of 1985 that it was again possible to farm the land in Northern Potosí, many returned there.” (Mariscal et al 2011, p. 20)

The authors summarise that it was “starting with this major drought that [Bolivia] began to feel the effects of climate change, such as alterations in rainfall patterns, ... a delay of the planting season and a fall in the yields of some crops. The reduction in the number of days of rain and the appearance of dry periods at any time of the year is having a major impact by speeding up processes of soil erosion, changing the landscape ... Rural out-migration increased drastically” (Mariscal et al 2011, p. 20).

A very high degree of social mobility in Bolivia endures to this day and was recently noted in the UN National Human Development Report for Bolivia *Los cambios detrás del cambio: Desigualdades y movilidad social en Bolivia*¹¹ (PNUD 2010).

The general link between water security and human development outcomes is well established in the literature (UNDP 2006, UNDP 2007, Lansley 2009, Mendelsohn 2009, UNEP RRA 2009, WEF 2011, GWSP 2012). A number of scientific publications have highlighted droughts, water stress and extreme weather events as climatic phenomena likely to intensify under progressive climate change (IPCC 2007, IPCC 2012, Burke et al 2008, The Copenhagen Diagnosis 2009, Rötter et al 2011, Biasutti 2011).

A number of recent studies which are detailed below (eg, Mariscal et al 2011; Díaz et al 2010) have highlighted the consequences of climate change induced water stress in Bolivia. In this regard two trends are of particular interest for this case study as they have the potential to spawn even more human mobility. First, increasing aridity is putting growing pressure on agricultural practices, contributing to human out-migration from aridity affected areas. Second, rapid melting of tropical glaciers in the Andes is understood to jeopardise the water security of Bolivia's most populous and fastest-growing urban conglomerate El Alto/La Paz, a process which could have a significant impact on human migration. According to the U.S. State Department, El Alto is already "one of the fastest-growing [cities] in the hemisphere" (USDS 2012). These two trends will now be discussed.

(2) *Water stress, climate variability and migration in Bolivia*

In simple terms, climate change intensifies the water cycle, making wet areas wetter and dry areas drier (Lansley 2009). This process is detailed in chapter three of the *World Development Report 2010* which explains how climate change impacts on the hydrological cycle can adversely affect agricultural productivity:

"Climate change will make it harder to manage the world's water. People will feel many of the effects of climate change through water. The entire water cycle will be affected. While the world as a whole will get wetter as warming speeds up the hydrological cycle, increased evaporation will make drought conditions more prevalent. Most places will experience more intense and variable precipitation, often with longer dry periods in between [Burke and Brown 2008; Burke et al 2006]. The effects on human activity and natural systems will be widespread. Areas that now depend on glaciers and snowmelt will have more fresh water initially, but supply will then decline over time [Milly et al

11 English translation performed by this researcher: "The changes behind the change: inequalities and social mobility in Bolivia."

2008; Barnett et al 2005]. The shifts may be so rapid and unpredictable that traditional agricultural and water management practices are no longer useful. This is already the case for the indigenous communities in the Cordillera Blanca in Peru, where farmers are facing such rapid changes that their traditional practices are failing (World Development Report 2010, p. 137) ... Climate change will depress agricultural yields [adding] several conflicting pressures to agricultural production. It will affect agriculture directly through higher temperatures, greater crop water demand, more variable rainfall, and extreme climate events such as floods and droughts. It will increase yields in some countries but lower them in most of the developing world, reducing global average yields." (ibid, p. 145)

While the strengthening of the hydrological system under climate change is a well-known phenomenon (Hansen et al 2007, Hansen 2009, World Development Report 2010, UNDP 2007, UNISDR 2011), recent publications suggest that the consequences of this effect may have been underestimated (Durack et al 2012, Kerr 2012) because "The Greenhouse Is Making the Water-Poor Even Poorer" (Kerr 2012). The results of a recent study involving 50 years of observational data (1950-2000) have been synthesised by lead author Dr. Durack as "robust evidence of an intensified global water cycle at a rate of about eight per cent per degree of surface warming", representing a "significant risk to human societies and ecosystems" (CSIRO 2012). According to the study's co-author Dr. Wijffels, observations imply "that the atmosphere can actually shuttle more water from the areas that are drying out to the areas that have lots of rain faster." (CNA 2012a)

These changes are particularly relevant for the Global South because increases in climate variability will make agricultural pursuits more precarious, and potentially "too risky to pursue as a major livelihood strategy in a larger number of places in the global tropics" (Ericksen et al 2011, pp. 7,46). Mariscal et al have also pointed out that Bolivia's geographical location in the southern hemisphere

"at transitional latitude between tropical and subtropical and with a range of altitudes [makes it] more vulnerable to certain factors that alter the environment and climate such as the macroprocesses of desertification and climate change, due mainly to the influence of the phenomena known as El Niño and La Niña." (Mariscal et al 2011, p. 13)

They note further that climate change exacerbates processes of desertification which already affect more than a third of Bolivia:

"Forty-one percent of Bolivia's territory is affected by the process of desertification, and its impact is severe in the mesothermal and microthermal climate zones. Although desertification is an ancient environmental macroprocess, its combination with the more recent process of climate change means that drought and erosion are increasing, producing drastic changes to the landscape. The macroprocess of climate change manifests itself mainly in changes to the wind-borne and orographic rainfall system: an increase in

the length of dry periods, a decrease in the number of days of rain, and the appearance of torrential downpours. The temperature of the land is also increasing, bringing with it changes to periods of frost and hail and the melting of the mountain glaciers.” (Mariscal et al 2011, p. 13)

These processes in Bolivia have been confirmed in recent reports (PNUD 2011, Stibbs 2011). During a key informant interview conducted for this case study at Universidad Mayor de San Andrés La Paz (UMSA), Dirk Hoffmann of the Bolivian Mountain Institute affirmed that agricultural practices in Bolivia were increasingly coming under pressure from significant delays (on the order of 3-4 weeks¹²) in the start of the rainy season (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111).

According to a study (UMSA 2010) conducted by the Universidad Mayor de San Andrés La Paz, the southern plains of Bolivia are already experiencing a significant drying trend. During an expert interview conducted for this case study Dr. José Luis Montaña explained the relevance of the study in terms of impact on migration: “Aridity continues to increase ... and [Bolivia] will have serious problems because the more arid this zone becomes, the more migration will result ... to major population centres. Hence climatic variations are quite dramatic for us in Bolivia.”¹³ (Q30/Exp/Dest/UMSA-LaPaz/20110111)

There are indications that prolonged drought has been contributing significantly to out-migration from Bolivia’s Gran Chaco, a hot and semi-arid region in the Río de la Plata basin located in eastern Bolivia, and extending into Paraguay and northern Argentina (Navia 2010, Rojas and Urgarte 2012).

Moreover, respondents in various fieldwork locations recurrently affirmed that in the past the rains were more reliable (eg, Q7/Migr/NMigr/Orig/El Cruce/20101210; Q8/Migr/NMigr/Orig/Ipatimiri/20101211; Q11/Exp/Orig/Vicinity of Camiri/20101213), and that as a result of variable precipitation agricultural pursuits were increasingly failing (eg, Q14/NMigr/Orig/Sinaí/20101216; “Bolivia documentary,” Luetz et al 2011; Figures 4.2 and 4.3).

Similar agricultural problems are reflected in other research carried out in 41 Bolivian *comunidades*: “most community members have access only to eroded smallholdings. Population growth and powerful outside demands for land and water have driven such com-

12 Interview conducted in German; verbatim rendition of this comment: “Die Regenzeit setzt drei bis vier Wochen später ein.” (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111)

13 Interview conducted in Spanish; verbatim: “La aridez sigue aumentando ... y vamos a tener serios problemas, porque conforme sea mas árida esta zona, va a ver mayor migración ... a los centros mas poblados. Entonces es bastante dramático para nosotros el tema de las variaciones climáticas en el territorio boliviano.” (Q30/Exp/Dest/UMSA-LaPaz/20110111)



Figure 4.2: Dead livestock throughout Bolivia's Gran Chaco reflect the severity of recent droughts. Given the enormous freshwater demands of cattle the viability of livestock tenure as a sustainable livelihood appears highly questionable, especially in the context of projections that climate change will further enhance aridity, variability, desertification and drought-conducive conditions (Painter 1995, 1995a; FAO 2006). (Photo: Johannes Luetz; 8 December 2010).



Figure 4.3: Agriculturalist Adan Antenor (second from left with his wife and grandchildren) affirms that subsistence agricultural practices are increasingly failing in Bolivia's Gran Chaco due to erratic weather, prolonged frost, and unreliable precipitation (Photo: Johannes Luetz; Q7/Orig/Exp/Migr/EICruce/20101210).

munities beyond their land's carrying capacity" (Boelens et al 2010a, p. 14; attributed to Zoomers 2010). It appears climate change is implicated in the underlying water resources reduction:

"In the Andes region, most rural poor are *minifundistas* [smallholders] who have access to small parcels of land but no access to sufficient water resources. [...] In recent decades, the increasing population pressure has contributed to ongoing processes of land fragmentation and environmental degradation. At the same time, competition for water has intensified... Furthermore, apparently as the result of climate change, there has been a reduction in the quantity of available water." (Zoomers 2010, p. 146)

Navia (2010) observes that three consecutive years of drought (2008-2010) have led to a dramatic increase in seasonal labour migration to the sugar cane plantations traditionally harvested annually near Santa Cruz and Tarija (see also Mosquera et al 2004). Citing a study conducted by the humanitarian organisation Visión Mundial Bolivia (VMB 2010; on file with this researcher), Navia reports a significant rise in the number of out-migrating families from drought affected areas, increasing from 400 families in 2009 to between 1,000 and 1,500 in 2010 (Navia 2010).

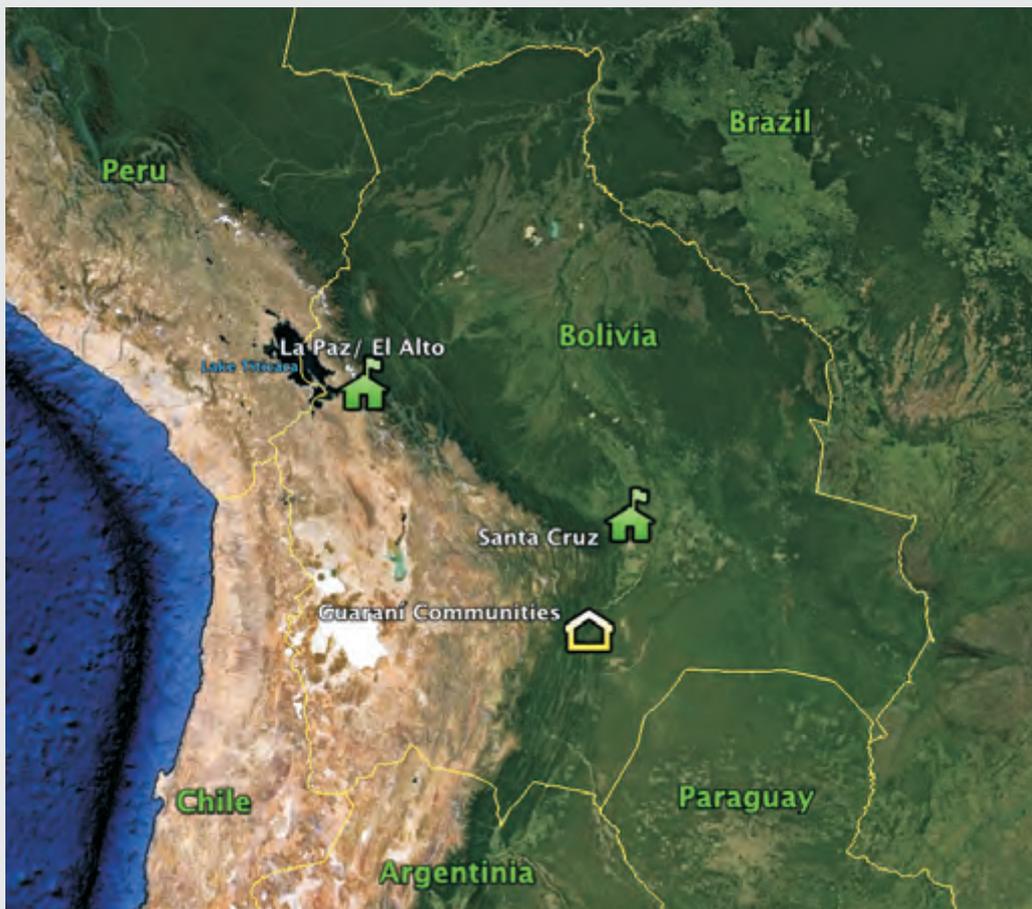
Field research for this Doctoral Study also noted dozens of abandoned houses, many of which had their front doors “locked” only with a wire or a piece of string or a cloth (Figure 4.4; “Bolivia documentary”, Luetz et al 2011). The influx in out-migrating *campesinos* was initially discovered by Visión Mundial Bolivia through a process of quarterly monitoring visits to drought affected communities where the humanitarian organisation supports development projects. During a key informant interview for this case study at its Camiri head office, the organisation’s regional manager Gualberto Carballo described how the rural-urban migration trend was initially discovered:

“In the implementation of our development projects, for example health, education, economic development projects, child protection, HIV/AIDS, we ensure continuous monitoring of sponsored children enrolled in our programmes. At least once every 90 days a child is visited in the community to verify that he [or she] is living in the community. From March, beginning of April, we began to realise that according to this monitoring process a large percentage of children were absent in the communities. This caught our attention. Concerned about this situation, we went to check with each family or the leaders of these communities about the factors that caused this [out-]migration to other parts [of Bolivia]. The worsening drought is one of the factors we were able to verify. The drought began to be felt from January this year [2010]. Think about it: from January to date, which is the 7th of December, it didn’t rain, apart from two recent rains a few weeks ago. The situation is very difficult. When the family does not have food, they have to go out to find work, whether as domestic workers or as *cargadores* [load carriers] at the markets or ... at the *zafra*¹⁴ [sugarcane harvests]. The condition of families who leave their communities in search of better conditions or to earn more money sometimes gets worse, because they come back with more debt, and the situation [here] has not changed, but has even worsened. This drought was one of the worst that ever occurred. Although the whole Chaco is a dry zone – we have always had droughts – this year was stronger, more than any other year, wherefore in April the national government declared this area a natural disaster zone.” (Gualberto Carballo; Q19/Exp/Orig/Camiri/20101207; Spanish verbatim citation available in Appendix E.1)

While seasonal labour migration has long been embraced as a form of livelihood diversification by Guaraní communities living throughout Bolivia’s Gran Chaco, the drought is understood to have induced an unprecedented number of *campesinos* to turn their backs on rural subsistence agriculture and migrate to the cities; apparently, many are not returning (Navia 2010, Girard 2012 p. 35; VMB 2010; Q19/Exp/Orig/Camiri/20101207).

14 The term “*zafra*” [sugarcane harvest] is used in this case study to denote the experience of hard exploitative labour associated with sugarcane harvesting and processing. Migrating *a la zafra* indicates the intention of seasonal labour migration. A study called “*Caña dulce, vida amarga*” (Sweet cane, bitter life), conducted by the International Labour Organization (ILO) and the United Nations Children’s Fund (UNICEF), found overwhelming evidence linking *zafra*s to blatant child rights abuse and child labour (Mosquera et al 2004; cf, Simón et al 1980).

Figure 4.4: Abandoned houses in out-migration affected Guaraní communities visited during field research in Bolivia's Gran Chaco (Photo: Johannes Luetz, December 2010)



Guaraní communities in and around Camiri (including Charagua, El Cruce, La Brecha, Itatiki, Guaichindi, Ipatimiri, Eiti, Sinai, Ivamirapinta) are characterised by out-migration denoted by yellow house. Urban catchments include Bolivia's two biggest cities Santa Cruz de la Sierra and La Paz, denoted by green houses (includes *zafra* in La Bélgica). Map: Google Earth.

(3) Water stress related to glacial melting: possible implications for migration

The second climate change induced issue of relevance in this case study is accelerating glacial melting that could see many tropical glaciers across the Andean Cordillera disappear within 10-20 years (Barnett et al 2005, Hoffmann 2007, Hoffmann 2008, de la Torre et al 2009, UNDP 2007 p. 97, World Bank 2008, Rabatel et al 2013, Messner 2009), potentially threatening the water security of Bolivia's most populous and fastest-growing urban conglomerate La Paz/El Alto, and significantly, reducing hydropower production which accounts for roughly 70% of the electricity generated in Bolivia (de la Torre et al 2009, p. 12).

The important role of glaciers in supplying steady year-round water supplies is well-known. During the winter months these glacial "water banks" build up stores of water in the form of snow and ice which they subsequently release during the summer months (Barnett et al 2005, Coudrain et al 2005, Mendoza Rodríguez 2007, UNDP 2007, Rabatel et al 2013). When this glacial equilibrium of recharge (accumulation) and discharge (ablation) is maintained over time, glaciers can contribute to stabilising a region's water security: "[t]he flow sustains river systems that are the lifeblood of vast ecological and agricultural systems" (UNDP 2007, p. 95-96). Serving this function, the Andean mountain glaciers have been described as South America's "virtual water towers, assuring year-round water flows" (Coudrain et al 2005, p. 930), and offering the world's highest capital city La Paz¹⁵ a "natural low-maintenance storage" (Rosenthal 2009).

Over recent years scientists monitoring the Andean glaciers surrounding La Paz/El Alto – many believed to be 18,000-20,000 years old (Kormann 2009, GAIA Noticias 2012, Painter 2009) – have warned that Bolivia's glaciers are showing signs of melting faster than previously projected.¹⁶ The Chacaltaya glacier is a case in point. Extending in altitude from 5,140 to 5,360m above sea level (Ramírez et al 2001), this glacier's main claim to fame was as the world's highest-lying skiing station (Coudrain 2005, Kormann 2009, Shukman 2009, Chávez 2009). "Just 20 years ago skiers from around the world would travel to Chacaltaya to say they had skied down the world's highest ski run" (Painter 2009). Although melting had been observed for decades (Mendoza Rodríguez 2007, Coudrain et al 2005, Barnett et al 2005), with glacial recession accelerating in the 1970s/1980s (Rabatel et al 2013, Hoffmann 2008, Soruco et al 2009, Francou et al 2003 p. 11), the Chacaltaya was not expected to melt away until 2013 (Francou et al 2003

15 With the official seat of Government, La Paz is Bolivia's administrative capital; with the country's Supreme Court, Sucre remains Bolivia's constitutional capital (Encyclopædia Britannica 2012).

16 With their small size – approximately "80% of Bolivia's 1,830 glaciers are smaller than 0.5km² in size" (Hoffmann 2007, p. 17) – Bolivia's glaciers are known to be particularly susceptible to climate change induced melting.

cited by Vergara et al 2007 p. 4; de Torre et al 2009 p. 12, World Bank 2008) or 2015 (Painter 2009, Shukman 2009, Weinberg 2010) or 2020 (Rosenthal 2009, Hager and Rosenthal 2009). In 2001 a scientific study lead-authored and published by one of Bolivia's foremost glaciologists had projected: "[i]t is most probable that the glacier will completely disappear in the 10-15 year range" (Ramírez et al 2001, p. 193).

But the glacier's retreat "outpaced [Ramírez's] wildest predictions ... It disappeared this year" (Rosenthal 2009). At the time of a field research visit for this case study on 11 January 2011 (Figure 4.5) the Chacaltaya glacier was already gone, having completely melted away in 2009 (Rabatel et al 2013, Brown 2011 p. 53, Shukman 2009, Rosenthal 2009, Painter 2009, Rosenthal and Delviscio 2009; Chávez 2009, Weinberg 2010; Q26+28/Exp/Chacaltaya/20110110; cf, "Bolivia documentary", Luetz et al 2011).

The final downhill ski descent across a tiny patch of snow slush was apparently made in December 2009 by Dirk Hoffmann of the Bolivian Mountain Institute (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111) and was captured on motion picture camera by the Associated Press (AP 2009a, AP 2009b). Synthesising the effect of glacial retreat, Ramírez has described the prospect of water stress in Bolivia as "a problem that begins now but will become more serious as other, much larger glaciers melt as well" (Shukman, 2009).

When glacial melting rates become faster than the accumulation of snow, glaciers lose mass and no longer provide a steady flow of water, resulting in "a temporary but unsustainable net increase in hydrological runoffs" (Vergara et al 2007, p. 4), signifying that "[w]hile the glaciers are melting, flows are high, increasing the threat of flooding. But this is a temporary phenomenon ... eventually the volume of melt water will decline" (de Torre et al 2005, p. 12), potentially threatening "the livelihoods of many people and the future of ecosystems with numerous rare and endemic species [and creating] water shortages for millions of people" (Coudrain et al 2005, p. 930). In 2007 the United Nations warned that glacial melt water stress in this part of the world could seriously hamper prospects of equitable human development:

"Peru and Bolivia are the location for the world's largest expanse of tropical glaciers – around 70 percent of the total for Latin America is in Peru and 20 percent in Bolivia. These countries are also home to some of the largest concentrations of poverty and social and economic inequalities in Latin America – the world's most unequal region. Glacial melt threatens not just to diminish water availability, but to exacerbate these inequalities." (UNDP 2007, p. 99)

A recent World Bank study warned that declines in water supplies can "put both the human population and the food supply at risk, and higher water costs can ultimately impair the ability of these cities to maintain vibrant local economies" (World Bank 2008). Ac-

Figure 4.5: At 5,300m above sea level the Chacaltaya glacier was known as the highest-lying skiing station in the world. The glacier completely melted in 2009, leaving behind a rocky slope, redundant lift and questions about Bolivia's future water security. (Photo: Johannes Luetz, January 2011)



According to the study the twin cities of La Paz/El Alto are presently drawing 30% of their water supply from glaciers (ibid), but water and time are running out, a point noted by Barnett et al (2005) who warn of “serious situations developing in ... South America” (p. 307):

“It is clear that [the region is] headed for a water-supply crisis. Better water management techniques can help, but cannot solve the problem without significant changes to agriculture, industry and lifestyle. [...] Time is running out for nations ... whose water supplies are dependent on mid-latitude glaciers, to understand just what the future might hold for them. How much they can do is uncertain given the several decades of warming that will occur as a result of past actions, even if greenhouse emissions were halted at today’s levels [Hansen et al 2005], but perhaps the initiation of strategic planning will be motivated by the prospect (and what is rapidly becoming the reality) of diminished water supplies. [...] Detailed studies of the future impact of global warming on water resources in these regions are long overdue.” (Barnett et al 2005, pp. 307-308)

According to the World Bank, “[m]elting glaciers will have serious consequences for Andean cities’ water supply, with 77 million people expected to be under severe water stress by 2020” (World Bank 2009). Another study on water availability for the La Paz/El Alto metropolitan area conducted by the Institute of Hydraulics and Hydrology at Universidad Mayor de San Andrés La Paz (UMSA) concluded: “there will be a severe shortage in the drinking water supply within only a few years” (Hoffmann 2007, p. 17).



Figure 4.6: “Toda persona tiene derecho al AGUA” (English: “All people have a right to WATER”) Photo of graffiti taken during field research for this case study indicates water stress as a concern for the inhabitants of Bolivia’s fastest-growing urban catchment El Alto. (Photo: Johannes Luetz, January 2010)

Recent reports appear to indicate early signs of water stress in El Alto (Rosenthal 2009, Rosenthal and Delviscio 2009, Hager and Rosenthal 2009, Shukman 2009, Kormann 2009, Stibs 2011, BBC 2013), with some campaign groups estimating that “as many as one quarter of the city’s population do not have ready access to water” (Shukman, 2009), and some people apparently affirming “that there are often disputes over access to water and that fights occasionally break out” (ibid; cf, Hager and Rosenthal 2009). A concern over water security in El Alto also appeared to be reflected by several graffiti photographed and filmed during fieldwork (eg, Figure 4.6; cf, “Bolivia documentary”,¹⁷ Luetz et al 2011).

In summary, rapid melting of tropical glaciers in the Andes threatens to undermine the water security of Bolivia’s largest urban conglomerate El Alto/La Paz which has been a magnet for in-migration, described in the literature as Bolivia’s “principal destination for internal migrants” (Thomas and Wittick 1981). According to Kormann (2009), “[a] few decades ago, El Alto was just a small barrio next to the airport. In less than 20 years, the population has grown from 200,000 to 900,000, without any urban planning.” With its sprawl of informal settlements stretching up to an altitude of 4,150m above sea level, La Paz’s poorer twin city El Alto boasts that “[i]t is the fastest growing city in Bolivia, due to a trend of movement from Bolivia’s rural areas to the La Paz region that started with the rural reform of 1952 and increased in the last 10 years” (elaltobolivia.com¹⁸).

Importantly, according to Thomas and Wittick (1981), “La Paz presents an example of an inverse relationship between elevation and socioeconomic class. As one leaves the Altiplano [El Alto] and proceeds down valley [towards La Paz], the income and educational level of the Paceños generally increases” (p. 42). Hence it seems unsurprising that

¹⁷ See relevant video footage from 1:40-3:10.

¹⁸ Last visited 2 May 2012.



Figure 4.7: The city of La Paz (Nuestra Señora de La Paz, English: Our Lady of Peace) is built up from the bottom of a huge “bowl” surrounded by the high mountains of the Altiplano (high plain). Stretching up to an elevation of 4,150m above sea level, its poorer twin city El Alto is the highest part of the urban conglomerate. (Photo: Johannes Luetz, 1 January 2010)

water stress is apparently affecting the poorer twin city El Alto first (Hager and Rosenthal 2009). The view of La Paz as seen from El Alto is depicted in Figure 4.7.

Shukman (2009) reports that the “drift from the countryside to the urban areas seems likely to accelerate... – adding to the already creaking water infrastructure of El Alto and La Paz.” Faced with massive in-migration on the order of 35,000 to 50,000 people annually (Stibbs 2011)¹⁹ and a combination of glacial melt water decline and reduced rainfall, the governor of La Paz region Pablo Ramos is cited in the media as contemplating planned migration measures to deflect potentially unmanageable consequences: “[w]e are thinking about a planned programme of migration, mainly to the north of the region ... For sure there’s going to be a huge movement of people – planned and unplanned” (Shukman 2009).

It is not clear what precise cumulative impact progressive climate change and related water stress will ultimately have on future human mobility in Bolivia. However, given that Bolivia already depends on “other countries... for over 50 percent of [its] renewable water resources” (FAO 2003, p. 21), and seeing that in the Bolivian Altiplano “local scarcity conditions ... tend to coincide with the most populated areas of the region” (ibid, p. 41), the compounded effect could be significant. Regional poverty, inequality, social vulnerabilities, water insecurity, conflict and migration potential already appear to be considerable in terms of scale and scope (Messner, 2009, WBGU 2007, UNDP 2007, p. 99; Barnett et al 2005, pp. 307-308). In this context the dissertation’s preparedness priority of what to do about this if, and importantly, *before* need arises, appears helpful irrespective of which contingencies will ultimately present themselves.

Methodological details pertaining specifically to the Bolivia research are discussed next.

19 Attributed to Dirk Hoffmann of the Bolivian Mountain Institute.

4.3 Methodological specificities of the Bolivia research

Data for this case study were sourced in Bolivia over the course of eight weeks (24 November 2010 to 20 January 2011)²⁰ and are supported by observations made and conversations conducted during that time, as well as during months of preparation and follow-up. The Bolivia field research was also aided by a preceding scoping visit (14 December 2009 to 12 January 2010) which enhanced familiarity with pertinent issues (eg, cultural, linguistic, ecological and socioeconomic vulnerabilities), and established critical networks in areas of translation/interpretation, logistics and overall research support.

To appreciate the forced migration experience over time and space from drought induced displacement to temporary or permanent relocation, fieldwork in Bolivia commenced in Bolivia's Chaco Region ("communities of origin") in and around Camiri²¹ where prolonged drought conditions were (and are) sustaining high levels of rural out-migration, and concluded in Bolivia's two biggest urban catchments ("communities of destination") Santa Cruz de la Sierra²² and La Paz/El Alto²³ which are sustaining high levels of in-migration. As made clear in Sections 3.4 and 3.5, this comprehensive micro-level approach sought to contribute to a holistic understanding of the complexities of rural-urban migration in Bolivia. As mentioned in Section 3.4, a consolidated map detailing several fieldwork sites is available at <http://goo.gl/maps/byN0F> .

Given that individual interviewees were recurrently encountered in groups, generally made up of the respondent and by-standing acquaintances who also elaborated on issues discussed by volunteering their own personal experiences, the total number of people interviewed is considerably greater than the number of respondent names recorded on paper questionnaires. With a minimum of 15 such focus group discussions taking place, and with between 2 and 8 respondents participating in each conversation, the total number of respondents queried in this field research is estimated by this researcher to be 82. This estimate is based on photos (eg, Figures 4.8 and 4.9 which depict typical focus group interview situations) and voice and video recordings, including pertinent transcripts. In a more narrowly defined sense there were a total of 34 semi-structured interviews conducted in a personal, face-to-face manner, of which 19 were carried out in rural

20 Drought induced migration related qualitative and quantitative PhD research conducted in Camiri, Charagua, El Cruce, La Brecha, Itatiki, Guaichindi, Ipatimiri, Hacienda Yatigüigua, Eiti, Sinai, Ivamirapinta, La Bélgica, Santa Cruz de la Sierra and La Paz from 7 December 2010 to 12 January 2011.

21 Camiri field research dates: 6-18 December 2010.

22 Santa Cruz dates: 24 November to 5 December; 19 December 2010 to 6 January 2011; 13-20 January 2011.

23 La Paz / El Alto fieldwork dates: 7-12 January 2011.



Figure 4.8: Night-time focus group discussion in Ivamirapinta (“community of origin”). (Photo: David Mayer; Q17/NMigr/Orig/Ivamirapinta/20101217).



Figure 4.9: Rosa Sanchez (2nd from left) and her family after interviews at 15 de Septiembre, Santa Cruz (“community of destination”). (Photo: Johannes Luetz; Q23/Migr/Dest/15 de Septiembre-SantaCruz/20101231).

“communities of origin,”²⁴ and the remainder in rural²⁵ and urban²⁶ “communities of destination”. Of all respondents queried, 94% had Bolivian nationality,²⁷ 88% were religious (41% Catholic, 41% Protestant, 3% Mennonite, 3% Cristiano), and 76% were male. In terms of ethnic background, 50% were Guaraní, 24% “mestizo” (mixed), 15% Aymara, 6% Quechua, and 6% Caucasian.

Eleven key informant interviews (32% of the sample) were conducted with “experts” (including local government officials, academics, environmentalists, humanitarian relief workers and disaster management professionals), and the remainder with “migrants” and

24 Communities of origin: Camiri, Charagua, El Cruce, La Brecha, Itatiki, Guaichindi, Ipatimiri, Hacienda Yatigüigua, Eiti, Sinai, and Ivamirapinta.

25 Includes La Bélgica, located 41km to the north of Santa Cruz de la Sierra. With its vast sugarcane fields, worker accommodation centres, and sugarcane processing plant Ingenio Azucarero La Bélgica S.A. “Don Guillermo”, La Bélgica has long been a magnet for seasonal migrants.

26 Santa Cruz de la Sierra, La Paz, El Alto

27 The only non-Bolivians queried were two Germans: an academic at Universidad Mayor de San Andrés (UMSA) in La Paz, and an environmentalist and Spanish interpreter with more than 10 years experience living in Bolivia.

“non-migrants”. Given that multiple respondents were recounting experiences both as “migrants” and “non-migrants”²⁸ it appeared impossible to establish a clear statistical picture with respect to the “migrant”-“non-migrant” ratio. Of all interviews conducted, 32 were carried out in Bolivia’s *lingua franca* Spanish (of which 29 benefited from Bolivian guides and/or interpreters), one in English, and one in German. Respondent ages ranged from 17-66 years, with 45 years as the average age.²⁹

Unlike in Bangladesh (Section 5.4) and Maldives (Section 6.4), preferred migration destinations and preferred nomenclature did not feature prominently in the Bolivian research and are therefore not discussed in field research findings (Section 4.4). Having discussed methodological and statistical specificities the next section looks at the results.

4.4 Field research findings

Research results discussed in this section can be broadly grouped into qualitative and quantitative subsections. Qualitative findings are produced first and are supported by a selection of three respondent commentaries which provide a richer context and offer fine-grained insights not otherwise captured by quantitative results. Quantitative results which follow may be subdivided into migration push factors (environment related and non-environment related) and migration pull factors. A discussion of findings will be undertaken in Section 4.5.

Qualitative findings

As made clear in Section 1.7, the inclusion of longer verbatim quotes is a deliberate emphasis of this research which aims to maximise contextuality/originality and minimise interpretive bias by allowing respondents to speak for themselves without being interpreted, shortened or paraphrased. As will be seen, the following three key commentaries and photos shed light on views, conditions, experiences, interpretations and value judgments pronounced by respondents in communities of out- and in-migration.

(1) Figure 4.10 and the corresponding key commentary reflect the experience of out-migration from Comunidad El Cruce (“communities of origin”) where prolonged drought conditions have prompted hundreds of subsistence agriculturalists to leave in search of alternative livelihoods. Importantly, community leader Adan Antenor (Figure

28 As explained in Sections 3.4 and 3.5, categories are non-static.

29 All but two respondents disclosed their age, wherefore the average age is derived from a sample of 32.



Figure 4.10: Community leader Adan Antenor (left) together with his wife and grandson; Comunidad El Cruce, “community of origin/out-migration”; (Q7/Exp/Migr/NMigr/El Cruce/20101210-16; Photo: Johannes Luetz; 10 December 2010)

4.10, left) may be seen as the primary reason why these communities were initially selected for field research: when drought conditions deteriorated into a humanitarian emergency, Mr. Antenor called on Santa Cruz based *EL DEBER* newspaper to feature the “Éxodo en el Chaco por los cambios climáticos [climate change exodus from the Chaco]” (Navia 2010), a publication which ultimately prompted this author to conduct fieldwork in relevant communities mentioned in the article. Several people cited by Navia were subsequently visited by this researcher to participate as respondents. Given Mr. Antenor’s prominent leadership role in raising awareness of the region’s dramatic depopulation, his commentary is featured first and foremost. It reflects the perspective of a local farmer and civil society leader.

“Right now the Community of El Cruce has 623 inhabitants, around 95 families are still here. About 50% ... have left: 30% are gone mid-term to work in the *zafra*, 20% are away short-term in Camiri, Gutierrez) ... Those who are still here pursue *agricultura*. The last rains came in January 2010, we reacted too late. I should have called for help sooner [referring to the decision to call the *El DEBER* journalist who featured the human exodus [Navia 2010].³⁰ There has always been annual [seasonal] migration, but not like today! This year saw unusual weather. The normal temperatures for the end of May, and into June, are around 12-15°Celsius. This year the temperatures dropped to -8°Celsius, this never happened before, birds fell from the sky, dead. This year [2010] was the first year that it was this cold. In the past it was also cold, but not like this year. For one week temperatures stayed low, then temperatures normalised but the damage [to our crops] had been done. The drought also began to be felt from around March. After some rains in January there were no more rains from mid-March to 20 November, a new phenomenon. A total six families from Comunidad Sinaí migrated to Argentina, four families from El Cruce also went to Argentina, six families from Guachindi also went to Argentina, plus some 100 people left as individuals ... These climate changes – especially when people are caught by surprise – also brought diseases: *tos* [cough], *fiebre*

30 Article available @ <http://www.eldeber.com.bo/vernotasantacruz.php?id=100724213953>
English translation available @ <http://luetz.com/misc/climate-change-exodus-in-the-chaco.pdf>



Figure 4.11: Nicolas Manuel Sanchez (middle), together with his wife and two children, discuss the severity of the drought under the shade of a tree: “four days ago the first rains came. Before that, for more than one year there was not a drop.” (Comunidad Ipatimiri, (Q8/Exp/Migr/NMigr/Ipatimiri/20101211; Photo: Johannes Luetz)

[fever], *resfriado* [cold], and other problems. In response to the drought the government provided emergency relief: 7.5 kg of rice, *frejol cumandita* [beans], flower, oil and sugar, but that was gone in 15 days ... It is also the poor, degraded soil that is causing the migration to Argentina when people search for more and better land.” (Adan Antenor, Vice Presidente Comité de Vigilancia de la Capitanía GKK del Municipio de Gutiérrez, Comunidad El Cruce; community of out-migration; interviews conducted with Mr. Antenor 10-16 December 2010; Q7/Exp/Migr/NMigr/El Cruce/20101210-16; Figure 4.10)

(2) Figure 4.11 depicts the Capitan Grande de la Zona, Nicolas Manuel Sanchez (middle), together with his family. The corresponding key commentary reflects cross-cutting issues commonly shared by drought affected communities as perceived through the lens of a local government administrator.

“[As] Capitan Grande de la Zona I am responsible for 20 communities, about 8,000 people ... In this zone ... more than 2,000 people left in 2010 because of the drought, individuals and families. Of the 2,000 who left around 50% have since returned, the other half stayed. They went to the *zafra* and also to Argentina. In total 516 children left ... Last year there was also migration, but not like this year when people began to leave from January. Some lost everything ... Normally people sow in November and harvest in February. But this drought was very bad. The first rains only came four days ago in December. For more than one year there was not a drop. In the past the rains were more *puntual* [reliable], they used to come in September or October. Now precipitation is more erratic ... Whether a family migrates is a father’s decision. It is often determined by the weather. If the weather is good, people will stay ... Almost all people in these communities are *agricultores* [farmers]. People are also migrating on account of population growth and overcrowding; there simply isn’t enough space to sow, so people are unemployed and seek opportunities elsewhere. But the communities are safe. There are no rapes, for example ... The most important aspiration? Employment! [The tipping point?] When people have no more food to eat they have no choice but to go. Sometimes *conscriptores* [recruiters] come with trucks to convince the people to go and work in the *zafra*. But in the city they disappear – it is a very individualistic lifestyle. Here there is *reciprocidad* [reciprocity] – people help each other. In the city people are



Figure 4.12: Rosa Sanchez Amador describes the difficulties of facing migration and integration with minimal education, vocational training and Spanish language learning at her new home in Barrio 15 de Septiembre, Santa Cruz de la Sierra, “community of destination”; (Q23/Migr/Dest/Santa Cruz-Barrio 15 de Septiembre/20101231; Photo: Johannes Luetz).

left alone to fend for themselves.” (Nicolas Manuel Sanchez, Capitan Grande de la Zona; Comunidad Ipatimiri; community of out-migration; Q8/Exp/Migr/NMigr/Ipatimiri/20101211; Figure 4.11)

(3) Figure 4.12 and the corresponding key commentary reflect the experience of a migrant from La Brecha, Isoso, in her new home in Santa Cruz de la Sierra, Bolivia’s largest city (“community of destination”).

“Sixty Guaraní families live in this *barrió* [neighbourhood] called “15 de Septiembre”. I left Isoso years ago with my baby and husband. I’m from La Brecha (Tamachindi). My brother was already here in Santa Cruz studying theology, now he works as a pastor. We moved here when my mother followed him to Santa Cruz. Now most of my family are here. I always thought we were only coming for a short time but now nobody wants to return. Sometimes I return home to visit. My father is still alive in La Brecha. This year he brought in only a very modest maize harvest. [...] My husband is a [subsistence] farmer but now he works as a security person at the cemetery, it is dangerous work, people break in and rob the graves. [...] There are three families who live together with us (Figure 4.9 depicts a related focus group conversation). My brother owns the place so I can live here for free. It was very difficult to adjust to life in Santa Cruz. There is much more pressure here to make money and lead a *buena vida* [good life]. I’m also very shy. When we came to Santa Cruz everything was expensive and culturally difficult, it was very difficult...!³¹ Here you have to have a profession. We women are very *timidas*³² [shy], and we go unnoticed. Having a profession would be a big help. My people [Guaraní] are not assertive, we are afraid and hold back. We are also challenged because we don’t know the Spanish language well. [...] My dream was to be an *enfermera auxiliar* [assistant nurse] in Charagua or Camiri, but you need education, *una profesión*

31 Similar adjustment problems are experienced by other ethnic minority groups living in Bolivia (Méndez Vedia, 2012).

32 Incidentally, Ernesto “Che” Guevara’s Bolivian diary also mentions “a Guaraní community whose members are very timid and who speak – or pretend to speak – very little Spanish.” (Waters 1994, p. 202)

abre puertas [a profession opens doors]. But I only finished year 2 of primary school – *poco* [little]. [What I learned from all this is that migrants should] work hard to have a profession *before* [emphasis original] they move, the benefits [trickle down] into everything else. I've always wanted to return [to my community of origin] but now my son wants to stay. My father always begs me to return to Isoso but it's hard, it's difficult if one [spouse] wants to stay, one wants to return. Guaraní families want to be together. When we came here I worked afternoons until 19:00 hours as a domestic worker at a *cuarto externo* [external quarters], five years ago I made around 500 Bolivianos,³³ then I became sick, withdrew, started my business with my savings. Now I create *artisanía* [handicrafts] which I sell at the Casa de la Cultura. They give me an *espacio* [space] near the Plaza 24 de Septiembre [Santa Cruz Central Plaza]. There are 49 women *tejedoras* [weavers] like myself, I learned the trade when I was 13." (Rosa Sanchez Amador; Barrio 15 de Septiembre, Santa Cruz de la Sierra; "community of destination"; Q23/Migr/Dest/Santa Cruz/20101231; Figure 4.12)

After these selected qualitative findings, the next subsection looks at quantitative results.

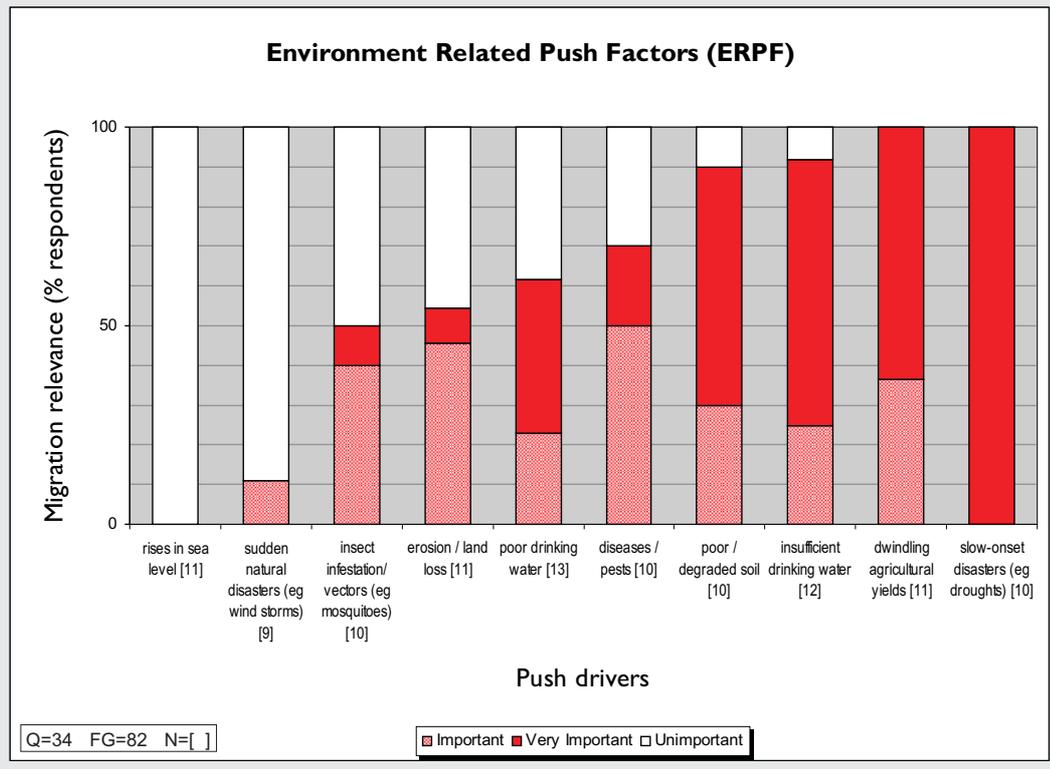
Migration push factors: environment related pressures

Thirteen respondents partially or completely discussed and rated environment related (Figure 4.13) migration pressures ("push factors"). Not every interviewee addressed every category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample size and incomplete data set, discussions yielded noteworthy insights.

Problems associated with "slow onset disasters (eg droughts)" were viewed as the most important environment related push factors (ERPF) for migration, with 100% of respondents considering them "very important" (10/10). The role of the prolonged drought for migration was also highlighted through other water related issues such as "poor drinking water" which 62% considered either "important" (3/13) or "very important" (5/13), or "insufficient drinking water" which 92% considered either "important" (3/12) or "very important" (8/12). In sum, the impact of prolonged water stress upon a rural area dependent on subsistence agriculture is perhaps most dramatically demonstrated by 90% of respondents queried considering "poor/degraded soil" as either "important" (3/10) or "very important" (6/10), and 100% of respondents queried considering "dwindling agricultural yields" as either "important" (4/11) or "very important" (7/11) factors impacting on migration. Problems relating to "erosion/land loss" differed markedly from community to community and were heavily influenced by prevailing

33 Approximately US\$ 70 (ie, on the day the interview took place: 31 Dec 2010; Section 1.7).

Figure 4.13: Environment Related Push Factors (ERPF)



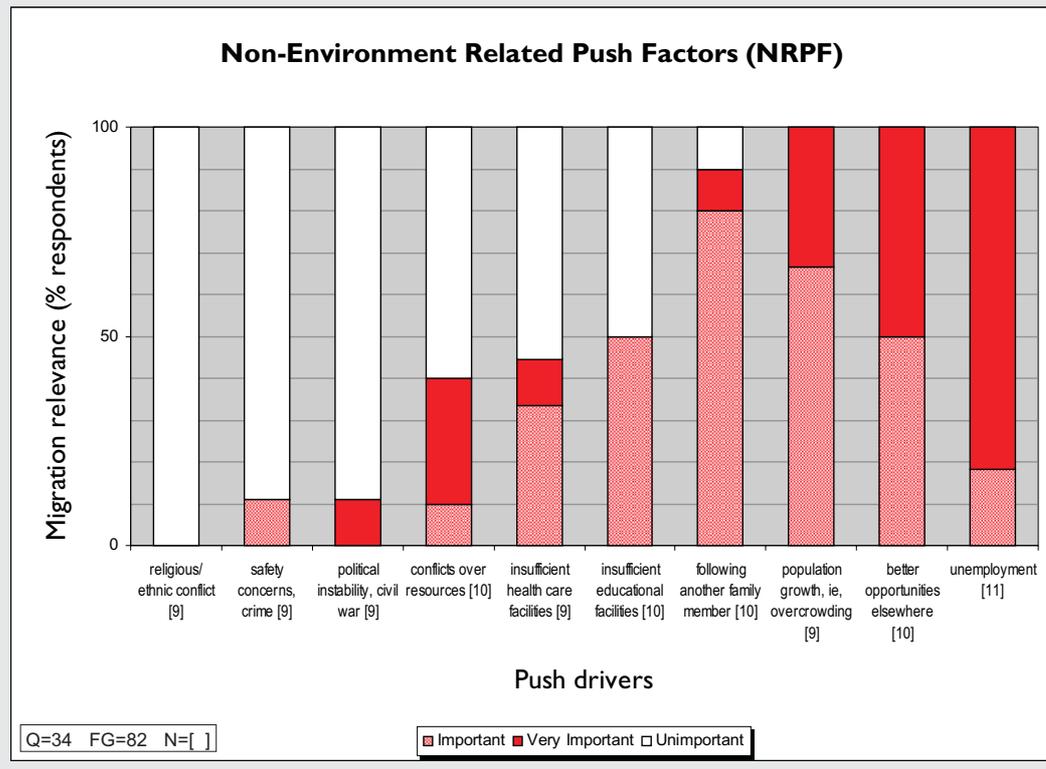
microclimatic conditions in communities of investigation. In some communities entire hillsides were eroded which effectively made agricultural pursuits obsolete (Figures 4.24 and 4.25).³⁴ Issues relating to health were also implicated as factors contributing to migration, with 70% of respondents considering “diseases/pests” as either “important” (5/10) or “very important” (2/10), and 50% considering “insect infestation/vectors (eg mosquitoes)” as “important” (4/10) or “very important” (1/10) drivers of migration. The most commonly cited disease which in the view of respondents contributes to migration is *mal de Chagas* or *enfermedad de Chagas-Mazza* (“Chagas disease”, also known as “American trypanosomiasis”), a lifelong tropical parasitic infection caused by a blood-sucking insect vector *Trypanosoma cruzi*, which to date represents a major public health problem in Bolivia. This disease and its rural-urban spread will be detailed in Section 4.5. Individual respondents also mentioned additional environment related migration push factors: “no maize” (Q5/NMigr/Orig/Itatiki/20101209), “monoculture” (Q13/Exp/Orig/El Cruce/20101215),³⁵ and “burning the land” (Q16/Exp/ Migr/Orig/Camiri/20101216).³⁶

34 “Bolivia documentary” (Luetz et al 2011) depicts footage of the erosion of entire hillsides and plots of land rendered agriculturally useless.

35 Comment elaborated agricultural practices which exclude crop rotation (ie, sowing only “maize”).

36 Comment elaborated land degradation caused by slash-and-burn deforestation for agriculture.

Figure 4.14: Non-Environment Related Push Factors (NRPF)

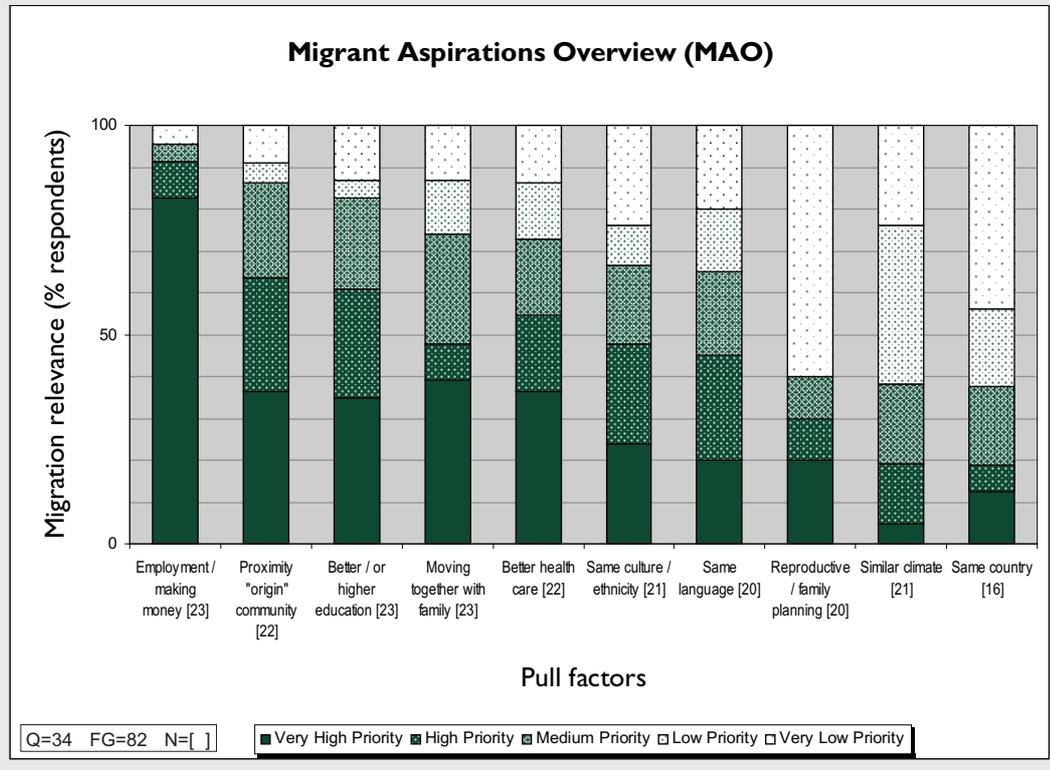


Migration push factors: non-environment related pressures

Eleven respondents partially or completely discussed and rated non-environment related migration pressures (“push factors”) (Figure 4.14). Not every interviewee addressed every category which explains discrepancies in categorical values. Notwithstanding the comparatively small sample size and incomplete data set, discussions again yielded insightful perspectives.

The most significant non-environment related push factor (NRPF) for migration was “unemployment” which 100% considered as either “important” (2/11) or “very important” (9/11), a result closely connected to “better opportunities elsewhere” which the same percentage of respondents considered “important” (5/10) or “very important” (5/10). Issues of “population growth, ie overcrowding” in communities of investigation were also regarded as contributing to migration, with 100% of respondents rating population pressures as either “important” (6/9) or “very important” (3/9). Issues of family were also noted as implicated in the mix of migration drivers with 90% regarding “following another family member” as either “important” (8/10) or “very important” (1/10). With regard to service provision (or lack thereof), a total 50% of respondents viewed “insufficient educational facilities” as “important” (5/10), with the same number considering this “unimportant” (5/10), and 44% regarding “insufficient health care facilities” as

Figure 4.15: Migrant Aspirations Overview (MAO): Comparative levels of prioritisation as ascribed by respondents



either “important” (3/9) or “very important” (1/9). Migration arising in full or in part from “conflicts over resources” was viewed by 40% of respondents as either “important” (1/10) or “very important” (3/10), but the majority considering it “unimportant” (6/10). Of lower concern were issues of “political instability/civil war” and “safety concerns/crime”, which 11% each considered “very important” or “important”, and the remainder rating such problems as “unimportant”.

Some respondents also mentioned other migration relevant NRPf not included in the questionnaire: “Adolescents don’t want to live like parents” (Q13/Exp/Orig/El Cruce/20101215), “conflict” (Q7/Exp/Migr/NMigr/El Cruce/20101210),³⁷ “interpersonal conflict” (Q14/NMigr/Orig/Sinaí/20101216),³⁸ “not enough land” (Q18/Migr/Orig/Ivamarapinta/20101217),³⁹ and further, missing “policy safety nets” (Q1/Exp/NMigr/Orig/Camiri/20101207)⁴⁰.

37 Comment elaborated intra-community conflict over limited land and resources in numerous communities.
 38 Comment linked to a family member who was embroiled in a violent conflict with other community members before deciding to migrate to Argentina.
 39 Comment linked to a shortage of arable land in the community of investigation.
 40 Comment made by Subgobernador (“Deputy Governor”) Richard Moreno at Municipio de Camiri.

Figure 4.16: Migrant Aspirations Aggregate Index (MAAI)

Aspirations of forced migrant communities	Ascribed importance
Employment/making money	4.7
Proximity to the <i>origin</i> community	3.8
Better or higher education	3.7
Moving together <i>with</i> the family	3.5
Better health care	3.5
Same culture/ethnicity	3.1
Same language	3.1
Similar climate	2.4
Same country	2.3
Reproductive/family planning	2.3

Ascribed importance: weighted average calculated from assigned values: very high priority = 5 points; high priority = 4 points; medium priority = 3 points; low priority = 2 points; very low priority = 1 point.

Migration pull factors: migrant aspirations

A total 23 respondents partially or completely discussed and rated various possible migrant aspirations (“pull factors”). The comparative levels of prioritisation respondents ascribed each category are summarised by the Migrant Aspirations Overview (MAO) (Figure 4.15) and synthesised by the Migrant Aspirations Aggregate Index (MAAI) (Figure 4.16). Not every interviewee addressed every category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample and incomplete data set, discussions again yielded noteworthy insights.

By far the strongest aspiration voiced by respondents both in communities of origin and destination was gainful employment, with 91% of respondents ascribing “employment/making money” a “very high priority” (19/23) or “high priority” (2/23). Only 4% each considered it of “medium priority” (1/23) or “very low priority” (1/23). The second strongest aspiration was “proximity to community of origin” which 64% viewed as having a “very high priority” (8/22) or “high priority” (6/22), followed by “better/higher education” which 61% ascribed a “very high priority” (8/23) or “high priority” (6/23). Respondents ascribed the lowest comparative priority to climate and country: only 19% considered “similar climate” as having a “very high priority” (1/21) or “high priority” (3/21), and the same percentage regarded remaining in the “same country” as having a “very high priority” (2/16) or “high priority” (1/16).

4.5 Critical discussion of core issues

Field research in drought-affected communities revealed that migration rates and local microclimates vary considerably from community to community, but overall it does appear that a significant number of *campesinos* (rural smallholder farmers) are indeed steadily turning their backs on rural life permanently. It is clear from interviews that a majority of respondents regarded drought, aridity, erratic precipitation and extreme weather phenomena as a cause for growing concern. Moreover, respondents typically linked water stress to a perceived need to move away from drought affected areas, thereby broadly conceding that in their minds there is a definitive causal nexus between water security (in absence or presence) and human settlement (in motion or quiescence).

This section offers a richer understanding of Bolivia's bigger context within which water stress and many other factors contribute to human movement. It will discuss six climate change related areas of interest which impact on human migration in Bolivia, namely the issues of (1) water management; (2) transmission of diseases; (3) deforestation and land tenure; (4) matters relating to history, culture and education; (5) rights fulfilment; and (6) financial and social cost of movement. As noted in Section 2.7 and elaborated in Section 3.3, these issues are framed by a preparedness paradigm which seeks to raise options for anticipatory migration approaches and solutions. Some issues are more directly related to climate change and migration than others. However, the combining feature of all six issues is that unless checked, climate change and migration may exacerbate conditions in one of Latin America's most unequal countries (UNDP 2007, p. 99; USDS 2012, ECLAC 2006, CEPAL 2010, Díaz et al 2010). Inversely, addressing these issues now will likely avert worse outcomes in the future. Hence the following six areas of interest seem to constitute compelling climate migration opportunities. The discussion begins by looking at water research and management issues first.

(1) Water management matters

Water security is not only determined by local climatic conditions which are subject to wider processes of global climate change but can be enhanced or diminished by the presence or absence of forward-thinking domestic public policy and local and regional scale water management. This is of foremost importance for Bolivia in the context of insecure or diminishing water supplies deemed likely this century as progressive climate change continues to exacerbate existing hydrological trends.

This subsection will offer a discussion of Bolivia's potentially precarious water resource situation which has received broad coverage in the popular news media (Painter 2009, Shukman 2009, Rosenthal 2009, Rosenthal and Deviscio 2009, Hager and Rosen-

thal 2009, AP 2009a, 2009b, Stibbs 2011), prompted the compilation of an extensive report by U.S. military analysts (Roebuck et al 2004), and even featured as the central issue of conflict in the twenty-second instalment of Ian Fleming's James Bond film franchise (IGN 2008). Most recently Bolivia's water situation even drew the support of an international *haute couture* label (AFL 2013).

In its 2007 Flagship Report *Climate Change as a Security Risk* the German Advisory Council on Global Change (WBGU) summarised the challenges climate change presents to Andean countries like Bolivia: "The most important climate impacts for the countries of the Andes include major warming and the resulting rapid glacier melt. These factors, combined with increasing precipitation variability, have serious impacts on the water supply and on agriculture, which is also affected by increased soil degradation" (WBGU 2007, p. 151). The report's Summary for Policy Makers also features a map (Figure 3.1 depicted in Section 3.4) which highlights the region as a hotspot for "climate-induced degradation of freshwater resources" and "climate-induced decline in food production" (WBGU 2007, p. 4).

While it is well-known that temperature increases towards the centre of large continents are above global average values which typically include lower temperature measurements made over sea (The Copenhagen Diagnosis 2009), it is not always appreciated that this continental increase is significantly amplified at higher altitudes (Hoffmann 2008; cf, WBGU 2007 p. 151). A forthcoming study (Hoffmann and Requena 2013) projects that a world with global average temperature increases of around +4°C above pre-industrial values could mean warming for the La Paz/El Alto Altiplano Norte region on the order of between +7°C and +10°C. According to Hoffmann the consequences would be almost inconceivable, with impacts "certainly clearly felt within the next two to three decades" (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111).

A study by Bush et al (2010) into "[n]onlinear climate change and Andean feedbacks" discusses the region's high sensitivity to temperature increases and sketches possible scenarios after the passing of impending tipping points which could see water levels of Lake Titicaca significantly drawn down and conditions in the region become increasingly arid:

"If, as projected, the next century brings warmer and drier conditions than those of today, a tipping point appears to exist within ca. 1-2°C of current temperatures, where the relatively benign agricultural conditions of the northern Altiplano would be replaced by inhospitable arid climates. Such a change would have profound implications for the citizens of the Bolivian capital, La Paz ... the accompanying droughts would cause major dislocations of natural and human communities." (Bush et al 2010, pp. 3223 and 3231)

As indicated in Section 4.4, 100% of respondents who rated environment related push factors considered droughts a “very important” contributor to migration, more than any other single cause. This result raises three important questions which seem relevant from a water security viewpoint. First, how much water supply is available on the supply side? Second, how much water supply is needed on the demand side? Third, how is the available water supply to be managed? During a key informant interview conducted with the Director General of the Servicio Nacional de Meteorología e Hidrología (SENAMHI) in La Paz, Dr. Miguel A. Ontiveros emphatically affirmed that answers to these three questions were unavailable and that basic studies were urgently needed to determine Bolivia’s water availability and need:

“To have meaningful adaptation in Bolivia we need to know how much water we have and need, how much are we using? Much, little? No one knows. For water management we need information ... We don’t have enough climate scientists, our climate change scenarios are estimates only. Socioeconomic quantification studies don’t exist, we don’t have this information ... We need professionals, climatologists, more studies, better precipitation maps to measure the rains, and a more holistic education that prepares the country to understand these issues. [...] We need risk reduction education, but we can’t pay for education for want of money.” (Dr. Miguel A. Ontiveros; SENAMHI La Paz; Q33/Exp/Dest/La Paz/20110112)

The notable absence of hydrological studies is underscored in the literature by Dirk Hoffmann of the Bolivian Mountain Institute:

“[A]t present, practically no research has been carried out on the consequences the melting and eventual disappearance of the country’s glaciers has and might have on the economic and social situation of its population ... Impacts of glacier retreat are most likely to be mainly local, in some cases regional, which means that local authorities must play a vital role in this context. The supply of (drinking) water for the growing urban conglomeration La Paz – El Alto, is the main issue with shrinking glaciers in Bolivia.” (Hoffmann 2008, p. 77)

Hoffmann laments that “there is nothing to be done about the Bolivian glaciers. They are doomed” (Stibbs 2011). Calling for more research and the “construction of an Andean vision [with] a uniform methodology”, Hoffmann advocates for “more detailed local studies, with straightforward definitions, ... a more detailed glacier hazard analysis [as well as an] updated glacier inventory of Bolivia [to] assess future water availability in the Andean watersheds on a regional scale” (Hoffmann 2007, p. 18).

But the question of ensuring Bolivia’s long-term water security seems to go beyond the need for more research and encompasses practical issues of urban water management. Glaciologist Edson Ramírez from the Hydraulic and Hydrology Institute at Universidad Mayor San Andres La Paz (UMSA) has noted that upgrading the water grid and building



Figure 4.17: Major water reservoir which supplies water to La Paz near La Cumbre (approximate altitude: 4,500m above sea level). Respondents voiced concerns that this water reservoir could soon be insufficient to meet the needs of La Paz / El Alto, and that more regulation was urgently needed to ensure that water pollution from upstream mining activities (Figure 4.18) did not negatively impact on the urban conglomerate's already challenged water security (Q28/Exp/near La Cumbre/20110110).

an additional reservoir could solve some of the water problems afflicting La Paz and El Alto (Figure 4.17):

“If we’re going to think about alternatives, then we have to do them right away. The effects are appearing much faster than we can respond to them. For example, let’s take a reservoir. We’re talking five to seven years before it’s constructed and can really be used. We may just not have that time.” (Hager and Rosenthal 2009, 5:05-5:35)

The same point is also highlighted by Hoffmann who places some responsibility for the region’s water stress on political authorities: “If you have population growth of something between 35,000 and 50,000 people each year for the metropolitan area [of La Paz/El Alto], and for more than 15 years you don’t build any new water catchment, do you think it surprising that water will not be sufficient at some point?” (Stibbs 2011)

During an expert interview conducted at UMSA La Paz, Hoffmann emphatically urged the construction of new water reservoirs and cautioned against attributing Bolivia’s high rate of urbanisation squarely to climate change related human movement. “The population has doubled, the reservoirs are still the same. This is a [water] management problem” (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111). Noting that glacial meltwater contributes to the potable water supply of La Paz/El Alto by about 12-15%, Hoffmann estimates that 40% of the conglomerate’s water supply is wasted through conduction loss (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111; cf, Hager and Rosenthal 2009). UMSA colleague and glaciologist Javier Carlos Mendoza Rodriguez concurs: “glaciers are almost irrelevant for the drinking water supplies of El Alto which are mainly precipitation dependent” (Q29/Exp/Dest/UMSA-La Paz/20110111).

There are also indications that illegal mining activities in the catchment areas of major water reservoirs needlessly contaminate the drinking water supplies of the La Paz / El Alto urban conglomerates (Figure 4.18; Q26/Exp/near La Cumbre/20110110; Q28/Exp/near La Cumbre/20110110).



Figure 4.18: Mining activities only a few hundred metres upstream from the water reservoir pictured in Figure 4.17. In the view of respondents contacted during fieldwork, mining activities upstream are responsible for contaminating the water supplies of major water reservoirs for La Paz / El Alto (eg, Figure 4.17). Regulation is needed to “curb this illegal activity” (Q26/Exp/near La Cumbre/20110110; Q28/Exp/near La Cumbre/20110110).

Another researcher at UMSA Dr. José Luis Montaña explained the need for comprehensive water management approaches:

“Our water situation needs a holistic solution. Agriculturalists upstream are catching or diverting the water, and people downstream feel water stress. It’s a complex situation. No one knows how many people will be affected and when, but it’s not unreasonable to expect that 20-30 years from now many people will ... need to migrate.” (Q30/Exp/UMSA-La Paz/20110110-11).

Such an eventual migration could have significant impacts on Bolivia’s long-term food security. For now there seems to be tacit agreement among Bolivia’s community of researchers that while glacial melting has had, can have and will have local level water supply impacts which could trigger or contribute to human migration, at a macro national level the role of glaciers seems comparatively less critical for Bolivia’s water security vis-à-vis other measures such as improving the country’s overall water supply management.

During field research a number of respondents commented on the possible availability of fossil water in Bolivia’s Gran Chaco, at various times referring to a so called *Aquifero Guaraní*⁴¹ which respondents speculated might perhaps be tapped, albeit at prohibitive cost (Q19/Exp/Orig/Camiri/20101218). In light of fieldwork locations which included Guaraní communities it is perhaps unsurprising that this water resource was recurrently mentioned, seeing that this aquifer is named after the Guaraní people who inhabit parts of Bolivia, Argentina, Brazil, Paraguay and Uruguay. However, while this aquifer is known as a huge underground reservoir of ancient water lying under parts of Argentina,

41 The International Atomic Energy Agency (IAEA, no date) states: “At over 1.2 million square kilometres and estimated to contain 37,000 cubic kilometres of water, this groundwater body is the largest aquifer in South America and one of the world’s largest systems. It currently supplies about 15 million people in over 500 towns and cities in the region; the population of the overlying countries – Argentina, Brazil, Paraguay and Uruguay – is collectively over 242 million, and has the potential to sustainably supply about 360 million people.”



Figure 4.19: Sign along the road from Camiri to Charagua indicates hydrocarbons as “explosive”. (Photo: Johannes Luetz; 8.12.2010). According to an unidentified key informant interviewed in Camiri on 7.12.2010, hydrocarbon exploration and exploitation are implicated in water contamination (“when oil seeps into aquifers”), indigenous ill-health (“children die of cancer”) and forced migration (“because of resultant land degradation people leave, have hunger”). (cf, Perreault 2012, Weinberg 2010)

Brazil, Paraguay and Uruguay – its huge size of more than 1.2 million square kilometres is equal in area to England, *Franc ayuda en el chaco* [parcela de tierra de cultivo de m not, in fact, extend under any part of Bolivia’s present-day territory, wherefore it is not clear why Bolivia should be able to assert any claim to these water reserves (OAS 2005, Foster et al 2006, IAEA WRP no date). Indeed, in Article 1 of the Guaraní Aquifer Agreement reached on 2 August 2010, the aquifer countries Argentina, Brazil, Paraguay and Uruguay reassert themselves as “*los únicos titulares de ese recurso* [the sole owners of this resource]” (IWLP 2010; Sindico 2011; cf, DPIH, no date).

Moreover, there is no evidence that there are any significant reserves of fossil water waiting to be discovered and extracted in Bolivia’s Gran Chaco (BGR 2012). In fact, two respondents noted that *perforaciones* [drillings] in their villages up to depths of 300m (Q5/NMigr/Orig/Comunidad Itatiki/20101209) and 500m (Q24/Migr/Dest/Santa Cruz/20101231)⁴² had not succeeded in reaching groundwater. Notwithstanding, even *if* viable reserves of fossil water should exist, it needs to be cautioned that fossil water – like fossil fuel – is a very old and non-renewable resource. Pasig et al note that “the groundwater level in the Chaco plain is deep and the usable aquifers only can be reached at a depth of more than 150m” (Pasig et al 2000, p. 203). Moreover they note that borehole samples in the Chaco Tarijeño “revealed a very old water age [up to] 38,660 B.P.”⁴³ (ibid, p. 204) and that virtually no recharge occurred: “the infiltrating rain water is almost completely used by the vegetation [with] nearly no recharge towards the saturated zone of the groundwater. [...] Due to this very small amount of recharge the groundwater is

42 Interviewee Raúl Quezada Tariuma discussed the terrain in his community of origin Eiti-Camiri: “In 1978 they drilled 500m deep, but even at that depth there was no water!” (Q24/Migr/Dest/Santa Cruz/20101231)

43 The term “B.P.” (Before Present) represents a time measuring scale used in geology and archaeology. Given that “the present” is transient and changes all the time, it is common practice in these disciplines to use 1 January 1950 as the reference date which was established after radiocarbon dating began in the 1950s (Taylor 1985).

brackish to saline” (ibid). While it is beyond the scope of this case study to assess the potential availability of viable fossil water supplies in Bolivia’s Chaco, the caution bears repeating that fossil water is a non-renewable resource which in the view of this researcher should be disincentive enough to avoid entertaining thoughts of developing unsustainable dependencies, viable or not.

Water management evidently plays a decisive role in guiding migration outcomes. In its 2007 Flagship Report *Climate Change as a Security Risk* the German Advisory Council on Global Change (WBGU) emphasised the important role of water management and its link to migration:

“Water crisis and water conflict are also the driving forces behind migratory movements of people. The examples cited in Carius et al (2006) make it clear that migration can occur at different stages in the causal chain. First, drought in certain regions can elicit movements of people to less affected regions. The resulting rise in population and demand for water can overwhelm the water management system in the destination area. Second, migration can occur as the response to a collapsing water management system. Third, migration can be the reaction to (violent) conflict over access to scarce water resources. This includes forced resettlement as a consequence of dam projects, which in turn can be a driver of conflict escalation.” (WBGU 2007, p. 86)

The “*guerra del agua*”⁴⁴ (water war) which erupted in 2000 in Bolivia’s third-biggest city Cochabamba is a reminder that widespread violent protest can easily erupt in the context of huge social disparities when water resources are perceived to be unfairly withheld, distributed or sold at exorbitant price (Boelens 2010b, Wallach and Woodall 2004, pp. 125-126; Roebuck et al 2004 p. 17-18; Lobina 2000, cited in WBGU 2007 p. 86; cf, Faysse et al 2007, Weinberg 2010).

Implementing the following policy priorities could significantly enhance Bolivia’s prospects of facing an insecure water supply future more securely: (1) more research into Bolivia’s cumulative national water supply and demand (Q33/Exp/Dest/La Paz/20110112); (2) stringent regulation of mining activities to curb resultant water resources contamination⁴⁵ (Q32/Exp/Dest/La Paz/20110104; Q28/Exp/Dest/La Cumbre-La Paz/20110110; Painter 1995a; Weinberg 2010; USAID 2011 pp. 3-4, 14; Figures 4.18 and 4.19); (3) reduction of conduction loss and unwanted and undocumented water wast-

44 The “*guerra del agua*” (water war) erupted in the streets of Cochabamba, Bolivia’s third-largest city, after an IMF loan led to “structural adjustment” and the privatisation of the city’s water provider. Bechtel corporation “raised water rates by as much as 400%” and thereby triggered a popular uprising which was met by stiff police violence, leaving more than 170 people injured and one 17-year-old killed. Ultimately, the Bolivian government was forced to cancel the contract, and “[t]he people of Cochabamba took back their water” (Wallach and Woodall 2004, pp. 125-126).

45 Key informant interview with Nancy Gutierrez, Visión Mundial, Humanitarian Manager, La Paz.



Figure 4.20: Elaborate multipurpose rain catchment system. The enormous roof size of this basketball and football field provides shade for sports activities and community meetings (ongoing, right), as well as a significant catchment area to funnel rain water into an adjacent tank (see Figure 4.21). (Photo: Johannes Luetz, 16.12.2010)



Figure 4.21: This tank collects water from the adjacent roofed-over basketball court (see Figure 4.20). The popularity of this rain catchment system was apparent on the day of the research visit to the community, with dozens of children carting away buckets of water. The locked tank is only opened for two hours in the morning Tuesdays, Thursdays and Saturdays. (Carlos Lazarte; Q13/Exp/Orig/EI Cruce/20101215; Photo: Johannes Luetz, 16.12.2010)

age⁴⁶ (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111; Hager and Rosenthal, 2009); (4) water conservation through comprehensive education and awareness campaigns (Q32/Exp/Dest/La Paz/20110104)⁴⁷; (5) up-scaling rain water harvesting mechanisms and retrofitting available structures⁴⁸ (Q19/Exp/Orig/Camiri/20101218; Parados 2013, Zoomers 2010, p. 160; Figures 4.20 and 4.21); and (6) commitment to an integrated country-wide water management approach through legislating a comprehensive water law⁴⁹ (Roebuck et al 2004).

Progressive climate change seems to make it even more critical that the above mentioned water management priorities are swiftly mainstreamed, especially since Bolivia al-

46 Key informant interview with Dirk Hoffmann, Bolivian Mountain Institute, Universidad Mayor de San Andrés (UMSA), La Paz.

47 Key informant interview with Nancy Gutierrez, Visión Mundial, Humanitarian Manager, La Paz.

48 Key informant interview with Gualberto Carballo, Visión Mundial Camiri Regional Director.

49 The newly created Bolivian Water Ministry – “an unprecedented decision for Latin America” (Assies 2010, p. 65) – may be a step in this direction. A new water law should also consider “[g]reenhouse-gas emissions from energy use in the water sector.” (Rothausen and Conway, 2011)

ready depends on “other countries... for over 50 percent of [its] renewable water resources” (FAO 2003, p. 21) and in view of “local scarcity conditions [which] tend to coincide with the most populated areas of the region” (ibid, p. 41). This appears critical in view of the prediction that climate change will increase precipitation variability which can be even more disruptive to agriculture than diminishing rainfall *per se* (Davis 2001). In terms of preparedness it seems to make sense to bolster Bolivia’s water management *before* supplies fall short of demands.

The next subsection will examine the interplay of diseases and migration in the context of climate change.

(2) Disease matters

The spread of communicable diseases may be seen both as a cause of migration and an effect of the same. The most commonly cited disease which in the view of respondents contributes to migration is *enfermedad de Chagas-Mazza* or, as it is more commonly named in Spanish, *mal de Chagas* (Chagas disease, also known as “American trypanosomiasis”), a lifelong tropical parasitic infection caused by a blood-sucking insect vector *Trypanosoma cruzi* which “affects about 8 million people in Latin America” (Rassi et al 2010, p. 1388) and is “[r]ecognised by the World Health Organization (WHO) as one of the world’s 13 most neglected tropical diseases” (ibid; citing Hotez et al 2007). According to Araujo-Jorge and Medrano-Mercado, “Chagas disease is a major public health problem in Latin America. At present, Bolivia has the highest rate of vector and congenital transmission, and the old rural profile of the disease is changing rapidly into urban” (Araujo-Jorge and Medrano-Mercado 2009, p. 236).

A number of respondents interviewed in rural areas admitted that they were suffering from Chagas disease and needed to leave the Chaco region regularly to travel to the cities for treatment.⁵⁰ In this way rural-urban migration (whether temporary or permanent) may be understood as a way for patients to obtain medical treatment and relief, while at the same time increasing the geographic spread and distribution of Chagas disease, with new cases of infection increasingly noted both in urban areas in Bolivia as well as in numerous non-endemic countries, including in North America, Australia and Europe (Schmunis 2007; Araujo-Jorge and Medrano-Mercado 2009, p. 237).

50 High rates of infection in Bolivia’s Chaco are also noted in the literature: Araujo-Jorge and Medrano-Mercado (2009, p. 238) report that 63.9% of women of reproductive age in Carapari were tested seropositive, which suggests that infection rates could be high throughout Bolivia’s Chaco.

Several researchers have associated the spread of the disease with migration, and it seems climate change is implicated in some of this process. Briceño-Leon has linked rural-urban migration to the transformation of the infectious disease from a traditionally rural illness to an increasingly urban affliction, reporting that “seasonal and permanent rural-urban migration has played a major role in re-mobilizing vectors, *T. cruzi*, and Chagas-infected individuals” (Briceño-Leon 2009, p. 71). Araújo-Jorge and Medrano-Mercado have found that “[i]n Bolivia, this phenomenon is clearly observed and we [Medrano-Mercado et al 2008] and others [Albarracin-Veizaga et al 1999] have reported active vector and congenital transmission of Chagas disease in poor urban areas” (Araújo-Jorge and Medrano-Mercado 2009, p. 237). Research also revealed a particular prevalence of *T. cruzi* infection in the departments of Santa Cruz de la Sierra where more than half of all sera samples from blood banks were shown to be contaminated (Carrasco et al 1990, pp. 69, 71). Given the need for serological testing to establish diagnostic certainty it is highly likely that many infected individuals remain untested, undetected and thus untreated – and may not themselves become aware of having contracted the disease until much later in life when the debilitating consequences of the disease manifest in the form of “cardiomyopathy, digestive megasyndromes, or both” (Rassi et al 2007, p. 1388).

Given Bolivia’s unimpeded urbanisation process which has seen a steady increase in the percentage of the country’s urban population from 25% in 1950 (Mariscal et al 2011, p. 36) to 67% in 2011 (UNDESA 2010), it is conceivable, if not likely, that the rural-urban spread of Chagas disease is both a cause of migration as well as an effect of the same:

“The globalization process is one of the most important elements influencing the outcome of Chagas diseases in Latin American countries, both in urban and in rural localities. [...] Bolivia is currently undergoing a vigorous urbanization process, and the rural population has decreased from 58.5% in 1976 to approximately 42% in 1992 [INE 2001].⁵¹ Peripheral districts or ‘popular zones’ are home to 58% of the city’s population [Bailey-Lazcano and Trehwella-Fernandez 1998⁵²]. Forty percent of people living in these districts originally from rural villages and may act as transport of triatomine vectors from rural to urban areas.” (Araújo-Jorge and Medrano-Mercado 2009, pp. 237-238, 241)

According to *Visión Mundial Bolivia* humanitarian manager Nancy Gutierrez, in some rural communities 80% of families are affected by Chagas disease (Q32/Exp/Dest/La

51 Source referenced by the authors (p. 243) as Instituto Nacional de Estadística (INE 2001) is a dead link as at 10 Feb 2013: <http://www.ine.gov.bo/cgi-bin/Redatam/RG4WebEngine.exe/PortalAction>

52 Unpublished thesis: Bailey-Lazcano R. C., Trehwella-Fernandez (1998) *Identidad familiar, migración y desnutrición: las vicisitudes de la dinámica identitaria familiar ante la migración*. Thesis, UMSS, Cochabamba, Bolivia, 1998, 78 pages. (Unavailable online as at 10 February 2013)

Paz/20110112).⁵³ Other comments suggest that the spread of HIV/AIDS primarily occurs in the inverse direction from urban to rural areas, possibly on the back of cyclical rural-urban-rural labour migration (Q13/Exp/Orig/El Cruce/20101215; Q4/Exp/Orig/Charagua/20101209).⁵⁴ One key informant commented:

“Diseases and pests also contribute to the migration. Many people got sick with headaches, fevers, etc and 11 died, children and adults. But even those who go to the *zafra* suffer and often come back sick after much hardship. [...] What we need in the communities is medicines. A lot of people suffer from fever, diarrhoea. The community health posts only have stuff to dull the pain, for example, paracetamol.” (Nicolas Manuel Sanchez; Q8/Exp/Migr/NMigr/Ipatimiri/20101211)

More research is needed to establish if/how the spread of diseases (in either direction) may be activated by migration, and how it may be mitigated or contained. This seems prudent in view of the prospect that climate change could contribute to a surge in human mobility in Bolivia:

“Global warming, unrestricted exploitation of natural resources such as forests and fisheries, urbanization, human migration, and industrialization of animal husbandry cause environmental destruction and fragmentation [Cabello and Cabello 2008]. Any degradation of wild-life biotopes, affecting their diversity, contributes to the dissemination of zoonoses such as Chagas disease, Leishmanioses, Hantavirus and others... A recent study indicated that there is a potential for Chagas disease to emerge in the United States, when risk was determined by the simultaneous analysis of climate changes that would make the triatomine vector effective and increase in the risk for transmission [Lambert et al 2008]. Similar studies are still absent in Latin America countries.” (Araújo-Jorge and Medrano-Mercado 2009, pp. 241-242)

It appears that Chagas disease no longer afflicts only (or mainly) the rural poor in the small villages in Bolivia but that this formerly rural disease has gradually transformed itself into “an urban health problem” (Medrano-Mercado et al 2008, p. 423). In view of the fact that host communities and guest communities do not know what to guard against when encountering unfamiliar disease patterns to which they are exposed as a result of transmigration (eg, Méndez Vedia, 2012), it would stand to reason that heightening preparedness implies raising awareness of pertinent rural-urban differences in diseases *before* these are contracted.

53 Key informant interview conducted in Santa Cruz (4 January 2011) and La Paz (12 January 2011).

54 Key informant interviews with Carlos Lazarte in El Cruce (Gerente PDA Tekove, Zona Central Camiri; Q13/Exp/Orig/El Cruce/20101215) and Giovana Perez, Visión Mundial Manager Koe Iyambae Charagua Province Programa de Desarrollo de Área (PDA) in Charagua (Q4/Exp/Orig/Charagua/20101209).

Having discussed the interplay of diseases and migration in the context of climate change, the next subsection will take a look at the interdependence of deforestation, climate change and migration.

(3) Deforestation and land tenure matters

Deforestation in Bolivia advances on the order of approximately 300,000 hectares (El Deber 2011, USAID 2011 p. 12) to 400,000 hectares annually (Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111).⁵⁵ This high rate of deforestation is a concern because it seems to create a number of interdependent problems which impact on human migration, including through soil erosion, degradation of arable land, desertification, and reductions in air moisture which spawn microclimatic changes that enhance aridity and drought-conducive conditions (Brown 2011, Davis 2001; cf, Kümmerer et al 2010).

Given that Bolivia's high rate of slash-and-burn deforestation presently ranks the country as number one in the world for CO₂ emissions from deforestation *per capita*⁵⁶ (World Development Report 2010, p. 363), a side-effect of which is thought to be increased glacial melting in the Andean region on account of black soot particles settling on white ice speeding up melting dynamics (Hoffmann 2011, Pepin et al 2010, Rosenthal 2009a), stringent conservation of Bolivia's remaining forests needs to become a higher preparedness priority in policy and practice if present trends of widespread environmental degradation are to be mitigated or stopped. Unfortunately, despite encouraging populist rhetoric (eg, Cochabamba Documents 2010), this field research found little evidence of such a trend reversal (cf, Painter 1995, 1995a).

Importantly, a number of respondents linked *deforestación* (deforestation) in Bolivia to the country's revised Agrarian Reform Law (Ley 3545) which in 2006 amended the 1996 version of the same law (Ley 1715).⁵⁷ This land reform bill is among several legislative changes enacted by Bolivia's first indigenous president Evo Morales who took office in 2006, which have since strengthened Bolivia's Instituto Nacional de Reforma Agraria

55 Key informant interview conducted with Dirk Hoffmann; figures attributed to Wulf Killmann.

56 Although Bolivia's cumulative national share of CO₂ emissions from deforestation (139 million metric tons) appears modest by comparison with Brazil (1,830 million metric tons) or Indonesia (1,459 million metric tons), Bolivia's deforestation rate seems alarming in light of its small population: on a *per capita* basis Bolivia's CO₂ emissions from deforestation are more than 155% those of Brazil and more than 230% those of Indonesia. This rate of CO₂ emissions from deforestation *per capita* is the highest among all countries in the world (World Development Report 2010, p. 363).

57 See Fabricant (2008-2010), Heath et al (1969), and Clark (1969) for discourses relating to Bolivian land reform initiatives dating back to the time following the revolution in 1952.

(INRA)⁵⁸ and have paved the way for sweeping expropriations (Prada 2006, Powers 2006, Romero 2006, Fabricant 2008-2010, Merco Press 2010, BBC 2012b, BBC 2012d; cf. also INRA 1715 and INRA 3545).

Numerous respondents alluded to this land reform practice, including the following unidentified interviewee:

“Unproductive land is often burned because of *políticas populistas* [populist politics]. Since 2006 when president Evo Morales came to power, *deforestación agresiva* [aggressive deforestation] has been observed. If land is only standing forest it may be perceived as ‘unproductive’ land and can be claimed or reassigned to ‘productive’ use, for example, through land clearing for livestock or agriculture. Today everybody makes sure to ‘work’ the land. If people own land and don’t work it, it may be taken away, ... forested land is in danger of *expropiación* [expropriation]. The fear of *expropiación* causes *deforestación*; it contributes to migration because it is driving climate change, ... it is making the [human] exodus worse.” (Unidentified respondent, 7 December 2010, Camiri, Cordillera Province)

One respondent also highlighted the widely publicised expropriation of the Hacienda Caraparicito which made headlines in Bolivia at the time of this research visit. Despite stiff resistance by the U.S. American Larsen family their land was ultimately expropriated and redistributed to local Guaraní families (Heredia 2010a, Heredia 2010b, Cortez 2010). A copy of the original eviction notice is on file with this researcher. It bids the accosted to “proceed with the immediate eviction and removal of personal *separables* [belongings] at own cost within three days from the date [6 December 2010], in accordance with the provisions contained in [enumerated] resolutions [...] Non-compliance shall invoke the involvement of the public [police] force.” (INRA Aviso de Intimación 2010)⁵⁹ The expropriation had followed years of unsuccessful opposition to Bolivia’s new land reform practice on the part of the U.S. American ranchers concerned (Romero 2008, Valdez 2010, Merco Press 2010).

A key informant interviewed in Bolivia’s Gran Chaco elaborated on the nexus between land reform politics, deforestation and climate change:

58 The Instituto Nacional de Reforma Agraria (INRA) is a public entity under the auspices of the Ministerio de Desarrollo Rural y Tierras charged to coordinate and execute policies established by the Agrarian Reform (Art. 17 of the Ley No 1715). Laws, decrees and communications were available 13 June 2011 @ <http://www.inra.gob.bo:8081/InraPa/paginaController?cmd=contenido&id=5067>

59 In Spanish the excerpted verbatim passage reads: “... proceder al desalojo inmediato de los mismos y retiro a su costa de mejores separables en el plazo de tres días a partir de la fecha, conforme las disposiciones contenidas en las citadas resoluciones [...] En caso de incumplimiento, se recurrirá al auxilio de la fuerza pública.” (INRA Aviso de Intimación 2010)

“The Cordillera has about 90,000 square kilometres of land area, approximately 105,000 inhabitants, and ... 400,000 heads of cattle. [...] I left in 1980 and returned after a little over 15 years. [By then] you could tell the climate was beginning to change in the region of Camiri, and there was a population explosion. [...] Along the road from Santa Cruz to Yacuiba, passing Camiri, ... there is now much *desmonte* [land clearance] which you didn’t see before. From 2003 to 2010 or so, the production base grew a lot, this area now has *chacos* [parcels of farmland] which have caused deforestation and climate change, along with ... fire, lack of water for human consumption, and various other things. [...] In the past the production base was small along the road from Santa Cruz to Yacuiba, and there were few fields of crops. But as a consequence of state policies – that unproductive land is to be reverted – we’ve noticed that from 2003 to 2010 there has been a very big increase in *deforestación*, uncontrolled irrational slashing, which has led to a growing production base. In other words, there are now *chacos* that weren’t there before. Erosion, dried up streams and rivers have changed the natural ecosystem and are somehow also causing climate change... And there have been problems with forest fires. [...] It is necessary that the national government joins the provincial governments and municipal governments to act as one [government] to touch on the land issue, because there must be regulation that allows us to ensure food security and be in balance with the environment, with nature. If we go on like this, we will have a rather uncertain future. [...] Those families who keep their forested land intact, you need to reward them and give them incentives. Why? Because in the end they will generate quality of life and air quality.” (Unidentified respondent, 7 December 2010, Camiri, Cordillera Province. Spanish verbatim citation in Appendix E.2.)

Another respondent in Santa Cruz de la Sierra commented:

“Whoever owns property [ie, land] must cultivate it. This accelerates slash-and-burn land clearance! If the land is not in permanent use it shows that there is not enough interest and ownership – you run the risk of expropriation. This is enshrined in the law INRA 1715: ‘*La tierra es de quien la trabaja* [the land belongs to those who work it]’.⁶⁰ Dispossessions are leading to cut-and-burn clearance, and deforestation in general. [...] The peculiar legal position concerning property is radically destroying the environment, faster than ever, and accelerating climate change exponentially.” (Unidentified respondent, 23 December 2010 in Santa Cruz de la Sierra; pers. comm. on file with this researcher; cf, El Deber 2011)

With Bolivia having “one of the most inequitable distributions of land in South America” (USAID 2011, p. 4) and with 10% of agricultural landholders controlling 90% of Bolivia’s agricultural land (ibid, p. 3), agrarian land reform is rightly seen by many as a way to mitigate or redress historical injustices committed 500 years ago by Spanish

60 This well-known quote is generally attributed to the Mexican revolutionary Emiliano Zapata Salazar (8 August 1879 to 10 April 1919), but sometimes also used more generally in conjunction with agrarian land reforms.

Figure 4.22: Slash-and burn deforestation site to be called Copera Bossa Verde Community, Cordillera Province, encountered by this researcher on 9 December 2010 in the vicinity of Alto Isoso. (Photo: Johannes Luetz)



conquistadores when land dispossessions and slavery in Bolivia had their inception (Kelley and Klein 1981, Murphy 2010, Read 2006). Even today contemporary remnants of these historical injustices (Mooney 1910) are still affecting indigenous Guaraní communities in Bolivia, including through bondage, forced labour, landlessness (or near-landlessness), and forms of exploitation analogous to slavery (IACHR 2007 esp. pp. 69-75 {paragr. 257-276}; IACHR 2008, 2009; Garcia 2008, Schipani 2009, ILAB 2010; cf, Jones 1995; Simón et al 1980).

Incidentally, the Argentine Marxist revolutionary Ernesto “Che” Guevara, killed in Bolivia in 1967, was an outspoken critic of large landholdings⁶¹ which Bolivia’s 2009 Constitution is now subjecting to scrutiny and regulation (Ryan 1998, Waters 1994, Selser 1970, Castañeda 1997, pp. 350-352). Bolivia’s *Nueva Constitución Política del Estado*, published in 2008 and accepted by referendum in 2009, prohibits *latifundios* (large land holdings) which are defined in Artículo 398 (opción B) as comprising (1) “unproductive

61 On 9 April 1961 Che Guevara declared: “[T]he first liberating revolutions never destroyed the large landholding powers that always constituted a reactionary force and upheld the principle of servitude on the land. This phenomenon, prevalent in all the countries of the Americas, has been the foundation of all the injustices committed since the era when the King of Spain gave huge grants of land to his most noble conquistadores. [...] In most countries the large landholders realized they couldn’t survive alone and promptly entered into alliances with the monopolies – the strongest and most ruthless oppressors of the Latin American peoples. U.S. capital arrived on the scene to exploit the virgin lands and later carried off, unnoticed, all the funds so ‘generously’ given, plus several times the amount originally invested in the ‘beneficiary’ country.” (Guevara and Deutschmann 2003, p. 134; cf, Guevara, no date)

land”; (2) “land with unfulfilled socioeconomic function”; (3) “exploitation of the land through debt-bondage, semi-servitude or slavery”; (4) “land held in excess of 5,000 hectares” (CPBE 2009, p. 94).⁶²

In 2006 the Morales government announced it was planning to redistribute land to indigenous communities “that the ancestors [of Bolivia’s big landowners] stole during the Spanish conquest five centuries ago” (Read 2006). Seizing “private holdings that are judged *not to be in productive use*” (ibid, emphasis added), President Morales apparently seeks “to meet his target of redistributing around a fifth of Bolivia’s total land area” (ibid). According to this new law “unproductive” land may be seized (Romero 2006, Taipei Times 2006, Merco Press 2010; cf, Ugarte 2012).

Field research found first-hand evidence of significant slash-and-burn deforestation in Bolivia (Figure 4.22), as well as several consequential effects, including erosion and land degradation (Figures 4.23, 4.24 and 4.25). Moreover, interesting insights emerged from a chance encounter with a man who was caught in the act of slash-and-burn deforestation and agreed to be interviewed for this research (the conversation pertains to Figure 4.22). When asked to elaborate on the practice of fire clearance the unidentified respondent linked it to a perceived need for more land:

“First you cut with an axe [machete], chop, pile it up together, for ease of burning. It is work that takes a long time, at least two months in the same place. We are going to plant corn and beans, we are also thinking to sow pumpkin seed; altogether 24 families are going to live here. [...] Fire clearance does not help the earth, if anything it harms the rains, all this slashing and burning! For lack of land, however, we’re coming to live here, this year I think. We’re wiring off about 50 hectares. [Q: When did the settlement process begin?] [A:] This has been going on for the last four years. We have been negotiating to have this land and to form a new settlement for our community, ... the captains did their best to get things legalised. [...] Now things are formally organised for the legal settlement. [A few raindrops are falling...] This is the second time that a few drops of rain have fallen, there have been no significant rains for six or seven months ... all around you can clearly see the drought.” (Unidentified respondent, 8 December 2010, Copera Bossa Verde Community, Cordillera Province; Spanish verbatim citation in Appendix E.3).

62 Excerpted verbatim passage: “Se prohíbe el latifundio y la doble titulación por ser contrarios al interés colectivo y al desarrollo del país. Se entiende por latifundio la tenencia improductiva de la tierra; la tierra que no cumpla la función económica social; la explotación de la tierra que aplica un sistema de servidumbre, semiesclavitud o esclavitud en la relación laboral o la propiedad que sobrepasa la superficie máxima zonificada establecida en la ley. En ningún caso la superficie máxima podrá exceder de cinco mil hectáreas.” (CPBE 2009, p. 94; Cuarta Parte, Título II, Capítulo Noveno: Tierra y Territorio, *Nueva Constitución Política del Estado*)

Figure 4.23: Severely degraded agricultural land in the Community of Sinaí, 16 December 2010. According to agriculturalist Roberto Rojas (centre), “this land has not been cultivated since 2003 ... You see clearly that this plot of land yields almost nothing. The most degraded parts are now essentially useless for agricultural production” (Q14/NMigr/Orig/Sinaí/20101216). Interview shown in “Bolivia documentary”, Luetz et al 2011 @ 1:10). (Photo: David Mayer)



Rural respondents also commented on severely degraded lands and declining agricultural yields:

“The soil doesn’t yield like it did in the past. It yields nothing.⁶³ The *gusano* [worm, caterpillar, maggot] is a huge problem. Last year it ate almost everything. [...] Deforestation... people don’t realise that chopping trees creates erosion and reduces agricultural yields ... people chop down trees to sow more, but what happens is that the productivity goes down ... we haven’t had harvests for two years. We need practical training how to do *reforestación* [reforestation] – this would be a big help because the sun scorches the soil. Eight of my goats have died.” (Roberto Rojas, Guaraní smallholder; Q14/NMigr/Orig/Sinaí/20101216; Figure 4.23; cf, “Bolivia documentary”, Luetz et al 2011).

Moreover, the viability of livestock tenure as a livelihood strategy needs to be re-examined in regions such as Bolivia’s Gran Chaco which are subject to water stress, especially in view of projections that ongoing climate change could further enhance aridity, variability, desertification and drought-conducive conditions (UNISDR 2011, Painter 1995, 1995a; Kümmerer et al 2010).

63 “Esta tierra desde el 2003 ya no se trabajaba ... El terreno se ve bien que no puede dar casi nada. La parte tierra más dura por esta parte, es que no dá casi nada la producción.” (Bolivia documentary, Luetz et al 2011 @ 1:10)



Figure 4.24: Erosion in Comunidad El Cruce, 14 December 2010. (Photo: Johannes Luetz) According to Kümmerer et al, "removal of vegetative cover may increase soil erosion about 10 to 100 times or more, the impact being dependent on the steepness of the slope and intensity of the rain or wind." (Kümmerer et al 2010, p. 147)



Figure 4.25: Erosion along the route from Camiri to Charagua in the vicinity of Caipipendi, 18 December 2010. (Photo: Johannes Luetz)

The literature indicates that it takes anywhere from 13,000 litres (Arthus-Bertrand 2009, @ 0:30:00) to 16,000 litres (UNEP RRA 2009, p. 26), and even up to 100,000 litres (Pimentel 1997, cited in Lansley 2009 p. 11) of freshwater to produce one kilogram of beef (cf, Lardy and Stoltenow 1999, FAO 2006). In view of such enormous freshwater resources required for rearing cattle, and in light of the significant externalities⁶⁴ imposed on natural environments through overgrazing, compaction and erosion, it would appear that converting deforested lands into cattle husbandry lots needs to be re-examined (and likely discontinued) as an income generating strategy if livelihoods are to be not merely new and additional, but also sustainable and future/climate proof. This also appears critical in view of the reality that the livestock sector accounts for approximately 18% of global greenhouse gas emissions (UNEP RRA 2009 p. 25, cited in Lansley 2009, p. 11; also FAO 2006, p xxi).

The viability of livestock tenure in Bolivia's Chaco was also questioned by an unidentified respondent who commented on the enormous water needs of cattle:

⁶⁴ Livestock induced environmental degradation is elaborated in *Livestock's long shadow* (FAO 2006).

“Large-scale animal tending projects don’t work in situations of drought. A cow drinks 60 litres of water per day! *Chaqueo* [slash-and-burn clearance] leads to poor [and] degraded soil because the land was ‘burnt’... Also the absence of crop rotation... maize, maize, maize... causes the land to degrade. [...] The *gusano* [worm, caterpillar, maggot] destroys harvests. Almost the whole zone suffers from dwindling agricultural yields.” (Unidentified respondent; Q16/Exp/Migr/Orig/Camiri/20101216)

It appears that much of Bolivia’s tropical and sub-tropical forested land is in urgent need of respite from deforestation⁶⁵ and likely needs long-term remediation, reforestation⁶⁶ and afforestation⁶⁷ if processes of land degradation and soil erosion are to be effectively countervailed (Kümmerer et al 2010). One respondent suggested a moratorium on deforestation: “preventative strategies include a moratorium on deforestation, and more sustainable/responsible environmental management practices” (Q19/Exp/Orig/Camiri/20101218). Another respondent highlighted awareness and law enforcement:

“The Ley De Medio Ambiente⁶⁸ [Law of the Environment] No 1333 is an excellent law. But two things are needed: diffusion and teaching, and law enforcement with consequences. Corruption⁶⁹ destroys the effect of the law. Municipalities need to promote *control social*. National parks with integrated management practices implemented at community level would be useful.” (Unidentified key informant; Q11/Exp/Orig/vicinity of Camiri, Cordillera Province/20101213; cf, BBC 2012 for contemporary counter-corruption efforts in Bolivia)

Similar points were passionately iterated by an environmental activist in the city of Santa Cruz de la Sierra:

“People consider trees as a disruption to development. What we need is a complete moratorium on the cutting of trees and [emphatically:] *not ‘controlled’ deforestation!* We also need an information policy regarding environmental interrelationships, for example, trees and evapotranspiration; or deforestation has to do with precipitation. We need to create, teach and uphold principles. In Bolivia, however, the principle is the

65 The Intergovernmental Panel on Climate Change (IPCC) defines the term “deforestation” as “[c]onversion of forest to non-forest.” (IPCC 2007, p. 79)

66 The IPCC defines the term “reforestation” as “[p]lanting of forests on lands that have previously contained forests but that have been converted to some other use.” (IPCC 2007, p. 86)

67 The IPCC defines the term “afforestation” as “[p]lanting of new forests on lands that historically have not contained forests.” (IPCC 2007, p. 76)

68 Source document: Justia Bolivia (no date) Ley De Medio Ambiente Ley 1333 1989-1993. Available 11 February 2013 @ <http://bolivia.justia.com/nacionales/leyes/ley-1333-1989-1993/gdoc/> and <http://docs.bolivia.justia.com/nacionales/leyes/ley-1333-1989-1993.pdf>

69 Ruíz mentions “corruption” as being among Bolivia’s “main types of human and civil rights abuses against the population” (Ruíz 2007, p. 206; attributed to Defensor del Pueblo 1998).

exception. [...] Principles are there to be trespassed. Laws are created such that they can be circumvented. People resist structure. Their mentality is conducive to maintaining 'dis-structure', negative structure, chaos. The government can be most agile the less structure is maintained. Take FSC [Forest Stewardship Council] certified timber cleared in Alto San Pedro: all of it is illegally hewn. People don't realise that laws have a protective function and are meant to create structure and order. People don't feel part of *res publica*⁷⁰ [lat: 'public matter'], don't feel part of the bigger whole, their biggest delusions are: to think that the Earth is not finite, and to dismiss conjunctions of cause and effect. People can't just go elsewhere; things are finite, everywhere. We need sweeping reforestation!

People don't know why, but everybody respects that it's wrong to commit murder. We need that same awe with regard to trees. The catholic church could use its established structures and moral authority to infuse such awe [of the environment] in people: 'don't touch the tree, it is holy; creation is part of the plan of God, inviolable, worthy of protection.' [...] The structures, traditions and academic foundations [of the catholic church] are practically all in place... [It] should use this archaic responsibility to foster environmental *mens rea*⁷¹ [lat: 'guilty mind']. Policy makers need to establish appropriate frameworks that create structure from the top-down. Conscience needs to contribute censorship from the inside-out." (Unidentified respondent; Q20/Exp/Dest/Santa Cruz de la Sierra/20101223)

A survey conducted on behalf of the human rights ombudsman (Defensor del Pueblo 1998) produced similar findings:

"Environmental degradation. Various regions of Bolivia suffer from indiscriminate clear-cutting of forests and woodlands (by lumber companies and colonizers), unrestrained urban sprawl, inappropriate use of water resources, and lack of precautions in mining and oil drilling as well as industry. There is troublesome lack of interest in environmental issues at the local and national levels of authority." (Ruíz 2007, p. 207; emphasis original; attributed to Defensor del Pueblo 1998)

It is a preliminary finding of this research that elements of Bolivia's land reform programme (INRA 1715, INRA 3545), also anchored in Bolivia's 2009 Constitution (eg, Article 398 in CPEB 2009, p. 94), appear to be implicated in fuelling the country's high rate of deforestation. Well-intentioned as Bolivia's land reform agenda may be in principle, there is high agreement and much evidence that aggressive deforestation may be

70 The Oxford Dictionary defines "res publica" as "the state, republic, or commonwealth. Latin, literally 'public matter.'" (McKean 2005 p. 1443)

71 The Oxford Dictionary defines "mens rea" as "the intention or knowledge of wrongdoing that constitutes part of a crime, as opposed to the action or conduct of the accused. Compare with ACTUS REUS. ▶ mid 19th cent.: Latin, literally 'guilty mind.'" (McKean 2005 p. 1060)

linked in part to (1) widespread fears among land owners of losing their “unproductive” forested lands through expropriation, and/or (2) to the audacious advances by landless settlers seeking to assert ownership claims to their occupied lots by overtly demonstrating their “productive use” of the same through fire clearance and subsequent cultivation.

Natural regeneration through the widespread planting of trees has been successful in other parts of the world which are similarly prone to processes of erosion and desertification (Kinver 2011, Brown et al 2011, WVA 2010, WVE 2011). With *Pachamama*⁷² (Mother Earth) now referenced in Bolivia’s new constitution (CPEB 2009, Preámbulo p. 2; cf, Ingham 2007), and with a new *Ley de Derechos de la Madre Tierra* (Law of the Rights of Mother Earth) on course to give nature equal rights to humans (Cochabamba Documents 2010, LDMT 2010, Ugarte 2012, Weinberg 2010), it remains to be seen whether or not these measures can invigorate forest conservation on the scale and speed needed (Vidal 2011, Deppe 2012, LDMT 2010, El Deber 2011). Preventing the clear felling of Bolivia’s remaining forest appears to be a priority so urgent that in 2011 the United Nations brought it to the attention of the Bolivian Government (El Deber 2011).

Before concluding this subsection one final observation appears to be in order: Anderson considers rural-urban migration and the thinning out of rural areas as generally conducive to environmental sustainability and conservation, given that the cumulative people pressure exerted on natural systems in ecologically sensitive areas is reduced (Anderson 2002, p. 7). Accordingly, rural-urban migration may be both an effect of deforestation (as people leave degrading environments which can no longer support agricultural livelihoods), and a *proviso* to contain resultant environmental damages (as pressure from human encroachment on natural systems is reduced).

In view of Bolivia’s high rate of land degradation sustained from deforestation, logging, hydrocarbon prospecting and exploitation, mining, soil and water pollution, agricultural encroachment, erosion and desertification, heightened preparedness would seem to imply a careful re-evaluation of Bolivia’s land reform programme in policy and practice. Second, strengthening local and national institutional capacities would seem necessary if land tenure laws and basic principles of environmental stewardship are to be more successfully enforced.⁷³ Finally, a moratorium on deforestation may need to be implemented and enforced – along with coordinated reforestation and afforestation initiatives

72 Pachamama (“Mother Earth”, or lit: “Mother World/Land”) is a goddess revered by indigenous Andean peoples (Ingham 2007).

73 The weaknesses of Bolivia’s institutional capacity were recently exemplified by protesting police officers demanding pay rises (BBC 2012a; see also BBC 2012).

– if processes of desertification and erosion are to be successfully decelerated and, if possible, stopped and reversed.

In the view of this researcher there is no doubt that forest and agriculture dependent livelihoods will come under growing pressure this century as climate change impacts continue to register in aridifying or desertifying regions in Bolivia. In this context it seems highly likely that progressive climate change will increase precipitation variability and exacerbate vulnerabilities to drought enhancing El Niño and El Niño–Southern Oscillation (ENSO) events (Davis 2001, Kennett et al 2012). This prospect makes the protection of Bolivia’s remaining forest appear urgent and unequivocal. Inversely, ongoing deforestation can be expected to make a difficult situation catastrophic, with more climate change and more *ad hoc* migration guaranteed.

Having discussed the interplay of deforestation, climate change and migration, the fourth subsection will take a look at matters pertaining to ethnocultural equity.

(4) Ethnocultural equity and education matters

Cultural and historical factors are also implicated in human migration, perhaps most notably the admission by migrating heads of family (whether male or female) that their large families, along with associated responsibilities, leave many of them no other options but to move and search for employment opportunities elsewhere. Given the history of violent enslavement, persecution, pillaging and widespread population decimation to which indigenous communities in South America were subjected by the *conquistadores* and their diseases, population growth seems to be largely dismissed as a problem, or at times even conceived as a positive sign of ethnocultural resurgence. In this context the issue of population growth remains a sensitive issue in Bolivia today. Other culture related matters discussed in this subsection which also impact on migration include sociocultural drivers, political incentives, lifestyle preferences, education opportunities in rural areas, and entrepreneurial or business culture. Population growth is discussed first, followed by an analysis of underlying reasons.

As observed in Section 4.4, “population growth, ie overcrowding” in communities of investigation was widely seen as contributing to migration, with 100% of respondents rating population pressures as either “important” (6/9) or “very important” (3/9). Aspects of family identity were also noted as implicated in the mix of underlying migration drivers, with 90% of respondents regarding “following another family member” as either “important” (8/10) or “very important” (1/10).

According to the following respondent commentaries, estimations of average family sizes vary considerably: “Some parents have 10-15 children” (Q3/Exp/Orig/Charagua/

Figure 4.26: Number of children per adult Guaraní, communities of origin and destination

Interview details	Age	Sex	Children per Guaraní respondent
(Q2/Migr/Orig/La Brecha/20101208)	40	m	8
(Q5/NMigr/Orig/Itatiki/20101209)	55	m	4
(Q6/NMigr/Orig/Guaichindi/20101210)	?	m	3
(Q7/Migr/NMigr/Orig/El Cruce/20101210)	58	m	5
(Q8/Migr/NMigr/Orig/Ipitimiri/20101211)	45	m	5
(Q9/Migr/Orig/El Cruce/20101211)	38	m	4
(Q10/Migr/Orig/El Cruce/20101211)	33	f	4
(Q14/NMigr/Orig/Sinaí/20101216)	35	m	3
(Q17/NMigr/Orig/Ivampirapinta/20101217)	35	m	3
(Q18/Migr/NMigr/Orig/Ivampirapinta/20101217)	66	m	7
(Q21/Migr/Dest/La Bélgica/20101229)	64	m	5
(Q22/Migr/Dest/La Bélgica/20101230)	42	m	6
(Q23/Migr/Dest/Santa Cruz/20101231)	49	f	6
(Q24/Migr/Dest/Santa Cruz/20101231)	57	m	7
Average age	47.5		5

20101209); “on average each couple has around 10 children, some have 8, others 11” (Q5/NMigr/Orig/Itatiki/20101209); “the average number of kids is 3-4 per couple ... I have 3 [children] but would have more if things weren’t so tight [economically]” (Q6/NMigr/Orig/Guaichindi/20101210); “the average couple has 6 kids” (Q14/NMigr/Orig/Sinaí/20101216); “the average family size is 8 – parents plus 6 children” (Q19/Exp/Orig/Camiri/20101218); “we need better health care and family planning, some couples have 15-18 kids, they can’t take care of all their kids” (Q24/Migr/Dest/Santa Cruz/20101231); “people don’t talk about [reproductive health, family planning], they put children into the world without thinking much about the future ... there is [sociocultural] pressure to have many children; 3, 6, even 9 kids are not unusual; people say: ‘God sends us kids, we will embrace them’ – and they do” (Q34/Exp/Dest/El Alto/20110112).

According to demographic data collected by field research questionnaires⁷⁴ the average number of children per Guaraní couple is five (Figure 4.26). The small size of the sample effectively means that this number should be treated with caution and interpreted as indicative rather than as determinative: it may be concurrently “roughly right” and “precisely wrong”. In fact, today’s rate of population growth in Bolivia is difficult to know with any level of certainty because of old and largely outdated census data: with the last census carried out in 2001 and no firm commitments made by the Morales ad-

74 Of all Guaraní respondents queried, 14 indicated the number of their children which ranged from 3 to 8.

ministration regarding if/when a new census is to be held,⁷⁵ much of Bolivia's demographic data today appears based on extrapolating 11-year-old census data (INE 2001, 2001a; cf, Albó 2008, WHO 2007). A respondent working for Bolivia's public administration commented on the census situation:

"There is huge in-migration in El Alto: 85% of the people in El Alto are migrants. *Campesinos* keep coming from the countryside [...] According to the old census El Alto has a population growth of 10% ... 30,000-50,000 people annually, but the figures could be much higher. There is a new census planned for 2011, but nobody knows the month." (Unidentified public servant interviewed in El Alto; Q34/Exp/Dest/El Alto/20110112)

The high rate of in-migration to El Alto is corroborated by the U.S. State Department which considers El Alto "one of the fastest growing [cities] in the hemisphere" (USDS 2012). Three interviewees contacted by telephone on 15 May 2012 in Santa Cruz de la Sierra confirmed that the most recent census was eleven years ago and that a new census was likely being delayed by the Morales administration to avoid prompting any changes to Bolivia's internal tax revenue distribution which is derived from this data.⁷⁶

One of the results of working with old data is that it can spawn conflicting views and no small amount of confusion about the population sizes of cities in Bolivia, including the question whether Santa Cruz or La Paz/El Alto is the more populous or fastest-growing urban conglomerate. At present precise comparisons between similar size cities appear difficult, if not impossible. Notwithstanding the difficulties involved in working with demographic data of questionable accuracy, reliability, and up-to-date-ness, the implications of significant population growth (and not merely the effects of rural-urban migration) may be inferred from key commentaries which addressed overcrowding.

One key informant interviewed in Charagua suggested that family sizes were influenced by notions of productivity:

"The mentality of the Mennonites may be described like this: the more kids you have, the more *productivo* [productive] you are. The mentality of the Guaraní, on the other hand, may be described like this: the more kids you have, the more *bombre* [masculine/manly] you are. [...] The problem is that Guaraní women have too many children, with the result of little active family planning and shortcomings in child socialisation." (Unidentified female Mennonite, Charagua, Cordillera Province, 9 Decembre 2010)

75 As at the time of writing during June 2012.

76 Three unidentified respondents were contacted in Santa Cruz de la Sierra by telephone on 15 May 2012 and answered questions relating to demographic and census issues in Bolivia (recording on file with this researcher).

Another respondent appeared to suggest that large family sizes were implicated in impelling out-migration from agricultural areas, given that “population growth means there is not enough space, ... the place is ‘full’, there is disorder” (Q16/Exp/NMigr/Camiri/20101216). A third respondent affirmed: “People are also pushed to migrate on account of population growth and overcrowding; there simply isn’t enough space to sow, hence many people are unemployed and seek better opportunities elsewhere” (Q8/Exp/Orig/Ipatimiri/20101211). A community development worker further suggested that population growth and migration were also influenced by nomadic disposition: “Planning is difficult to integrate into a nomadic lifestyle. There are few choices: it’s either agriculture – or unemployment. Population growth also means that space is too limited to feed everyone at a subsistence level” (Carlos Lazarte; Q13/Exp/Orig/El Cruce/20101215).

Finally, the view was expressed that although the communities were typically “safe” (Q8/Exp/Orig/Ipatimiri/20101211), general shortage of arable land and resource scarcity were simmering sources of conflict which occasionally erupted, triggering international migration. This was acknowledged by two respondents:

“Lack of space for agriculture is a big issue. Conflicts over resources are very real: my sister’s husband left for Argentina after others beat him in a community conflict.” (Unidentified respondent, 16 December 2010, Comunidad Sinaí, Cordillera Province).

“There are also fights and conflicts over resources between families and neighbours. In Guaichindi there is not enough land, so people go to Argentina. There is also sexual abuse, crime, even murder.” (Unidentified respondent, 17 December 2010, Comunidad Ivamirapinta, Cordillera Province)

While it cannot be inferred from these commentaries that population growth and related resource scarcities are necessarily the *exclusive* underlying “causes” of conflict in communities of investigation, it does appear that they are unmistakably implicated in the mix of contributing factors. This is also reflected in the literature:

“Rapid population growth in rural areas has worsened the problem ... by increasing the man-land ratio. Even though the proportion of the population living in rural areas has been decreasing, fertility in the rural areas is much higher than it is in the cities. In 1975, in the city of La Paz, there were 4.8 children per adult woman... In rural areas there were 7.8 children per adult female.”⁷⁷ (Romero Pittari 1982, p. 307)

77 Given that the overall situation of subsistence farmers in rural areas has changed little over recent years it would seem conceivable, if not likely, that rural fertility rates could still be high vis-à-vis declining trends observed in cities. According to the latest UN Human Development Index figures the “[t]otal fertility rate” for the entire country of Bolivia is 3.2 (UNDP 2011, p. 140).

It appears that notions of “limited space” acknowledge at least three realities, namely: (1) population growth is recognised by respondents as contributing to perceived economic pressures at the household level; (2) resultant increases in demands on resources (eg, agricultural land, livestock, etc) and services (eg, education, health care, amenities etc) appear to introduce a small but growing level of competition among community members; (3) seasonal or cyclical (rural-urban-rural) labour migration or permanent (rural-rural or rural-urban) out-migration are seen by respondents as avenues to avoid resource scarcity and thereby avert ensuing conflict situations.

It may also be that the above mentioned commentaries describing “rural overcrowding” reflect not only on the growing number of people but also on the lagging provision of services available in remote rural communities. The benefits of service provision associated with rural-urban migration are noted in the literature:

“[R]ural-urban migration may be one of the cheapest ways of reducing poverty in Bolivia because it is so much cheaper to provide basic services like electricity, piped water, schools, and health services to people when they are gathered in towns or cities. In addition, economies of scale in the cities bring economic opportunities and increase people’s income.” (Andersen 2002, p. 1)

There appear to be several reasons for Bolivia’s high rate of population growth. The World Health Organization (WHO) attributes Bolivia’s high crude birth rate of 28.5 births per 1,000 population to the country’s “large population of young adults, high fertility rates (3.7 children per woman), and women’s lack of autonomy in decision-making and consequent inability to exert their sexual and reproductive rights” (WHO 2007). Additionally, this research suggests that there may be other cultural, historical and even political causes implicated in Bolivia’s significant population growth rate. While this case study is particularly interested in the contributing effect climate change is having on human migration, it is important to note that there seem to be other underlying issues which are difficult to disentangle from climate change related processes of migration. Climate change appears to be a push factor which is intertwined with demographic, historical and cultural push factors, as one key informant observed:

“The issue why people emigrate from Isoso is this: a father finds himself with 10 children or 15 children, ... feels overwhelmed by their needs, because he has a very large family to support, and that causes him to feel an urge to leave and find another job and resources to sustain the family. [...] The issue of family planning is a very difficult and sensitive [matter], no government institution or NGO has been able to tackle this issue. [...] Those who have tried to address the issue of family planning – the government and some institutions – have always come up against a barrier. And [because of] this cultural issue that the Guaraní have lived through in the last century, the subject of family planning is definitely not on their agenda. They are in the process of expanding

themselves, expanding their culture, to have more Guaraní, and occupy/claim their [ancestral] territory.” (Unidentified respondent, 9 December 2010, Charagua, Cordillera Province. Spanish verbatim citation in Appendix E.4.)

Given the historical precedent of brutal enslavement, persecution and widespread annihilation which the ancestors of today’s indigenous Guaraní suffered at the hands of the *conquistadores* (today it would be called genocide), large families do not seem to be viewed as a problem, but if anything, as an insurance policy against ethnocultural demise. Even today hydrocarbon multinationals routinely circumvent, marginalise and “non-consult” with indigenous Guaraní in their rapacious exploration and extraction pursuits (Perreault 2012, Weinberg 2010, Sawyer and Gomez 2012, Albó 2008, Larson 1988, Simón et al 1980, Kelley and Klein 1981).

In this context birth control, reproductive health and family planning appear to remain underappreciated issues of relevance in much of Bolivia today (Mooney 1910; IACHR 2007 esp. pp. 69-75 {paragr. 257-276}; IACHR 2008, IACHR 2009; cf, Garcia 2008, Schipani 2009). In the view of one key informant the history of cultural subjugation in Bolivia is still ostensibly ubiquitous:

“Reproductive health and family planning are hot potatoes that nobody wants to touch ... Some of the Guaraní are also afraid that their ethnic community may diminish or even die out. There are historical reasons for this. In the past there used to be millions of Guaraní, now there may be only around 100,000.⁷⁸ Half a century ago these indigenous communities were in a state of semi-slavery. These people really struggled and were under a lot of pressure.⁷⁹ Now they want to recover their rights and expand.” (Gustavo Garcia Gutierrez, Oficial Mayor Administrativo Gobierno Municipal Charagua, Cordillera Province; Q3/Exp/Orig/Charagua/20101209)

According to the World Health Organization (WHO), Bolivia’s Guaraní are an ethnic minority today: “[a]ccording to the 2001 census, 31% of the population identified itself as Quechua, 25% as Aymara, and 6% as Guaraní and other Amazonian ethnic minorities,⁸⁰ while 38% did not identify with any particular ethnic group” (WHO 2007; cf, Albó 2008; Perreault 2012).

78 Another respondent interviewed in Camiri on 18 December 2010 suggested there are “*más de 76,000 habitantes del Pueblo Guaraní*” [ie, more than 76,000 Guaraní]. According to Perreault there are “some 144,000 [Guaraní] people.” (Perreault 2012, p. 77; attributed to Albó 2008)

79 There is a significant body of evidence suggesting that hundreds of Guaraní families are still in a state of semi-slavery today (see eg, IACHR 2008, IACHR 2007 esp. pp. 69-75 {paragr. 257-276}; IACHR 2009; see also Garcia 2008, Schipani 2009).

80 Eg, the Ayoreode ethnic people group in Bolivia’s Chaco number only 2,500 (Méndez Vedia, 2012).

In addition to the historical factors just mentioned there may also be sociocultural issues which support the formation of large families:

“There are cultural reasons for large, incoherent families. Often one man has children with multiple wives – his third wife may live next door, a mere 30 metres away; all of this means little family cohesion, it reinforces individualistic lifestyles. When they eat, the men eat first, then the women.” (Unidentified respondent, 9 December 2010, Charagua, Cordillera Province)

Other respondents commented on cultural and even political factors which they viewed as being implicated in population growth. One female Mennonite remarked:

“The issue how many children each family has, initially comes down to a cultural factor. They think that the more children they have, the more blessed they are: ‘so I have more help in the Chaco with the crops.’ Moreover, the government issued another *Bono* [social service benefit] called *Bono Juana Azurduy*. This is to help every pregnant woman, from the beginning of pregnancy. For every medical check-up she has, she receives a *Bono* of 50 Bolivianos,⁸¹ until the child is born. At the time of giving birth, she receives an amount of 120 Bolivianos,⁸² I think, and this *Bono* continues ... with the sole purpose of benefiting the child and ensuring his [/her] vaccinations. Well, at present they see this as an economic issue: ‘if I get pregnant or I have another child, I will receive this *Bono*.’ And it has been noticed that there is an increase in pregnant women. However, they’re not seeing implications through to the future, what may follow: ‘for if we abound in children, we cannot have the necessary economic conditions to give them a good quality of life.’ Yet starting a family planning programme is dangerous for cultural reasons. I don’t think it’s impossible, but it is a subject we need to analyse from many points of view.” (Unidentified female Mennonite, 9 December 2010, Charagua, Cordillera Province. Spanish verbatim citation available in Appendix E.5)

While in the view of the respondent some women appear swayed by the *Bono* to treat pregnancies “*como un negocio*” (like a business; *ibid*), there is also evidence that this *transferencia condicionada* (conditional cash transfer = CCT) of up to 1,820 Bolivianos⁸³ has already made a positive contribution in Bolivia, for example, by safeguarding family rights to health, by supporting family planning in isolated communities, and by lowering the rates of maternal mortality, neonatal mortality and chronic malnutrition in children less than two years of age (MSD 2009, PPSMNN BJA, Navarro 2012; Molyneux and Thomson, p. 19; UNFPA, n.d.).

81 Approximately US\$ 7 (ie, on the day the interview took place: 9 Dec 2010; Section 1.7).

82 Approximately US\$ 17.50 (ie, on the day the interview took place: 9 Dec 2010; Section 1.7).

83 Approximately US\$ 265 (if converted at June 2011 exchange rates, ie time of writing; Section 1.7).

A local government representative also cited issues of lifestyle and business culture as reasons for migration:

“Alto Isoso – the name that encompasses all the communities in the area – has around 12,000 to 15,000 inhabitants. Migration in these areas is not a new thing. There are at least three cultural issues driving the migration. First, these people are more nomadic. Second, they are known to hunt. And third, they love their freedom and independence [*aman su libertad y su independencia*]. Seasonal migration, and being employed as day labourers, gives them more financial planning reliability than agricultural work. They know: ‘In two months I’ll have money.’ It is immediate money, quick cash. In contrast, here in rural communities harvests and incomes are unreliable. We believe that education and production or manufacturing are building blocks for change and stable livelihoods.” (Gustavo Garcia Gutierrez, Oficial Mayor Administrativo Gobierno Municipal Charagua, Cordillera Province; Q3/Exp/Orig/Charagua/20101209).

An employee working for the NGO Visión Mundial Bolivia also stressed the importance of longer-term planning and budgeting:

“While working for six or seven months in the *zafra*, during which time they generate income, the money they earn, they invest it in the short run. Unfortunately, [many migrants] do not know how to manage it well and run out in two months, returning to the same starting point while waiting for the next seasonal cycle to begin when they migrate again to the *zafra* the next year. So there is no future vision. Culturally, the Guaraní [people] do not have a business vision. You could say that they live for the day and are conformists.” (Unidentified respondent, Charagua. Spanish verbatim citation available in Appendix E.6.)

Finally, it was suggested that fostering entrepreneurial business acumen needs to go hand in hand with basic household level budgeting: “a domestic economic concept is needed... how can you pay 10 Bolivianos⁸⁴ for a beer when you only earn 35 to 40 Bolivianos⁸⁵ per day!” (Unidentified key informant; Q11/Exp/Orig/Hacienda Y., Cordillera Province/20101213)

In this regard a pivotal point needs to be raised, namely that the education of a majority of migrants appears to be routinely eclipsed. A short elaboration of key observations follows.

A significant percentage of respondents interviewed for this case study indicated primary school as their highest level of educational attainment. Of all those respondents

84 Approximately US\$ 1.50 (ie, on the day the interview took place: 13 Dec 2010; Section 1.7).

85 Approximately US\$ 5 to US\$ 6 (ie, on the day the interview took place: 13 Dec 2010; Section 1.7).

who provided this data,⁸⁶ 50% indicated primary school (years 1-6) as their highest level of schooling, 36% did not advance beyond secondary school (years 7-12), and only 14% commenced or completed tertiary education. The average derived from this sample shows the adult Guaraní life-long school attendance is 8.4 years (Figure 4.27). Despite being drawn from a small sample the statistic broadly corresponds with data compiled by UNDP which estimates that the “[m]ean years of schooling” in Bolivia is 9.2 years (UNDP 2011, p. 128).

Evidently, national averages mask internal disparities. According to research conducted in Bolivia by Kelley and Klein, “a child born into the elite white-collar family could expect to get nine years more education than the llama herder’s son” (Kelley and Klein 1981, pp. 162-163). A possible explanation for such disparities was offered by one respondent:

“Typically, in rural areas, when a child refuses to go to school, parents do not pressure the child to attend, perhaps reasoning like this, ‘I have an extra pair of hands [available] to help me in [my] *chaco* [plot of land for growing corn].’”⁸⁷ (Q4/Exp/Orig/Charagua/20101209)

A similar view is advanced by Kelley and Klein who argue that

“high ranking families would always be able to acquire more education for their children. In part, this probably has to do with money, since prosperous families can better afford to do without their child’s labor at home and to pay his school fees.” (Kelley and Klein 1981, p. 162)

While it may be true that some parents do not pressure their children enough to attend school or cannot afford the prohibitively high opportunity costs of foregoing their children’s labour and income contributions, it appears that the situation may be more intricate, and that low levels of education could also be rooted in purposive labour exploitation based on notions of ethnocentric superiority (Simón et al 1980). According to the Inter-American Commission on Human Rights (IACHR), ethnocultural subjugation is routinely implicated in the deliberate non-education of many Guaraní, and in particular among groups living in conditions of bondage or semi-slavery in rural areas of Bolivia’s

86 The sample comprises 17 Guaraní respondents (three of whom did not volunteer this information) and was collected in El Cruce, La Brecha, Itatiki, Ipatimiri, Sinaí, Ivamirapinta, La Bélgica and Santa Cruz de la Sierra.

87 Verbatim rendition: “Por lo general en el área rural, cuando un niño no quiere ir a la escuela, los padres no lo presionan para que asista, tal vez tiene un objetivo, pues si el niño no va a clases, la mentalidad es: ‘Tengo una mano de obra más que me ayuda en el chaco’ [parcela de tierra de cultivo de maíz]”. (Q4/Exp/Orig/Charagua/20101209)

Figure 4.27: Years of schooling completed by interviewed non-expert adult Guaraní migrants

Interview locations	Age	Sex	Years attended	Highest level of education
Comunidad La Brecha	40	m	6	Primary school*
Comunidad Itatiki	55	m	6	Primary school*
Comunidad El Cruce	58	m	8	Secondary school
Comunidad Ipatimiri	45	m	15	Tertiary education**
Comunidad El Cruce	38	m	5	Primary school
Comunidad El Cruce	33	f	6	Primary school
Comunidad Sinaí	35	m	8	Secondary school
Comunidad El Cruce	17	f	11	Secondary school ("in progress")
Comunidad Ivamirapinta	35	m	12	Finished high school
Comunidad Ivamirapinta	66	m	6	Primary school
Comunidad La Bélgica	64	m	6	Finished primary school
Comunidad La Bélgica	42	m	12	Finished high school
Santa Cruz de la Sierra	49	f	2	Primary school, finished year 2
Santa Cruz de la Sierra	57	m	15	Tertiary education ("in progress")
Average Age	45.3		8.4	Average years of schooling

* 6 years of schooling assumed (exact number unknown)
 ** 15 years of schooling assumed (exact number unknown)

Chaco. In this context the education statistic of 8.4 years of average schooling (Figure 4.27) may even be overly optimistic:

“The situation of bondage and forced labor is maintained by the conditions of poverty and scant education in which the majority of the members of the Guaraní people live in the region, as a result of the living and working conditions imposed by the estate owners. In the rural Chaco more than 90% of the population is living in poverty in most of the Guaraní communities. Over 55% of the Guaraní are illiterate...” (IACHR 2009, paragr. 103, p. 30⁸⁸)

During fieldwork conducted by IACHR in 2008 a Guaraní man made a statement which suggests that non-education may not be circumstantial:

“They didn’t allow us to go to school, they told us why are you going to study, you have to work. Due to the bosses, we haven’t been able to learn, and education would have been very important... I carried stones and water to build this school, when I was a little boy, nonetheless we haven’t studied here, they didn’t let us. That’s why we haven’t

88 Attribution: “Capítulo Boliviano de Derechos Humanos, Democracia y Desarrollo. *Situación de las Comunidades Guaraní en Bolivia. Resumen del Diagnóstico 1998-2001.*” (IACHR 2009, paragr. 103, p. 30, footnote 139)

studied well, and that's why, I say, one must tell the truth." (IACHR 2009, paragr. 122, p. 35⁸⁹)

In light of the body of evidence compiled by IACHR it appears that non-education is neither coincidental nor circumstantial but may, in fact, be actively coerced by estate owners as a deliberate form of repression, by prolongation of which the labour exploitation of vulnerable, subservient or bonded communities can be indefinitely continued.

"A weak state presence, together with low investment in educational services and other facilities (not to mention culturally biased curricula) means that, with poor literacy and numeracy, they are usually ill equipped to deal with outsiders, who can easily deceive them into debt bondage." (IACHR 2009, paragr. 139, p. 42; attributed to ILO 2005, paragr. 181, p. 39)

There can be no doubt that education has a key role to play in raising the social resilience and self-sufficiency of young people in the face of climate change, and preparing them both for the world within and without their rural community context (Figure 4.28). Naturally education raises options, and inversely lack of education limits them. In this sense free and compulsory education for all seems to emerge as a "no regrets" climate change adaptation strategy which will pay dividends irrespective of which climate change and migration scenarios are ultimately realised (Starke and Mastny 2010).

The high priority of ensuring education is similarly acknowledged by the Intergovernmental Panel on Climate Change (IPCC) in its report *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*: "Recent studies conducted in Bolivia... provide evidence of how extensive (low impact/high frequency) disasters negatively affect children's education, health, and access to services such as water and sanitation, an issue of critical importance given the importance of primary education for human and long-term economic development" (IPCC 2012, p. 455; attributed to UNISDR 2011; p. 7). According to the IPCC, promoting education is particularly critical in view of the finding that climate change related disasters and education are negatively correlated: "In areas in Bolivia that experienced the greatest incidence of extensive disasters, the gender gap in primary education achievement widened, preschool enrollment rates decreased, and dropout rates increased." (IPCC 2012, p. 455)

Research into poverty and inequality in Bolivia conducted by Spatz (2006) provides an insightful synthesis of core issues discussed in this subsection, incorporating aspects of poverty, rural-urban disparities, climate change, education, and fertility. These issues ap-

89 Attribution: "Testimony received by the IACHR during its visit to Itacuatía, June 11, 2008." (IACHR 2009, p. 35, footnote 163)

Figure 4.28: Guaraní children along the road from Charagua to Isoso. Throughout field research the education of children emerged as the most promising priority for preparedness informed migration and climate change adaptation. (Photo: Johannes Luetz; 8 December 2010)



pear inseparably intertwined with matters pertaining to history and ethnicity, and are therefore not easily disentangled:

“Bolivia has made some progress in reducing poverty since 1989; but the welfare gains were unevenly distributed. Most striking was the large and growing difference in the incidence of poverty between urban and rural areas. The widening of the urban-rural divide can be partly attributed to the inferior growth performance of rural areas as a consequence of the difficult ecological and climatic conditions for agricultural production exacerbated by the adverse impact of the El Niño/La Niña weather phenomenon. [...] Another divide which has widened over the last 20 years is between households with few children and those with many children, reflecting the considerable fertility decline among the non-poor in Bolivia over the last 20 years. If the fertility decline reaches the poor, it will be a major driving force of poverty reduction as it was elsewhere in recent years... A promising strategy to promote and accelerate the fertility transition of the poor is a combination of further improving the *access to, and the quality of, primary and secondary education as well as basic health services* – especially for women⁹⁰ – and of increasing the *availability of low-cost family planning* for the poor, which still appears to be a problem in some rural areas of Bolivia.” (Spatz 2006, pp. 102-103; emphases original)

90 Footnote original: “The impact of female education on fertility is well documented in Bolivia. Women with more than 12 years of schooling have only 1.9 children, compared to 6.7 for (the by now very few) females with no education.” (Spatz 2006, p. 103; attributed to INE 2003)

In summary, issues of history, sociocultural background, ethnocultural identity, lifestyle preferences, political incentives and social services, business mentality and entrepreneurial acumen, including population growth and education, clearly impact on climate change related migration outcomes. Although some of these matters are not immediately related to climate change it appears impossible to ignore or separate them from any meaningful holistic analysis of human movement in Bolivia, especially if ethnocultural equity is to be increased, and importantly, if more equitable migration and integration outcomes are to be enabled in the future.

The fifth and penultimate subsection will take a look at matters relating to the rule of law.

(5) Rights fulfilment matters

Many migrants appear to confront both urban context opportunities and opportunism with insufficient knowledge of their inherent rights, including child rights, labour rights, human rights and rights to education. It follows that many of them are easily ensnared, taken advantage of or exploited when they do not react or object after their rights are overlooked, violated or labour regulations are transgressed (Vaca and Cabitza 2011). On the other hand, awareness of rights can help pre-empt problems and redress undesirable consequences after their violation. In the simplest of terms, only when people know that they are endowed with unalienable rights can they take the necessary steps to avail themselves of any protection afforded them *by* those same rights.

Nongovernmental organisations (NGOs) working in migration affected communities are increasingly propagating the importance of “rights based” education as the first step to equipping and empowering people to look out for themselves (Q13/Exp/Orig/El Cruce/20101215). While the previous subsection already discussed education in its own right, this subsection will look at the “rights” aspect of it.

A study called *Caña dulce, vida amarga* (in English: “Sweet cane, bitter life”), conducted by the International Labour Organization (ILO) and the United Nations Children’s Fund (UNICEF), found clear evidence that education is frequently thwarted by child labour in Bolivia, an exploitative practice frequently associated with seasonal labour migration:

“[t]he inclusion of children and adolescents [as labourers] in the *zafra* [not only] violates universally recognised rights, ... depriving children of their childhood, their potential and their dignity while harming them physically and mentally, [but deprives] them of the opportunity to go to school or forcing them to drop out. Thus, a fundamental

right of every child and teenager, the right to education, is violated.” (Mosquera et al 2004 p. 7; cf, ILAB 2010)⁹¹

It would seem that if a child can be made to understand that he or she has both a duty and a “right” to attend school and learn, education may not be as easily interrupted or aborted as in the case of many seasonal migrant parents who pull their school age children out of school annually, and then leave for 6 months in the middle of the school calendar to work in the sugarcane production. This abrupt change of environment appears to have the tendency to transpose children with immediate effect from their childhood context of schooling to the adult context of paid employment (Simón et al 1980).

According to Mosquera et al, in Bolivia the percentage of children and adolescents who are thus introduced to paid employment from a young age is significant: in Tarija 90% of children working in the *zafra* (both boys and girls) cannot attend school and fail to advance beyond grade five of primary school⁹² (Mosquera et al 2004, p. 21).

According to figures released by Bolivia’s Ministry of Labour there are at least 850,000 children working in Bolivia under dangerous and underpaid conditions, including in “sugarcane and chestnut harvests, mining, fishing, brickmaking, sale of alcoholic drinks, garbage collection, cleaning of hospitals, security protection services, domestic workers and transport vendors/criers” (El Deber 2012).⁹³ According to the report, the main reasons why children and adolescents are working include “poverty, migration, family breakdown or parental irresponsibility as well as economic crises in families” (ibid; cf, ILAB 2010).⁹⁴ According to these statistics working children represent approximately 8.5% of Bolivia’s population (El Deber 2012, UNDP 2011, p. 163). In short, addressing children’s rights to education appears to be a significant, albeit underappreciated opportunity for the progressive empowering of marginalised individuals or communities. This is particularly important in the context of migration: “migrants – particularly low-skilled

91 Verbatim citation: “La incorporación de niños, niñas y adolescentes al trabajo de la *zafra* [...] viola los derechos universalmente reconocidos de este sector de la población: les priva de su infancia, de su potencial y de su dignidad y es perjudicial para su desarrollo físico y mental [...] privándoles de la oportunidad de ir a la escuela u obligándoles a abandonarla prematuramente. Así, un derecho fundamental de todo niño, niña y adolescente, el derecho a la educación, resulta vulnerado.” (Mosquera et al 2004 p. 7)

92 In the *zafra* near Santa Cruz the percentage is approximately 50% (Mosquera et al 2004, p. 21).

93 Verbatim citation: “El Ministerio de Trabajo mencionó entre los trabajos peligrosos: La *zafra* de caña, de castaña, la minería, pesca, ladrillería, venta de bebidas alcohólicas, recolección de basura, limpieza de hospitales, servicios de protección y seguridad, trabajadoras del hogar y voceador del transporte.” (El Deber 2012)

94 Verbatim citation: “Según el reporte del Ministerio de Trabajo, la razón por la que estos niños, niñas y adolescentes trabajan son la pobreza, migración, irresponsabilidad paterna o descomposición familiar además de las crisis económicas en familias.” (El Deber 2012)

ones – are among the most vulnerable people in society and are often denied basic protections and access to services.” (ADB 2012, p. viii)

This highlights “rights dissemination” as an important priority for empowerment, as noted by the Inter-American Commission on Human Rights: “Particular attention should be given to *disseminating* information with respect to the labor rights, agrarian rights, and human rights of the indigenous peoples” (IACHR 2009, p. 69; emphasis added). The Commission also emphasises the role of proper documents: “Another important source of indigenous vulnerability is the lack of official identity documents, rendering them ‘invisible’ to national authorities, and making it virtually impossible for them to denounce forced labour abuse and seek remedial action” (IACHR 2009, paragr. 139, p. 42; attributed to ILO 2005, paragr. 181, p. 39). However, rights dissemination can be effective only if concurrently accompanied by rights enforcement, a point emphasised during an expert interview which underscored the need for community level support structures:

“During the *zafra* the children suffer tremendously... [But the] responsibility [needs to be] shared by all: by parents, communities and authorities. [...] Within our communities we could also address this problem [rights non-fulfilment] through community leadership. A leadership that is sensitised and ready to monitor health, education and the dissemination of rights. Presently there is no community structure that upholds those rights that the children are learning. [...] We have worked extensively for the disclosure/dissemination of these rights. Now many of the children know their rights, yet many people violate those rights, and there is no community structure that can back up those rights. So what we are proposing for the near future is to work towards supporting structures that benefit child wellbeing.” (Carlos Lazarte, Gerente PDA Tekove, Zona Central Camiri; Q13/Exp/Orig/El Cruce/20101215; cited in Luetz and Barrón 2012, p. 50; Spanish verbatim citation in Appendix E.7).

According to Lazarte, the appointment of community *corregidores* [mayors/judges] with two-year terms of office could go a long way in creating said structures where awareness of rights is complemented with enforcement of the same (Q13/Exp/Orig/El Cruce/20101215). Problems of rights non-fulfilment are caused not only by lack of rights awareness by right holders but also by lack of law enforcement by duty bearers, a point highlighted by numerous commentaries, including the following sample:

“Many of the labourers who work in the mill [sugarcane refinery], especially those who carry [loads], when they break a foot, they have nowhere to go to demand/claim support, and if they try, they are told: ‘look, if you want to work, work, and if not, go away!’ So what can we say? There are no rights. [...] But [the employers] divulge in the news [media] that all is well. When the commissioners come [to investigate] the company hides/eclipses [the workers], and does not let them speak. The [only] ones who speak are the section chiefs. [...] A labourer arrives working towards a more comfortable life, but encounters a harsh reality and a minimum salary, as I said, of 1,700

[Bolivianos],⁹⁵ or as little as 900 Bolivianos,⁹⁶ with the reality that he has to pay for rent, groceries, and meet the rising cost of living. And the reality is that the company owners are at times *impuntuales* [unpunctual]. They let [the worker] work two or three months, but pay him only one. We don't have the option to talk openly. The worker is guarded and silent about everything, because if he faces or speaks up to those in charge, they will go after the one who spoke up first. And if he doesn't speak up, he will quietly suffer and bear up with this reality on the inside: 'if you want to work, work; otherwise *ichau!* [bye], you're out.'" (Unidentified 42-year-old respondent; Q22/Exp/Migr/Dest/La Bélgica/20101230; Spanish verbatim citation in Appendix E.8).

According to a report by the Inter-American Commission on Human Rights (IACHR),

"[o]ne factor that allows this situation to persist is the high rates of illiteracy among the population, who, in general, are unaware of their rights and have no way to control the debts recorded in the notebooks at the time of 'settling up' matters with the landowner. The result of this is that the landowner defines the conditions of work, the length of the working day, payment for the work, the form of payment of the debts acquired, the frequency of settlements, the way advances are handled, the type of work to be done, etc." (IACHR 2007, p. 72 paragr. 265; note attribution;⁹⁷ Simón et al 1980)

In sum, "rights" fulfilment, including child rights, labour rights, human rights and rights to education emerges as an effective albeit underappreciated preparedness priority for more equitable migration management. Notwithstanding, in the simplest of terms rights fulfilment can promote protection only if rights are widely disseminated, understood, respected, asserted, and above all, upheld, enforced and guaranteed both by local authorities and the national government (CEPAL 2010, CEPAL 2011; cf, ILAB 2010, UNICEF 2012). This research found much evidence and high agreement⁹⁸ that far-reaching improvements are desired by respondents respecting rights across the entire chain from diffusion to fulfilment (eg, Q21/Migr/Dest/La Bélgica/20101229; Q22/Exp/Migr/Dest/La Bélgica/20101230; Q25/Migr/Dest/La Bélgica/20110102).

95 Approximately US\$ 250 (ie, on the day the interview took place: 30 Dec 2010; Section 1.7).

96 Approximately US\$ 130 (ie, on the day the interview took place: 30 Dec 2010; Section 1.7).

97 Attributed to: "Documentary. 'I Want to be Free, without an Owner'. Indigenous Peoples and Registration. 32 minutes, 8 seconds. Public Defender's Office. Ministry of the Presidency. Vice-Ministry of Justice. Indigenous Peoples and Empowerment." (IACHR 2007, p. 72 / footnote 218)

98 Terms "much evidence" and "high agreement" are used as exemplified by the Intergovernmental Panel on Climate Change: "[w]here uncertainty is assessed qualitatively, it is characterised by providing a relative sense of the amount and quality of evidence (that is, information from theory, observations ... indicating whether a belief or proposition is true or valid) and the degree of agreement (that is, the level of concurrence in the literature on a particular finding). This approach is used ... through a series of self-explanatory terms such as: high agreement, much evidence; high agreement, medium evidence; medium agreement, medium evidence; etc." (IPCC 2007, p. 27)

The likely prospect that climate change could lead to an increase in *ad hoc* human movement in the future seems to make anticipatory legislation, stronger institutional structures and more support for law enforcement agencies an important priority. This is particularly crucial given that “Bolivia consistently ranks among the most corrupt countries in the world in the various surveys of corruption” (Oxhorn 2011, p. 147).

To conclude this subsection, proactive governance in the area of rights fulfilment is an important preparedness priority because it equips migrants, and especially young people, to know their rights *before* these are transgressed.

The final subsection will conclude with a short discussion of financial and social costs.

(6) Cost appraisal matters

This research has found that the true social and financial cost of migrating is not normally appreciated until *after* significant debts have been incurred or unacceptable consequences have been encountered. While migration can reduce problems, for example by opening up new livelihoods, it can also create new ones, for example by draining limited resources which are consumed along the way. Moving is not just a pathway to new income streams, it is also a journey that can be hard to sketch and expensive to afford in terms of hidden financial and social costs (Simón et al 1980).

Referring to Tannuri-Pianto et al (2004), Molina and Yañez observe that the cost of migration is often prohibitively high: “In the Bolivian case, the poorest do not migrate. This is indicative of high internal migration costs. Only the better-off can take on the risk and associated costs of migration” (Molina and Yañez, p. 12).

According to several migrants interviewed during fieldwork the true cost of moving is frequently underestimated until the moment when it is incurred. In Bolivia’s Chaco region this was most dramatically demonstrated by a number of children and teenagers who had been abandoned by their parents, and who did not know if or when their parents would return. Sometimes they were left to the oversight of nearby relatives who then found themselves with the added responsibility of feeding them. One such relative testified: “It is an additional burden to feed another mouth, we ourselves don’t even have enough to eat, but they are family, what can we do!” (Unidentified respondent; Comunidad El Cruce; 16 December 2010)

Although the regional government [Gobierno Departamental Autónomo de Santa Cruz] runs a food programme called *Desayuno y Almuerzo Escolar* (School Breakfast and Lunch) which it supports in the region where fieldwork took place (GAD 2012), in the opinion of NGO workers from Visión Mundial this programme offers a double edged

blessing. On the upside it assures parents that their children's basic nutritional needs are going to be met. On the downside it appears to offer parents an incentive to migrate alone more readily since they are put at ease, knowing that some of the burden of care will be borne by the government. This appears to have some contributing affect on parents' willingness to abandon their children or leave more suddenly than might otherwise have been the case⁹⁹ (Q3/Exp/Orig/Charagua/20101209; Q15/NMigr/Orig/El Cruce/20101216).

Mobility comes with invisible costs which migrants do not always foresee: displacement diverts resources away from long-term development programming to short-term crisis management; seed capital is eaten up rather than invested in future development; stunted economic growth, distress sales of private assets, school absenteeism, family breakdowns, loss of livelihoods, protracted periods of unemployment and health-related ill-effects, including lifelong psychological trauma, are only some of the many opportunity costs associated with forced migration, disaster displacement or environment related human mobility (cf, Luetz 2008 p. 32; Simón et al 1980).

In a number of communities migrants were seen returning home with hefty outstanding debts and apparent feelings of discouragement, confusion, isolation and exhaustion (Q9+10/Migr/Orig/El Cruce/20101211; cf, Navia 2010, Luetz and Barrón 2012). For example, Doña Cándida, a 33-year-old mother of four commented on the high social cost involved in joining her husband for a stint of seasonal migration (Figure 4.29):

"[We] left in March or April and returned only 15 days ago [interview date: 11 Dec 2010]. [We] left the children in the care of [an] uncle. My husband M. went to work in the *zafra*, I worked as a domestic worker. The work was hard. [M.] would always leave at 5:00am in the morning ... [We] weren't able to save anything [because we used up the] earnings. M. earned 24 Bolivianos¹⁰⁰ per ton of sugarcane harvested. [We] would prefer to stay here in El Cruce – if there were rains. But here there is nothing ... right now we have nothing, no maize, nothing to sow. [...] And the rains don't come like in the past. [Dwindling agricultural yields] is the number one reason why people migrate. [...] For me separating ... from the community was very difficult ... I came back twice to see my children ... if I could have seen my children more often, like every two weeks, it would have been easier. [This] experience taught [me] it is better to stay ... I really don't want to go anymore, no matter what!" (Q10/Migr/Orig/El Cruce/20101211; partial Spanish verbatim citation available in Luetz and Barrón 2012, p. 52; Figure 4.29)

99 This view was expressed during interviews with abandoned youth and their relatives conducted in El Cruce, and during a key informant interview conducted with Gustavo García Gutierrez, Oficial Mayor Administrativo Gobierno Municipal Charagua (Q3/Exp/Orig/Charagua/20101209; Q15/NMigr/Orig/El Cruce/20101216).

100 Approximately US\$ 3.50 (ie, on the day the interview took place: 11 Dec 2010; Section 1.7).



Figure 4.29: After eight months of separation from her children Doña Cándida is reunited with her children. To her this separation represented the highest cost involved. She said: “right now we don't have maize, we don't have anything; but alas, I don't ever want to go again.” (Q10/Migr/Orig/El Cruce/20101211; Photo: Johannes Luetz. This story is covered in Luetz and Barrón 2012, p. 52).

While leaving their children for six to eight months is painful for migrating parents, migrating *with* the children is not necessarily a more benign alternative:

“Young children and youth [those below 5 and 14+] often join their parents when they migrate to work in the *zafras*, ... they suffer the most. They have no health care access, contract diarrhoea, suffer. And they don't go to school, this year few children went to school. [...] Wives are sometimes afraid that if they stay in the communities with their children their husbands will find a new wife and not return back to the community, this also happens.” (Carlos Lazarte, Gerente Q13/Exp/Orig/El Cruce/20101215)

Human mobility evidently takes a heavy toll on migrating individuals or communities and sometimes has the semblance of “survival migration” which Betts defined as “persons outside their country of origin because of an existential threat to which they have no access to a domestic remedy or resolution” (Betts 2010, p. 362). For the purposes of this study it is essentially irrelevant whether a national border is crossed (as in the case when migrants move internationally from Bolivia to nearby Argentina) or whether provincial, cultural, ethnic and language borders are crossed (as in the case when Guaraní speaking migrants move internally to work in Bolivia's *zafras*). The cumulative magnitude in ethno-cultural dissimilarities and socioeconomic adversities faced by “survival migrants” is so enormous that the question of national or provincial border crossing seems irrelevant beside this “existential threat” which leaves “no access to ... remedy or resolution” (Betts 2010, p. 362).

In sum, heightened migration preparedness would seem to imply a more effective appraisal of financial and social costs of movement *before* unpayable debts are incurred and unacceptable consequences are encountered. This is no small challenge, and more research is necessary to assess if/how (or to what extent) commonsense anticipatory costing is possible. It has been suggested that microcredit institutions such as the Fundación Boliviana para el Desarrollo (FUBODE) could act as an insurance mechanism against unacceptable social costs (Q19/Exp/Orig/Camiri/20101207). Notwithstanding promising

examples (cf, FUBODE 2012, MicroEnsure 2012), it is important to note that much of the cost associated with “survival migration” cannot be counted or costed in Dollars and Cents or Bolivianos and Centavos,¹⁰¹ and that the “pain of social costs” is experienced subjectively and therefore differently. Moreover, since social costs, eg malnutrition of children (CEPAL 2009 pp. 60-79) are in interdependent relationships with other social costs, eg school absenteeism (ibid pp. 70-72), the combined cumulative opportunity costs are evidently greater than the sum of all parts (cf, CEPAL 2011).

Expressed in simple language, and to conclude this final discussion subsection, heightened preparedness in this area would seem to imply an approach that seeks to appraise the financial and social costs of migration *before* these are incurred.

Having concluded Section 4.5, the next section will attempt to synthesise the implied meaning of key research findings produced by this fieldwork.

4.6 Synthesis of the Bolivia case study

The discussion in Section 4.5 mentioned six topical matters, namely the issues of (1) water management; (2) diseases; (3) deforestation and land tenure; (4) factors relating to history, culture and education; (5) rights fulfilment; and (6) financial and social cost of movement. Even though some of these issues are not immediately related to climate change and migration, they represent key policy priorities that can both forestall uncontrolled climate migration scenarios and/or enable migration responses in ways that are beneficial and equitable. This section will seek to synthesise key points.

As this research has shown, reasons for migration are numerous, interdependent and complex. In the view of this author it is not possible to disentangle the intertwined mix of factors why people decide to move. A monocausal attribution of reasons why people in Bolivia migrate (as presented by Andersen 2002, p. 8) therefore appears methodologically unsound because causes for migration are inclusive, not exclusive (Betts 2010, p. 378). The amalgamation of reasons why people move is as varied and diverse as the circumstances of the individual respondents involved. Both climate change related and non-climate change related factors are contributing to people movements across all areas of investigation. Trying to isolate a single reason for migration, eg, “climate change” or “environmental change” appears impossible. However, concluding that climate change is therefore not implicated in the compound migration mix appears even more untenable. On the contrary, this research suggests that climate change appears unmistakably

101 Bolivian currency units: 1 Boliviano is subdivided into 100 Centavos.

implicated in contributing to human migration in Bolivia. This appears to be evidenced by three observations. First, climate change in Bolivia is already enhancing aridity, variability and drought-conducive conditions; Second, drought can trigger migration or increase the rate of existing seasonal migration; Third, present trends of population growth in rural areas are increasing demands and competition for scarce resources and are exhausting and even depleting natural capital. These matters will be discussed next.

(1) Climate change enhances drought-conducive conditions

First, climate change is already enhancing aridity, variability and drought-conducive conditions in Bolivia, thus exacerbating precipitation related disaster risk (Brown 2011 p. 53, Mariscal et al 2011, UMSA 2010, El Deber 2012a, PNUD 2011, Navia 2010, Díaz et al 2010; IPCC 2012, pp. 405, 455; cf, Figure 3.2 in Section 3.4).

This view is derived both from the literature as well as from anecdotal evidence produced by respondents interviewed for this case study. These commentaries suggest that in the past the rains were more reliable, and the droughts less severe (eg, Q7/Migr/NMigr/Orig/El Cruce/20101210; Q8/Migr/NMigr/Orig/Ipatimiri/20101211; Q11/Exp/Orig/Vicinity of Camiri/20101213; Q14/NMigr/Orig/Sinaí/20101216; Q19/Exp/Orig/Camiri/20101207; Q20/Exp/Dest/Santa Cruz de la Sierra/20101223; Q30/Exp/Dest/UMSA-LaPaz/20110111; Q31/Exp/Dest/BMI-UMSA-LaPaz/20110111).

This was particularly highlighted during a key informant interview with a locally well-known 91-year-old German immigrant who had lived in the Chaco for 62 years and who affirmed that based on his many years of observation the prevalence of heatwaves had “notably increased” in the area since his arrival in the 1940s (key informant interview with Egon Wachtel, 13 and 15 December 2010, Hacienda Yatigüigua, vicinity of Camiri, Cordillera Province).

The prevalence and severity of droughts which have been afflicting Bolivia’s Chaco Cruceño in recent years (Navia 2010, Rojas and Ugarte 2012; El Deber 2012a) have already been described by Díaz et al as being above average:

“Drought is a temporary condition that occurs rarely, for some countries, an event that occurs 1 in 20 years. In the Chaco Cruceño, using the SPI,¹⁰² you can see that the events

102 According to the United Nations Office for Disaster Risk Reduction (UNISDR), “[t]he World Meteorological Organization (WMO) adopted the Standardized Precipitation Index (SPI) in 2009 as a global standard to measure meteorological droughts.” (UNISDR 2011, see p. 58 and Box 3.2 “Measuring meteorological drought” for relevant details pertaining to the SPI; also Sivakumar et al, 2010)

of drought have occurred between 4 and 16 times in the last 33 years.”
(Díaz et al 2010, p. 102, paragr. 2)¹⁰³

Research conducted by the International Research Institute for Climate and Society, Columbia University (IRI, 2010) and Sivakumar et al (2010) suggests that a drought return rate as observed in Bolivia’s Chaco on the order of “between 4 and 16 times in the last 33 years” (Díaz et al 2010, *ibid*) exceeds even “extreme dryness [of] 2.5 occurrences per 100 years” (UNISDR 2011, p. 58) measured in 2010 (Figure 3.2 in Section 3.4).

(2) *Drought can trigger or enhance migration*

Second, drought can trigger migration or increase the rate of existing seasonal migration (Navia 2010, Girard 2012 p. 35, Molina and Yañez 2009, pp. 3-4; Painter 1995, p. 138). This trend is clearly observed in Bolivia:

“The 1981-1990 ten-year period saw the occurrence of two events that were unprecedented in Bolivian history: i) a prolonged drought from 1983 to 1985, which completely impoverished rural and indigenous people in the valley and on the high plateau; this may be considered the moment when climate change started to manifest itself; and ii) an economic crisis from 1985 to 1990, which pushed the country’s economy into a deep depression. [...] These two events triggered huge waves of migration in different directions: to the largest cities (La Paz, Cochabamba and Santa Cruz), to rural areas in the lowlands ... and abroad.” (Mariscal et al 2011, p. 10)¹⁰⁴

A few pages later the authors explain that the drought was exacerbated by an El Niño event which had the following impact on migration:

“Rural out-migration increased drastically. It was starting with this major drought that the country began to feel the effects of climate change, such as alterations in rainfall patterns. In many cases this generated a change in farming practices leading to a delay of the planting season and a fall in the yields of some crops. The reduction in the number of days of rain and the appearance of dry periods at any time of the year is having a major impact by speeding up processes of soil erosion ... [p. 14]. [The drought] was so devastating that it disrupted the agricultural cycle: not even seeds were left. The unanimous response ... was mass migration in two directions: i) to the large cities... the men

103 The verbatim Spanish text reads: “La sequía, es una condición temporal que ocurre en contadas situaciones, para algunos países un evento que ocurre 1 de cada 20 años. En el Chaco Cruceno, aplicando el SPI [Standard Precipitation Index], se puede ver que los eventos de sequía han ocurrido entre 4 y 16 veces en los últimos 33 años.” (Díaz et al 2010, p. 102, paragr. 2)

104 The same “exogenous shocks” are cited by Molina and Yañez 2009, pp. 3-4; Painter 1995, pp. 138-139.

to work in whatever jobs they could find and the women to beg in the streets; and ii) to rural areas ... to work in the sugar cane harvest or ... to obtain land. [p. 20] ... [I]mpoverishment was immeasurably worsened by the El Niño event which acted as the trigger that set off the migration 'explosion'." (Mariscal et al 2011, pp. 14, 20)

In an expert interview for this case study Dr. José Luis Montaña synthesised the meaning of a study (UMSA 2010) conducted by the Universidad Mayor de San Andrés La Paz: "Aridity continues to increase ... and [Bolivia] will have serious problems because the more arid this zone becomes, the more migration will result ... to major population centres. Hence climatic variations are quite dramatic for us in Bolivia"¹⁰⁵ (Q30/Exp/Dest/UMSA-LaPaz/20110111).

Moreover, the majority of respondents made comments suggesting that the drought significantly increased the rate of "regular" migration. The following excerpt is but one example taken from a large amount of similar anecdotal evidence: "There was always migration, but the drought aggravated it" (Bernardo Salvador-Aviles, tour guide, interviewed in Camiri, Cordillera Province on 16 December 2010).

(3) Population pressure compounds competition for natural resources

Third, present trends of population growth in rural areas are increasing demands and competition for scarce resources and are exhausting and even depleting natural capital (Mariscal et al 2011, Díaz et al 2010, Andersen 2002 p. 7). This competition holds significant conflict potential as noted by the German Advisory Council on Global Change: "[w]ater crisis and water conflict are also the driving forces behind migratory movements of people" (WBGU 2007, p. 86; also Messner 2009). A major Bolivian study *Caracterización de la Cuenca Alta del Río Grande y Chaco Cruceño*, concludes with the following synthesis:

"You can say that the Chaco Cruceño experiences near constant emergency.¹⁰⁶ [...] Municipalities in the Chaco Cruceño are subject to a steady increase in rural population, which implies: greater competition for water resources, enhanced pressure on vegetation cover and degradation of nature, more vulnerable people exposed to extreme events and risk. The overall situation suggests that *conditions are being created in the Chaco*

105 Interview conducted in Spanish; verbatim: "La aridez sigue aumentando ... y vamos a tener serios problemas, porque conforme sea mas árida esta zona, va a ver mayor migración ... a los centros mas poblados. Entonces es bastante dramático para nosotros el tema de las variaciones climáticas en el territorio boliviano." (Q30/Exp/Dest/UMSA-LaPaz/20110111)

106 Conclusion based on prevalence of drought in Bolivia's Chaco Cruceño (Díaz et al 2010, p. 102).

Cruceño that will increase the vulnerability and risk of the population settled in the region.” (Díaz et al 2010, p. 102 para. 2b, 4; emphasis added)¹⁰⁷

Based on respondent commentaries it appears that in terms of conflict potential the situations in some communities of investigation may already be considered volatile:

“Here [in Comunidad Ivamirapinta] 60% have left (some to Argentina, the majority to Santa Cruz), ... 20% are still away, won't return again. There are various abandoned houses here ... There are also fights and conflicts over resources between families and neighbours. In Guaichindi there is not enough land, so people go to Argentina. There is also sexual abuse, crime, even murder ... [The migration tipping point is] when there is no water and no food. People worry about the future.” (Unidentified agriculturalist; Q17/NMigr/Orig/Ivamirapinta/20121217)

Water scarcity derived conflicts and regional depopulations are not without historical precedent. As already discussed in the Introduction (Section 1.3), the collapse of several civilisations, including the Classic Maya Civilisation in Central America, has been linked to climate change, “modest reduction in precipitation” (Medina-Elizalde and Rohling 2012, p. 956), “extended drought” (Kennett et al 2012, p. 788), “increased warfare” (ibid, p. 791) and the progressive depletion of natural resources (Diamond 2005, Marshall 2012, BBC 2012c, Kennett et al 2012, Kluger 2012, Brown 2011).

Unabating population growth in the context of adverse climatic conditions characterised by gradual drying appears to make increasing competition for scarce resources more likely. This could have the negative consequence that natural capital could be ultimately depleted in a gradually downward spiralling race to the bottom (Diamond 2005, p. 427-431). All things considered it seems highly plausible that migratory movements of people in Bolivia could increase appreciably in the future, not least because climate system inertia implies a time lag of several decades between the “cause” (greenhouse gas emissions) and the “effect” (rising temperatures). Expressed in simple language, a lot of climate change is already “in the pipeline” and will be borne out irrespective of mitigation efforts. As made clear in Section 1.3, climate system inertia effectively implies that the cumulative climate change impact on migration will almost certainly increase in the fore-

107 Verbatim citation: “Por las condiciones descritas se puede concluir que ‘no es posible cultivar sin riego en las condiciones climáticas del Chaco Cruceño’. Se puede establecer entonces que el Chaco Cruceño vive una situación de casi constante emergencia. [...] Los Municipios del Chaco Cruceño presentan un aumento constante de población rural, lo que implica: mayor competencia por el recurso agua, mayor efecto sobre la cobertura vegetal y la degradación de la naturaleza, mayor población vulnerable a eventos extremos y de riesgo. Las condiciones presentadas permiten concluir que ‘en el Chaco Cruceño se están creando las condiciones de mayor vulnerabilidad y riesgo para la población que se asienta en la región.’” (Díaz et al 2010, p. 102 para. 2b, 4).

seeable future, an expectation also reflected in a research background paper for the 2007/2008 UN Human Development Report:

“while the evidence for a distinctively anthropogenic ‘climate change signal’ in forced migration so far is circumstantial, it is mounting. And with all available scenarios predicting accelerating climate change impacting growing populations and more people living on marginal land, forced climate migration is certain to increase.” (Brown 2007, p. 18)

In this context the paradigm of preparedness again emerges as a useful framework to guide forward thinking adaptation measures in Bolivia¹⁰⁸ and raise policy options for anticipatory (rather than reactionary) migration management. From a risk management perspective (HFA Bolivia 2011) it appears highly desirable that appropriate policies be discussed, developed, drafted and legislated well *before* they are needed. Notwithstanding, despite numerous obvious challenges associated with forced migration it is a conclusion of this research that migration should not be viewed as predominantly negative for communities of origin or destination. On the contrary, and as one respondent observed:

“For most people things work out when they migrate to the cities: 5% are worse off, 95% are better off; 100% of the people migrating to El Alto are looking for opportunities to grow and develop socially [*‘crecer y desarrollar socialmente’*] in every sense of the word. Those who improve their lot don’t return, only for *fiestas*.” (Efraim Mosco; Q28/Exp/Dest/La Paz/El Alto/20110110)

The view that migration can be a positive form of adapting to change is supported by Andersen:

“In general, people would not move if they didn’t expect that it would improve the situation for themselves or their children, so migration is certainly privately beneficial. [...] [M]igrants do not seem to impose significant negative externalities on the host cities. More likely, migrants bring positive benefits to the cities, as they contribute to a critical mass of consumers and a pool of cheap labor. At the same time they reduce the pressure on the environment and the degradation of agricultural land and forest.” (Andersen 2002, p. 7; cf, Dodman 2009)

Andersen also notes that Bolivia’s decentralised urbanisation pattern offers scope for further migration induced urban growth. Contrasting Bolivia against “most other Latin American countries, which have excessive degrees of concentration” (p. 3), Anderson points out that

108 See HFA Bolivia (2011) for an update on Bolivia’s progress towards the Hyogo Framework for Action (HFA).

“[o]ne of the reasons that basic needs are better provided for in the cities is that it is much cheaper to provide these services when people are concentrated in cities. [...] Thus, as long as Bolivia keeps urbanizing in a decentralized manner, as it has been doing during the last 50 years, Bolivia is unlikely to suffer from excessive urban concentration and mega-city problems.” (Andersen 2002, pp. 4,3)

Understood in this context Bolivia’s high rate of migration and urbanisation may be cautiously considered positive for the country’s human development, a point underscored by Molina and Yañez (2009), albeit with a caveat:

“[I]mprovements in well-being are closely tied to the urbanization process – there seems to be enough evidence of a modest ‘urbanization dividend’ over the past 30 years. [...] [However,] a look at the trajectory of 30 years of the human development index suggests that the ‘urbanization dividend’ ... is running out in Bolivia, it is time to look at alternative ways of improving welfare for the poorest population [in rural areas] that never migrated.” (Molina and Yañez 2009, pp. 27, 32)

Addressing the needs of the non-migrating poor evidently remains an important policy priority in Bolivia today: “[p]eople [non-migrants] who stayed in the rural communities are still among the poorest in the Andes.” (Zoomers 2010, p. 147)

In summary, policy makers are faced with a set of formidable challenges that need to be carefully checked if major problems associated with forced migration are to be successfully forestalled: (1) improving the welfare of the rural poor who do not migrate while halting the growing degradation and depletion of natural support systems that they depend on; (2) preparing urban population centres to absorb ever more arriving poor rural migrants while raising service provision levels, employment opportunities, and job market regulation; (3) mainstreaming measures to enhance and guarantee country-wide water security and food security in a context of climatic variability and overall socio-economic vulnerability (Rötter et al 2011; Brown 2011, PNUD 2011, Tulchin and Ruthenberg 2007, Messner 2009, Boelens 2010, Ruíz 2007, UNISDR 2011 p. 7, Kümmerer et al 2010).

In conclusion, although climate change is evidently implicated as a major push factor in migration in Bolivia, “climate change does not yet form part of the public agenda” (Mariscal et al 2011, p. 39). Strengthening the capacity of local government through stronger and accountable state institutions appears to emerge as a prerequisite both for a meaningful policy dialogue about Bolivia’s climate change adaptation challenges, as well as for the development of strategies to prepare the country for a further influx in climate change related migration. Moreover, a widely educated and prepared populace appears critical if urgently needed adaptation measures are to be successfully implemented and broadly supported by Bolivia’s diverse multicultural civil society (Ruíz 2007, Oxhorn

2011, Mainwaring and Scully 1995, Tulchin and Ruthenberg 2007, Gamarra and Malloy 1995, Zoomers 2010, Boelens et al 2010, Kelley and Klein 1981, Painter and Durham 1995, Spatz 2006; cf, Cochabamba Documents 2010).

(4) Research limitations and future research

As noted in Section 1.4, research limitations and areas for future research are raised in the context of each case study. Research findings are subject to at least three limitations. First, with a less than perfect Spanish speaking proficiency on the part of this author and only 90% of interviews benefiting from Spanish language guides and/or interpreter/s it is conceivable that information could have been lost in translation or misunderstood by the lack thereof. Second, given this author's association with World Vision International and Visión Mundial Bolivia – although this did not feature explicitly in interviews – it is conceivable that the responses of some respondents may have been shaded by their possible hope to influence ongoing aid distribution outcomes or to attract new development programming commitments. While this author appraises the influence of this association on research outcomes as rather low, the possibility cannot be excluded. Third, research findings are based in part on relatively small data samples and should be confirmed through other independent research.

At least two issues or research questions were encountered during fieldwork and analysis that lend themselves as promising objects for further research.

First, to what extent is the future-oriented preparedness paradigm helpful in Bolivia's present-oriented cultural context? How are cultural dimension issues such as "long-term versus short-term", "indulgence versus restraint" or "risk propensity versus uncertainty avoidance" ¹⁰⁹ influencing people's migration decisions? (Hofstede 1980, Minkov and Hofstede 2013, Hofstede, no date). How do such cultural differences enable/disable climate migration preparedness as presented in this dissertation? If meeting the needs of the present represents an all consuming effort, to what degree do people have capacity to entertain concerns about the needs of a distant future? To what degree are they able or willing to sacrifice short-term gratification for the sake of future generations? As Groucho Marx famously said: "[w]hy should I care about future generations? What have they ever done for me?" ¹¹⁰

109 Including, eg, risk aversion, risk neutrality, risk acceptance.

110 This quote was used by Professor Hans-Joachim Schellnhuber (Potsdam Institute for Climate Impact Research) during his keynote address at the 2011 conference Four Degrees or More? Presentations, proceedings and recordings are available at: <http://www.fourdegrees2011.com.au/presentations/>

Second, how can language be mobilised for positive migration outcomes? As the following commentary indicates, language proficiency can be a culturally sensitive issue.

“I left Comunidad Eiti in 1989 after a drought pushed us over the edge: 80 animals had died or disappeared, donkeys, chickens, pigs. There were no rains, no water. I walked 57km [from Eiti] to Camiri on foot to find work. There was nothing else to hope for: in 1978 they had drilled 500m deep, but even at that depth there was no water! This drought [2010] is much worse than in 1989. [...] My wife cried when we first arrived [in Santa Cruz], we didn't know who to ask for help, it was very hard ... When we came we spoke only Guaraní and very little *Castellano* [Spanish]. This contributed to shame, timidity, discrimination ... it made me realise that our children could not be held back by language ... but now we have to teach our children the Guaraní language so they don't forget their culture and background.” (Unidentified respondent interviewed in a Barrio of Santa Cruz de la Sierra on 31 December 2010).

Would it help if languages spoken in regions of destination (in this case Spanish spoken in Santa Cruz) were taught among would-be migrants in communities of origin (in this case Guaraní speakers in Bolivia's Chaco)? Or could/should Spanish be taught on arrival? Would this facilitate a more successful transition by the minority language group into the majority language group or would it be tantamount to the ethnocultural subjugation of one language group to the other? Would it aid integration or potentially speed up the demise of the minority language? In Bolivia the gradual dying out of minority languages is not without historical precedent (Méndez Vedia 2012; cf, Lewis 2009 for an inventory of spoken and extinct languages in Bolivia).

4.7 Conclusions and tentative policy recommendations

From the issues raised in this research a number of conclusions and tentative policy recommendations emerge which are presented in this section. Six areas of emphasis are highlighted, namely (1) water management; (2) diseases; (3) deforestation and land tenure; (4) factors relating to history, culture and education; (5) rights fulfilment; and (6) financial and social cost of movement.

As stated before, migration is viewed in this case study through the humanitarian lens of “preparedness” which by definition is anticipatory in nature with a view to making adequate preparations *before* these are needed. In this way this case study has sought to raise policy options for anticipatory rather than reactionary migration management. This research has shown that significant climate change related migratory movements of people are already underway. This research further suggests that an increase in the rate of human migration in Bolivia is likely in the future, wherefore it is hoped that the following

conclusions and policy recommendations may contribute to timely policy dialogue and development and thereby enable more equitable forced migration outcomes.

Based on research findings discussed in this case study the following recommendations and policy priorities are advised.

First, expand anticipatory water management and planning through focused research, policy analysis and infrastructural planning: A number of “no regrets” policies and adaptation strategies may significantly enhance Bolivia’s prospects of facing an insecure water supply future more securely. These include: (1) more research into Bolivia’s cumulative national water supply and demand; (2) stringent regulation of mining activities to curb resultant groundwater, soil and/or water course contamination; (3) reduction of water conduction loss and unwanted and undocumented wastage; (4) water resource conservation through comprehensive education and awareness campaigns; (5) upscaling of rain water harvesting mechanisms through retrofitting of available structures and planning and construction of additional sites; (6) commitment to an integrated country-wide water management approach and legislation of a comprehensive water law.

Second, monitor and control the rural-urban and urban-rural spread of diseases through research and awareness campaigns: In view of the fact that host communities and guest communities do not typically know what to guard against when encountering unfamiliar communicable diseases to which they are exposed as a result of human transmigration and interaction it would stand to reason that heightening preparedness implies raising awareness of pertinent rural-urban differences in diseases *before* these are encountered or contracted. At its simplest, this includes raising awareness of HIV/AIDS among rural communities, and of *mal de Chagas* among urban communities.

Third, legislate land tenure changes and implement a moratorium on deforestation: Rural-urban migration seems to be both an effect of deforestation (as people leave degrading environments) and a *proviso* to contain resultant environmental damages (as pressure from human encroachment on natural systems is reduced). In view of Bolivia’s high rate of land degradation sustained from deforestation/logging, hydrocarbon prospecting and exploitation, mining, soil and water pollution, agricultural encroachment, and erosion and desertification, heightened preparedness implies the following four policy priorities: (1) re-evaluating and adjusting Bolivia’s land reform programme in policy and practice; (2) strengthening local and national institutional capacities to uphold and enforce land tenure laws and basic principles of environmental stewardship and sustainability; (3) re-examining the viability of livestock tenure as a livelihood strategy in regions such as Bolivia’s Gran Chaco which are subject to mounting water stress, especially in the context of projections that ongoing climate change may further enhance aridity, desertification and drought-conducive conditions. In view of the enormous freshwater resources

required for rearing cattle, and in light of the significant externalities imposed on natural environments through overgrazing, compaction, erosion and associated greenhouse gas emissions, converting deforested lands into cattle husbandry lots needs to be re-examined and likely abandoned as an income generating strategy if livelihoods are to be not merely new and additional, but also sustainable and future/climate proof; (4) a moratorium on deforestation may likely be inevitable – along with coordinated reforestation and afforestation initiatives – if processes of desertification and erosion are to be successfully decelerated and, if possible, stopped and reversed.

Fourth, work towards multicultural and multiethnic equity, integration and education: Cultural and historical factors are clearly implicated in population growth and migration. Related issues which impact on migration include sociocultural matters, political incentives, lifestyle preferences, and entrepreneurial acumen or business culture. A sensitive and holistic human development framework seems necessary if more equitable migration outcomes are to be made possible in the future. This includes a greater commitment to education for all, with a particular emphasis on *primary and secondary education in rural areas*. A widely educated and prepared rural populace will be both more resilient and better equipped to implement and mainstream urgently needed adaptation measures across Bolivia's diverse multicultural civil society.

Fifth, enhance – both in communities of origin and destination – access to and fulfilment of rights: Rights fulfilment, including child rights, labour rights, human rights and rights to education, is an effective albeit underappreciated preparedness opportunity for more equitable migration management. It holds significant promise. Notwithstanding, in the simplest of terms rights fulfilment can promote protection only if rights are widely disseminated, understood, respected, asserted, and above all, upheld, enforced and guaranteed both by local authorities and the national government. There is high agreement and much evidence that far-reaching improvements are desired by respondents respecting rights across the entire chain from diffusion to fulfilment.

Sixth, appraise –where possible– the financial and social costs of migration before they are incurred: Heightened migration preparedness appears to imply a more effective appraisal of financial and social costs of movement *before* unpayable debts are incurred or unacceptable consequences are encountered. This is no small challenge, and more research is necessary to assess to what extent realistic anticipatory costing is possible. It has been suggested that microfinance (microcredit and microinsurance) mechanisms could play a role to reduce vulnerability and raise resilience. At the same time it is important to note that much of the cost associated with “survival migration” cannot be counted or costed in Dollars and Cents, or Bolivianos and Centavos, and that the pain of “social cost” is individually and subjectively perceived, wherefore quantification or comparison seems to be difficult. Moreover, social costs (eg, malnutrition of children) are in an interdependent relationship

with other social costs (eg, school absenteeism), wherefore the combined cumulative opportunity costs can be greater than the sum of all parts. Notwithstanding, it is important to explore if/how the social and financial affordability of migration can be secured *before* dependencies, debt bondage and modern forms of slavery disable positive migration outcomes.

Given the long lead time to implement and mainstream the above mentioned preparedness priorities it seems to be essential that the development of appropriate policy instruments is not needlessly delayed. To distil it further and to conclude, the following preparedness priorities and policy recommendations are advised:

- (1) Expand research into Bolivia's water supply and demand, prevent mining-related water contamination, reduce conduction losses, raise awareness among civil society, expand rain water harvesting mechanisms, and bolster comprehensive country-wide water management approaches *before* future water supplies fall short of demands.
- (2) Raise awareness and protect host and guest communities from unfamiliar communicable diseases *before* these are contracted.
- (3) Legislate, implement and enforce legal mechanisms, including a moratorium on deforestation to conserve Bolivia's remaining forests *before* these have irrecoverably disappeared (along with their function as an insurance policy against desertification and as a habitat for the country's matchless wealth in species diversity).
- (4) Foster ethnocultural equity *before* uncontrolled population growth forecloses options. Invest in expansive education to promote national climate change adaptation, heighten problem awareness, build up socio-cultural capital, and increase overall societal resilience.
- (5) Equip young people to know their rights *before* these are transgressed.
- (6) Appraise financial and social costs of migration *before* these are incurred.

Chapter 5: Bangladesh Case Study

5.1 Case study summary and chapter overview

Drawing on field research conducted in Bangladesh in November and December 2011, this case study examines the linkages between climate change and human displacement with a view to raising policy options for more equitable human migration. Both environment/climate and non-environment/non-climate related forced migration are a fact of life for countless Bangladeshis. The mix of factors contributing to migration is difficult to dissect but there appears to be far more “push” than “pull”: movement is typically forced by necessity rather than impelled by opportunity. Climate change is difficult to isolate as “the” cause of movement but impossible to dismiss as core contributing agent. Lack of basic education is a key factor limiting options for daily wage labourers and their respective families, constraining many to struggle for subsistence survival in subhuman conditions in urban slums where vulnerabilities can be more pronounced than the problems in rural context communities which triggered the migration in the first place. Poverty reduction, livelihood security, education, and better government planning are recommended as essential policy priorities for preparedness informed and more equitable migration management outcomes.

As pointed out in Sections 1.1 and 3.4, this case study visit was aided by an additional preceding research visit to Bangladesh (19-26 April 2008) which facilitated strategic partnerships in areas of translation/interpretation, logistics, and overall research support. Given this earlier research visit it also appeared sensible to return to some of the same sites and, where possible, interview some of the same community members again to try and gauge if/how conditions in the localities and the people’s individual perspectives had evolved or changed. This proved particularly fascinating in Dalalkandi, Tajumuddin, a coastal community in Bangladesh’s biggest Island Bhola where two informants contacted in 2008 were revisited for additional commentaries on erosion and displacement processes and ultimately confirmed that the places where interviews had occurred in 2008 (Luetz 2008, pp. 26-28) had already “disappeared” (Q6/Exp/Migr/Orig/20111129). A photo pertaining to this earlier encounter is reproduced from Luetz (2008, p. 26) in Section 5.3 (Figure 5.10).

In keeping with the research questions posited in Sections 2.7 and elaborated in Section 3.5, this case study does not seek to argue for or against the causality nexus between migration and climate and/or environmental change. To the contrary, it conceptualises both present and future forced human movement, including that which may be related to climate change, as causing the least disruption and suffering, if dealt with *before* its

manifestation and possible deterioration into a humanitarian crisis requiring *ad hoc* emergency intervention.

As one of three international case studies that deal with climate change related migration the Bangladesh research sought to assess the contributing role that climate change related problems and rapid onset disasters may have on human movement in the environmental context of densely settled megadeltaic regions. As explained in Sections 3.4 and 3.5, the objective was to conduct grassroots level field research across the whole spectrum of human migration or displacement, incorporating both communities of origin and destination (Section 5.3). Moreover, there was a special emphasis on hearing from people *directly* affected by migration over and above people primarily knowledgeable *about* them.

This case study chapter is subdivided into seven sections. Section 5.2 discusses the climate change and human migration context in Bangladesh. Section 5.3 mentions methodological specificities and statistics relating exclusively to the Bangladesh research. Section 5.4 discusses quantitative and qualitative field research findings, including migration relevant environmental and non-environmental pressures (“push factors”), and migrant aspirations (“pull factors”). Section 5.5 critically examines core issues raised by the research. It also highlights the three areas of poverty, education and planning as important foci if more equitable migration management processes and outcomes are to be secured. Section 5.6 contains a synthesis of the key discussion. Section 5.7 highlights policy implications and concludes with tentative policy recommendations.

As noted in Section 1.7, selected transcribed and translated key commentaries are preserved in Bengali (Appendix F). It should also be reiterated that additional fieldwork was conducted in South Asia (India) which is neither discussed in this case study nor the thesis *per se*. As mentioned in Section 3.7, a short synthesis report of key results from fieldwork in India showcasing similar findings is available (Appendix A).

The next section introduces the climate change and migration context in Bangladesh.

5.2 Climate change and migration in Bangladesh

In Bangladesh human movement appears to be influenced by environmental and climatic change together with traditional labour and seasonal migration patterns. To introduce the migration context in Bangladesh this section will commence with a discussion of the country’s contextual backdrop regarding relevant demographic and environmental issues, including natural disasters.

(1) Demographic issues and urban vulnerabilities

Discounting city states Bangladesh has the highest population density in the world. With an average 1,229 people living together on each available square kilometre of land, Bangladesh is home to more people than live in all of Russia combined (World Bank 2011, pp. 344-345; Belt 2011, p. 64). Bangladesh is also among the poorest and most low-lying coastal countries in the world. According to the United Nations Development Programme (UNDP 2011, p. 126) Bangladesh is a Low Human Development country with approximately 150+ million citizens and a rank of 146 (out of 187 countries) on the Human Development Index (HDI). In terms of purchasing power parity (PPP), 49.6% of the population live below the international poverty line of US\$1.25 per day¹ (UNDP 2011 p. 144), down from 57.8% in the year 2000 (ibid, see also²). In 2005, the most recent survey year available, 81.3% of the population lived on less than US\$2 per day (ibid). Moreover, 57.8% of the population live in “multidimensional poverty”, and 26.2% live in “severe poverty” (ibid; cf,³). Although poor by these standards, Inman (2009) asserts that “the country has left behind its earlier reputation as an ‘international basket case’, a term once unkindly bestowed on it by a United States government official. Its economy is growing fast, the poverty rate is falling and the average life span has now stretched to 63 years” (Inman 2009, p. 18). In recent years improvements in human well-being have no doubt been made, for example “the fertility rate plunged from 6.6 births per woman in 1975 to 2.4 in 2009” (UNDP 2011, p. 9), and life expectancy at birth was most recently assessed in the Human Development Report at 68.9 years (UNDP 2011, p. 129), up from 55.2 years in 1980 (UNDESA 2011).

As already alluded to in Sections 2.4 and 3.4, since coastal areas abound with resources and trading opportunities, for millennia human populations all over the world have preferred to live “within 100 kilometres of coasts and near major rivers” (Small and Nicholls 2003, Small and Cohen 2004; cited in McGranahan 2007 p. 18). With a worldwide length of one million kilometres – or approximately 25 times the Earth’s circumference – coastlines and their adjacent regions “are of extreme importance for humankind” (WBGU 2006, p. 40). Research by McGranahan et al assessed the vulnerabilities of coastal communities to risks resulting from climate change and defined a so-called Low Elevation Coastal Zone (LECZ) as “the contiguous area along the coast that is less than 10 metres above sea level” (McGranahan et al 2007, p. 17; see Figure 5.1).

1 Data from 2005, attributed to World Bank (2011 p. 346).

2 <http://hdrstats.undp.org/en/indicators/38906.html> and <http://hdrstats.undp.org/en/countries/profiles/BGD.html>

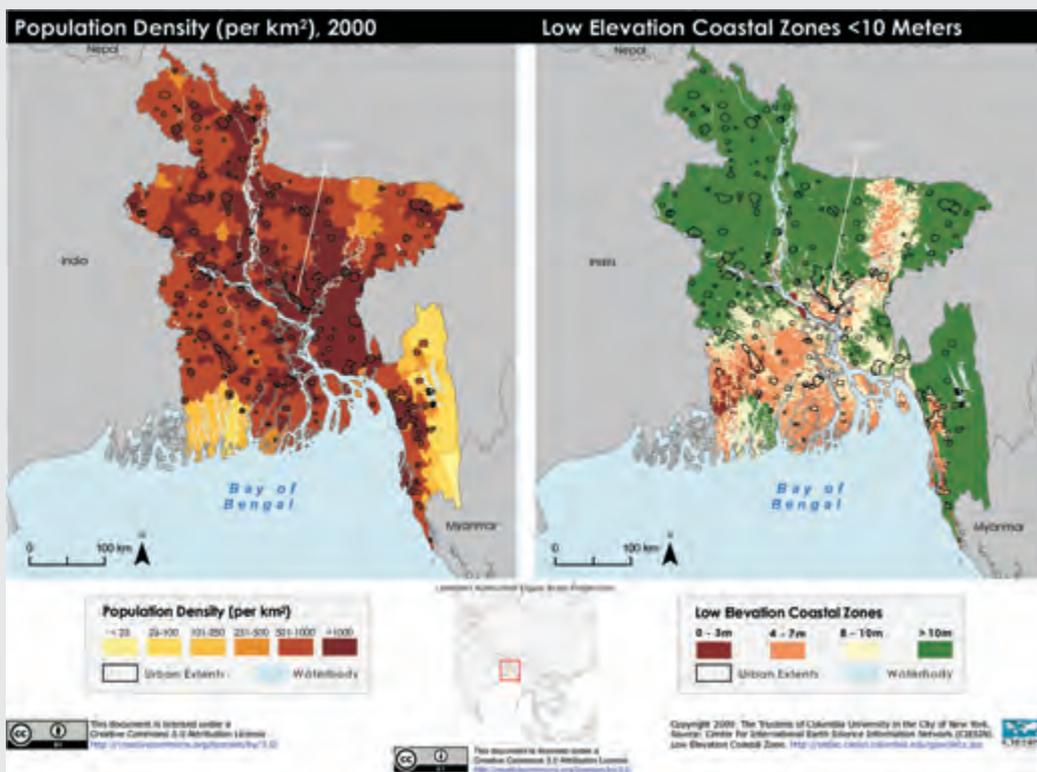
3 “Population in severe poverty: Percentage of the population in severe multidimensional poverty – that is, those with a deprivation score of 50 percent or more.” (UNDP 2011, p. 145)

The research found that these LECZ constitute only 2% of the Earth's land mass but contain 10% of the world's population, and 13% of the world's urban population, thus having a higher rate of urbanisation than the rest of the world (ibid, p. 17; see also Brahic 2007). With more than 600 million people worldwide living in the zone, 75% of whom in Asia (ibid, p. 17), and "21 percent of the world's human population [living] less than 30km from the sea" (Cohen et al 1997, Gommès et al 1998; cited in WBGU 2006 p. 40), the popularity of coastal regions is perhaps best evidenced by population growth rates of "twice the global average" (Bijlsma et al., 1996, cited in WBGU 2006 p. 40). Bangladesh exemplifies this trend: "[b]etween 1990 and 2000, the populations in the 0-10 metre zones of Bangladesh ... grew at more than twice the national population growth rate" (McGranahan et al 2007b).

According to the United Nations Populations Fund (UNFPA), the coming two decades will see Asia's urban population increase from 1.36 billion in 2000 to 2.64 billion in 2030 (UNFPA 2007). UN Habitat predicts that 95 percent of the world's urban growth in the next two decades "will be absorbed by cities of the developing world, which are least equipped to deal with rapid urbanization" (UN Habitat 2006). In short, much of the developing world is urbanising at an unprecedented rate, and it is doing so along, near or towards the coast. According to Small and Nicholls (2003), "[b]y the year 2030 approximately 50% of the world population could be living within 100km of the coasts" (cited in WBGU 2006, p. 40). The economic boom of countries in Asia⁴ has been attributed in part to policies that promote coastal development and thereby encourage coastward human migration. In Bangladesh millions live in coastal proximity: 46% of the population of Bangladesh (more than 62 million) live within ten metres above sea level (McGranahan et al 2007, p. 26), and "approximately 50 million people live below five metres above sea level" (Maplecroft 2007, p. 14). However, rapid urbanisation in coastal zones holds multiple risks. It exposes people to seaward hazards such as floods, cyclones, storm surges and sea level rise, while concurrently degrading sensitive ecosystems like mangrove forests and coral cover that traditionally protected these coastlines. At the same time coastal urbanisation is both rapid and often self-reinforcing: the more urbanised a coastal community becomes, the more it draws other would-be migrants into the suction of its magnetic field. The net effect can be an even further increase in the rate of coastal population growth and haphazard development practice in marginal environments exposed to seaward hazards like king tides, cyclonic surges, coastal erosion, land loss, etc. (McGranahan et al 2007, 2007b; Nicholls and Small 2002).

4 For example, "China's economic boom has been driven by policies that promote coastal development and which have encouraged one of the largest coastward migrations ever." (McGranahan et al, 2007b)

Figure 5.1: Bangladesh: Population density and the Low Elevation Coastal Zone (LECZ)



Source: CIESIN, Columbia University; map quoted from <http://sedac.ciesin.columbia.edu/data/set/lec2-low-elevation-coastal-zone/maps>

Several big cities in South Asia (eg, Dhaka, Chittagong, Khulna, Kolkata, Chennai, etc) extend into the LECZ and face challenges which are exacerbated by the fast pace of informal or unplanned urbanisation (McGranahan 2007, Brahic 2007). During fieldwork media reports highlighted “unplanned development” and consequent problems as matters of growing concern (Shyamol 2011 p. 5; Ahsan 2011, The Independent 2011a, 2011b). For example, Ahsan (2011)⁵ mentions how unplanned squatter settlements in Dhaka have resulted in virtually “the destruction of almost the entire natural sewage system of the city” (p. 1), and leaving it essentially “developed beyond reclamation” (p. 4).

Similarly, research by the World Bank identified Dhaka as

“the fastest growing mega-city in the world, with an estimated 300,000-400,000 new migrants, mostly poor, arriving to the city annually, [aggravating] large slums, poor housing, excessively high land prices, traffic congestion, water shortages, poor sanitation and drainage, irregular electric supply, unplanned construction, increasing air pollution and poor urban governance which results in growing problems of law and order.

5 Ahsan puts the blame on corrupt officials, namely “hawlk officers, attestation officers, circle officers, objection officers, and appeal officers ... and settlement officers.” (Ahsan 2011, p. 4)

[...] As migrants continue to arrive, they often end up in illegal settlements on precarious lands with major environmental concerns. The slums are located throughout the city with few services offered at high prices through middlemen, also called musclemen or *mastaans*, using illegal methods. [...] Access to basic services such as water, sanitation, electricity, health and education by the poor is limited. Because most slums are not recognized as legal lands, the Government, NGOs and Donors generally do not provide services in these areas. As a result, a parallel structure has emerged with *mastaans* providing services for a high fee.” (Baker 2007, pp. xiii, xv-xvi)

In such precarious conditions it can be very difficult for newly arriving migrants to get themselves established. In Dhaka there is “only one public tap for every 500 slum dwellers” (UN Habitat 2003, cited in UNDP 2011, p. 48), and according to Belt (2011, p. 73) the percentage of urbanites with access to toilets has decreased from 59% in 1990 to 56% in 2010, with a coverage drop to 52% projected by 2030 (see also respondent commentaries in Appendix F.2, F.3 and F.7). Such mounting pressures can constrain migrants with no other options to source amenities outside of official government supply grids, often forcing them to pay even higher prices for basic service provision than the wealthy. In an interview Baker (2007b) mentions that “the poor pay 2 Taka for a bucket of water, whereas the wealthy can purchase 1,000 litres through the official grid for 4.5 Taka” (cited in Luetz 2008, Endnote 259 @ p. 116).

A number of studies have drawn attention to the possible consequences of slum settlement proliferation which could exacerbate existing vulnerabilities.

According to UN Habitat,

“[n]early one billion people alive today – one in every six human beings – are slum dwellers, and that number is likely to double ... Unprecedented urban growth in the face of increasing poverty and social inequality [will] increase ... the number of people living in slums to about 2 billion by 2030.” (UN Habitat 2007)

According to the Vice President of the Asian Development Bank, Ursula Schaefer-Preuss,

“cities, especially in Asia, will be hardest hit when sea levels rise, with tens of millions of people likely to be forced from their homes ... The world simply cannot sustain current urban development trends.” (Schaefer-Preuss 2008, cited in Luetz 2008 p. 90)

UN Secretary-General Ban Ki-moon synthesised the situation like this:

“[t]he vulnerability of cities is increasing due to climate change, which has accelerated extreme weather events and rising sea levels. At the same time, urban slums are expanding into areas vulnerable to floods, landslides, industrial pollution and other hazards.” (UN Habitat 2007a, p. v)

Figure 5.2: Share of urban population in Bangladesh (%) for selected years

1960	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011
5.14	7.59	14.85	19.81	23.59	25.64	26.09	26.54	26.99	27.44	27.89	28.39

(Source: World Bank 2011b, World Development Indicators WDI, 2011)

According to the German Advisory Council on Global Change (WBGU),

“[c]limate change and urbanisation are dominant trends of global change. The interplay of the two trends in the major coastal cities of the developing world could cause an almost unmanageable situation, particularly if the arsenal of responses is limited by social, economic and institutional deficits.” (WBGU 2006, p. 63)

And a press release by the United Nations University Institute for Environment and Human Security on the occasion of the UN Day for Disaster Reduction 2005 put it like this:

“[a]round the world vulnerability is on the increase due to the rapid development of megacities in coastal areas. [...] Many cities are overwhelmed, incapable of handling with any degree of effectiveness the demands of a burgeoning number of people, many of whom take up shelter in flimsy shanties. Combine this trend with rising sea levels and the growing number and intensity of storms and it is the recipe for a disaster-in-waiting, with enormous potential to create waves of environment-driven migration.” (UNU-EHS 2005, p. 3)

In sum, indications are that urban vulnerabilities are likely mounting. In this respect the slow rate of urbanisation in Bangladesh emerges a cause of concern because it suggests that the process of urbanisation is far from “mature” (Figure 5.2). Indeed, the trajectory implies that it is highly likely that rural-urban migration into Bangladesh’s already overburdened megacities will continue for many years to come. In other words, if “only” 28% of Bangladesh’s population of 150+ million people are living in cities today, how will cities like Dhaka and Chittagong cope when this percentage doubles, as indeed it did in Bolivia where the share of the urban population has climbed to more than 66% (Figure 4.1, Section 4.2). This possibility seems to make creative urban planning, strategic preparations and overall migration preparedness increasingly more important.

In short, the question how in-migration of multiple millions of people into crowded cities like Dhaka can be accommodated and managed equitably and sustainably in the years ahead is a question that policy makers will need to address very carefully. (A comparative analysis of rural-urban ratios in Bangladesh (Figure 5.2), Bolivia (Figure 4.1), and Maldives (Figure 6.1) will be undertaken in Chapter 7.)

Aside from the vulnerabilities arising from demographic and urban development trends discussed above, Bangladesh is also vulnerable to natural disasters and several climate change processes. These vulnerabilities are discussed next.

(2) Natural disasters, environmental problems and climate change

The cumulative impact of any natural disaster depends both on the country context within which the disaster occurs, and the nature and force of the onslaught itself. In a country like Bangladesh where nearly 5% of the nation's citizens are affected annually by disasters (UNDP 2011, p. 152), and where more than 80% fight for survival on less than two dollars a day (ibid, p. 144), the cumulative impact of disasters on human development can be significant. According to Ainun Nishat of the International Union for Conservation and Nature (IUCN) in Dhaka, Bangladesh is "nature's laboratory on disasters. [...] We don't have volcanoes. But any other natural disaster you think of, we have it" (Inman 2009, p. 18).

According to the Emergency Events Database (EM-DAT)⁶ disaster definition,⁷ the years 1990-2007 have seen Bangladesh impacted by 164 natural disasters. While the majority of these disasters did not feature in international news media, they did exact a significant toll when damage figures are collated (Figure 5.3). The pie charts show the prevalence of natural catastrophes by disaster types (Figure 5.4) and the number of people affected by them (Figure 5.5) during the period mentioned. Windstorms were both the most prevalent (50%) and most deadly disaster type (more than 143,000 people killed). Floods were considerably less prevalent (28%) but appear to have caused the most far-reaching human impact with more than 113 million people⁸ affected (Luetz 2008b, p. 2).

This section briefly introduces three disaster types which appear to be most relevant for research into human migration: windstorms, floods, and erosion.

6 The EM-DAT International Disaster Database, Université Catholique de Louvain, Brussels, Belgium [<http://emdat.be>] is a joint project of the Centre for Research on the Epidemiology of Disasters (CRED) and USAID's Office of Foreign Disaster Assistance (OFDA).

7 "The Center for Research on the Epidemiology of Disasters (CRED) defines a disaster as a 'situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering.' For a disaster to be entered into the EM-DAT database, at least one of the following criteria must be fulfilled: 10 or more people reported killed; 100 people reported affected; declaration of a state of emergency; call for international assistance. Natural disasters which are entered into the database include the following disaster types (in alphabetical order): droughts, earthquakes, epidemics, extreme temperatures, floods, insect infestations, slides, volcanic eruptions, extreme high waves/surges, wild fires, and wind storms." (Luetz 2008, p. 38; cf, <http://emdat.be>)

8 This is a cumulative figure; multiple counts are possible if people were affected more than once.

Figure 5.3: Impact from 164 natural disasters (summary for 1990-2007)

Human Impact	Cumulative Total	Annual Average
People killed	159,133	8,841
People affected	151,1 million	8.4 million
Damage caused	US\$13.7 billion	US\$761 million

Source: Statistics based on EM-DAT International Disaster Database, cited in Luetz (2008b, p. 2)

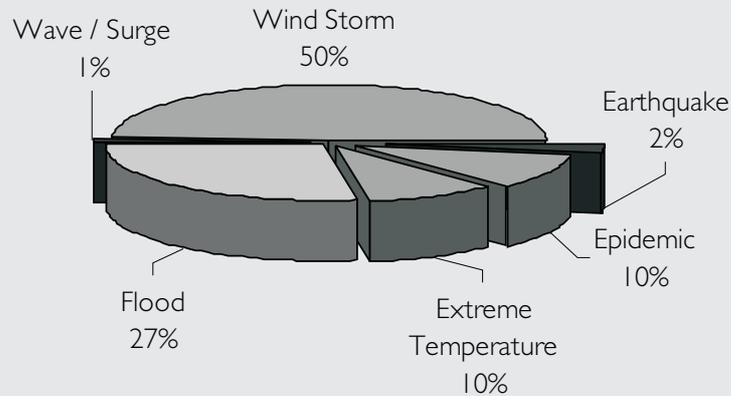
Windstorms

In discussing windstorms it is helpful to note that cyclones, hurricanes and typhoons are merely different names for the same windstorm phenomenon. According to the World Meteorological Organization, “[a]bout 80 tropical cyclones form each year. Their names depend on where they form: typhoons in the western North Pacific and South China Sea; hurricanes in the Atlantic, Caribbean and Gulf of Mexico, and in the eastern North and central Pacific Ocean; and tropical cyclones in the Indian Ocean and South Pacific region” (WMO, n.d.). As reported by Indian novelist Amitav Ghosh (2008), it was a 19th Century British-Indian eccentric, Henry Piddington, who first coined the word “cyclone” in Calcutta (now Kolkata) in the 1840s to represent “whirling storms”, an expression quite possibly derived from Greek “kukloma” (wheel, coil of a snake) and/or “kuklos” (circle) (McKean 2005, p. 421). Gosh (2008) chronicles how Piddington, purportedly one of the earliest storm chasers to gain prominence, drew his inspiration from the British meteorologist William Reid. Growing increasingly infatuated with the circular phenomenon which he compared to a “beautiful meteorite”, Gosh reports that

“Piddington was among the earliest to recognise that a cyclone wreaks most of its damage not through wind but through water, by means of the devastating wave known as a ‘storm surge.’ In 1853, when the British colonial authorities were planning an elaborate new port on the outer edge of Bengal’s mangrove forests, he issued an unambiguous warning: ‘Everyone and everything must be prepared to see a day when, in the midst of the horrors of a hurricane, they will find a terrific mass of salt water rolling in...’ But his warning was neglected and Port Canning was built, only to be obliterated by a cyclonic surge in 1867. [...] The phenomenon of the storm surge has been extensively researched since Piddington’s day, yet few public response systems have drawn the obvious lesson. To this day, the warnings that accompany a storm’s approach typically say nothing about moving to high ground: Their prescription is usually to seek shelter indoors. As a result people tend to hunker down in the strongest structure within reach – only to find themselves trapped when the surge comes sweeping through.” (Ghosh 2008, cited in Luetz 2008, p. 96)

A graphic schematic representation of a storm surge is available in Section 6.5 (Figure 6.22).

Figure 5.4: Bangladesh: Prevalence of natural disasters by types
(period: 1990-2007; total: 164 disasters)

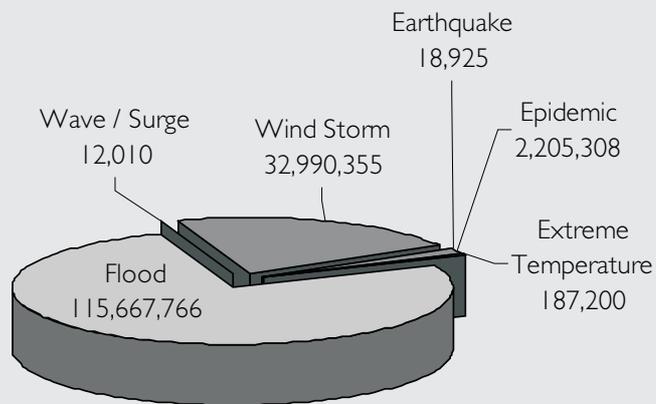


Reproduced from Luetz (2008b, p. 2); disaster definitions based on www.em-dat.net
(Wave/surge comprises disaster subsets tsunami and tidal wave but excludes storm surges)

During fieldwork for this case study a number of respondents identified Cyclone Sidr (11-16 November 2007) as the trigger that caused their migration (eg, Q09/Dest/Chittagong/20111201; see testimony pertaining to Figure 5.14). A snapshot of this cyclone's overall damage illustrates the destructive force windstorms can unleash on low-lying coastal communities in the Bay of Bengal. According to the situation report released by the Bangladesh Disaster Management Information Center, Very Severe Cyclonic Storm Sidr killed 3,292 people, injured 52,808, fully destroyed 563,877 households, and partially damaged 939,675. It affected 8,669,789 people, 2,000,848 families, and 30 of the 64 districts in Bangladesh. Moreover, “[c]rops on 596,516 acres of land were fully damaged while crops on 1,480,712 acres of land were partially damaged, [...] 2,400 educational institutes were fully damaged while 12,399 more were partially damaged, [...] 1,714 kilometres of roads were fully damaged, [...] while 5,409 more kilometres were partially damaged” (Ascension 2007).

On average Bangladesh is affected by “16 major cyclones per decade” (USDS 2012a), and a number of studies suggest that continued warming of Indian Ocean surface waters could spawn even stronger cyclones in the future, a scenario which could be particularly difficult for coastal communities if increases in windstorm intensity are accompanied by rises in sea level (WBGU 2006, pp. 38-44; Jiménez and Sánchez-Arcilla 1997; IPCC 2007, pp. 13 and 53; Emanuel 2005, Webster et al 2005, Copenhagen Diagnosis 2009, p. 19). Some researchers have already noted that cyclones “in this region [Bay of Bengal] have gotten stronger in recent decades” (Elsner et al 2008, Schiermeier 2008; cited by Inman 2009 p. 18).

Figure 5.5: Bangladesh: Number of people affected by natural disaster types (period: 1990-2007; total: 151.1 million people affected)



Reproduced from Luetz (2008b, p. 2); disaster definitions based on www.em-dat.net (Wave/surge comprises disaster subsets tsunami and tidal wave but excludes storm surges)

Hence with windstorm intensification in the future appearing possible, if not probable, policy planners should bear in mind that the most deadly aspect of cyclones is not wind but water. According to the World Bank report *Natural Disaster Hotspots: Case Studies*, “millions of people have drowned due to storm surges around the world. [...] However, most fatalities have occurred in Asia, and the major hotspot for fatalities due to storm surges is the Bay of Bengal” (Nicholls 2006, pp. 83, 94-95; see Figure 5.6).

There seems to be strong agreement among researchers that climate change will exacerbate storm surge risk: “by far the most certain aspect of climate change that will influence surge characteristics is global-mean sea-level rise. [...] The overall conclusion is that the surge hazard will evolve significantly throughout the 21st century” (Nicholls 2006, pp. 89-90; linked to Church et al 2001). The German Advisory Council on Global Change notes: “In most cases the most destructive results of sea level rise will [be] the increasing occurrences of storm surges” (WBGU 2006, p. 41; cited in Luetz 2008, p. 97). The warning should be taken seriously. With average ground levels in coastal areas as low-lying as “1.5 to 2 metres above sea level and [storm] surges reaching up to 6 metres” (IRIN 2007), and historical records indicating past cyclonic storm surge heights in the Bay of Bengal of up to 7m, 9m, 10m and 13.6m (Chowdhury 2000, pp. 5, 15; Ghosh 2008; see also Nicholls 2006, p. 82), the incalculable and deadly risks posed by storm surges are well-known among coastal communities in the Bay of Bengal (Figure 5.6). A number of respondents interviewed for this case study indicated that they had lost family members to cyclonic storm surges (eg, Q14/Dest/Chittagong/20111202; see testimony and photo in Figure 5.26).

Figure 5.6: Disaster deaths (>10,000) associated with windstorms (since 1700)
(Separated by region: South Asia, World)

South Asia	Location	Deaths
1970	Bangladesh	300,000-500,000
1737	India	300,000
1584	Bangladesh	200,000
1897	Bangladesh	175,000
1991	Bangladesh	138,000-140,000
1876	Bangladesh	100,000
1847	India	75,000
1854	India	50,000
1864	India	50,000
1833	India	33,000-50,000
1822	Bangladesh	40,000
adjustright 1912	Bangladesh	40,000
1919	Bangladesh	40,000
1942	India	40,000
1839	India	20,000
1789 (uncertain)	India	20,000
1989	India	20,000
1965 (May 11)	Bangladesh	19,279
1965 (May 31)	Bangladesh	12,000
1963	Bangladesh	11,500
1961	Bangladesh	11,468
1985	Bangladesh	11,000
1876	Bangladesh	10,000
1971	India	10,000
1999	Orissa, India	10,000
Rest of the World	Location	Deaths
1881	China	300,000
1923	Japan	250,000
1694	Shanghai, China	100,000
1862	Zhujiang Delta, China	80,000
1724	Jiangsu Province, China	70,000
1922	Santao, Guangdong, China	60,000-70,000
1912	China	50,000
1780	Barbados, Martinique	20,000-22,000
1998	Honduras, Nicaragua (Hurricane Mitch)	10,000-17,000
1937	Hong Kong	11,000
1906	Hong Kong	10,000

Source: excerpted from Nicholls (2006, p. 92; data sources referenced on p. 93). The table shows: "the major hotspot for fatalities due to storm surges [is] the Bay of Bengal." (Nicholls 2006, pp. 94-95)

Should Bangladesh's susceptibility to inundation be compounded by more intense tropical storms, more precipitation and rising sea levels as predicted to occur under climate change, the outlook could be rather grim. A rise in sea level of one metre "would inundate 18 percent of land area, directly threatening 11 percent of the population. The impact on river levels from sea rises could affect over 70 million people" (Agrawala et al 2003, cited in UNDP 2007 p. 100). Another study suggests that even under a 0.5m rise in sea level projected by 2050, "Bangladesh is likely to lose about 11 percent of its land, affecting an estimated 15 million people" (Wheeler 2011, cited in UNDP 2011, p. 59). And a World Bank study suggests that "a one-metre rise would swallow about 15-20 percent of Bangladesh's land area, where about 20 million people live today" (Chowdhury 2000, cited in Inman 2009, p. 19). Inman also predicts that "[m]onsoon rainfall is likely to increase and to fall in more intense bursts, making the annual floods broader, deeper and longer, and this could increase river erosion, too" (Inman 2009, p. 18). In *The Copenhagen Diagnosis* (2009) 26 prominent researchers suggest that "heavy precipitation rates may increase by 5% - 10% per °C of warming, similar to the rate of increase of atmospheric water vapor" (Copenhagen Diagnosis 2009, p. 19). In summary, it appears plausible that an increase in the prevalence and/or severity of flooding events could occur in the future. (The effects of sea level rise and related problems and projections are discussed in more detail in the Maldives case study in Chapter 6.)

Erosion

Criss-crossed by 230 rivers, Bangladesh's problems of river erosion are perennial. According to the Centre for Environment and Geographic Information Services (CEGIS), every year anywhere between 66,500 (BSS 2012) and 100,000 people (Shamsuddoha 2007) become homeless due to the effects of river erosion. "According to UNICEF Emergency Specialist Mohammad Zulfikur Ali Khan, river erosion is causing countless poor farmers to become 'undone' and migrate to the cities ... , adding further to the intense pressures of ramshackle slum settlements. With few saleable skills and having lost their farmland to the ocean or rivers, unschooled [migrants] have few options but to 'sell their physical labour and pull rickshaws'." (Luetz 2008, p. 28; cf,⁹)

There are some indications that river erosion may have been exacerbated by climate change related glacial melting in the Himalayas, as well as from rising sea levels along the coastal belt. Both issues are noted in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC): "[w]idespread mass losses from glaciers and

9 Face-to-face interview conducted by this researcher with UNICEF Emergency Specialist Mohammad Zulfikur Ali Khan on 20 April 2008 at UNICEF's Field Operations Section, Dhaka.

reductions in snow cover over recent decades are projected to accelerate throughout the 21st century, ... [eventually] changing seasonality of flows in regions supplied by meltwater from major mountain ranges (e.g. Hindu-Kush, Himalaya, Andes), where more than one-sixth of the world population currently lives" (IPCC 2007, p. 49). "Coastal areas, especially heavily populated megadelta regions in South, East and South-East Asia, will be at greatest risk due to increased flooding from the sea and, in some megadeltas, flooding from the rivers" (ibid, p. 50). Given that three of the region's major rivers – the Ganga, Yamuna and Brahmaputra – originate in the Himalayas, also known as the "water tower of Asia", South Asia may be particularly susceptible to short-term increases in glacial meltwater run-off. With approximately 5,000 Indian Himalayan glaciers contributing 50% to 70% of their annual meltwater discharge into Himalayan river systems, South Asia appears to be quite vulnerable to changes in this long maintained and delicate equilibrium (Pearce 2012, pp. 8-9). According to the Wadia Institute of Himalayan Geology, in less than 50 years smaller glaciers measuring between one and five kilometres in length could be reduced to "small patches of ice" (Ghosh 2007). The IPCC synthesised that the current era of floods may be succeeded by an era of water stress: "[b]y the 2050s, freshwater availability in Central, South, East and South-East Asia, particularly in large river basins, is projected to decrease" (IPCC 2007, pp. 11, 50). (The dependency on glacial discharge for agriculture is discussed in more detail in the Bolivia case study in Sections 4.2 and 4.5.)

According to some researchers, coastal islands like Bhola were not previously as vulnerable to erosion: "[t]he erosion of Bhola only started in the 1960s. Before that the size was stable and the extent of erosion negligible. But from the mid-1960s the erosion began, and over the years the rate has accelerated. Huge quantities of meltwater from the Himalayas are crashing into coastal estuaries and are speeding up river erosion across Bangladesh through the Ganges and Brahmaputra. Additionally, large coastal areas are being gradually submerged due to global warming and rising sea levels. The collision between downward currents of freshwater and upward pressures of saltwater creates strong twirling and severe erosion. In short, Bangladesh is suffering from 'double erosion,' crumbling from the top down through increasing glacial meltwater run-off, as well as from the bottom up through rising sea levels" (Shamsuddoha,¹⁰ cited in Luetz 2008, p. 27; cf, Terra Daily, 2005). According to Shamsuddoha the Island of Bhola has been reduced in size from an area of approximately 6,400 square kilometres in the 1960s to 3,400 square kilometres in 2004 (TerraDaily 2005). Once thriving population centres like Old Daulatkhan, Mirzakalu, Molongchara, Sarajgonj, Chowmohoni, Tazumiar have

10 Face-to-face interview conducted by this researcher with Mohammad Shamsuddoha, General Secretary Equity and Justice Working Group (EJWG), at the office of The Coast Trust NGO, Dhaka, 20 April 2008.

been permanently lost to the sea (eg, Figure 5.12 depicts what is left of the eroded road to Molongchara). Shamsuddoha warns: “If this rate of erosion continues, the entire island of Bhola could be lost within the next 40 years” (Luetz 2008, p. 28; cf Shamsuddoha and Chowdhury 2007, p. 23). A number of respondents interviewed for this case study on both the Island of Bhola and in Dhaka and Chittagong indicated that erosion was the unequivocal cause and the primary trigger for their migration¹¹ (eg, Q08/Dest/Chittagong/20111201; see Figure 5.13 and corresponding testimony).

It is less clear, however, to what extent climate change may be implicated in or responsible for changes in river erosion in Bangladesh. Researcher Maminul Haque Sarker, a morphologist at CEGIS in Dhaka, explains that the interplay of multiple causal issues is complex and therefore difficult to disentangle as sediments settle along the coast and create new land which is protruding towards the sea. This process of land accretion is “adding nearly 20 square kilometres a year in the coastal areas” (Inman 2009, p. 19). During an expert interview for this case study at CEGIS in Dhaka,¹² Sarker discussed satellite based studies which show that at the present time erosion and accretion nearly cancel each other out, although accretion is presently seen as “the dominant process” (Q33/Exp/Dhaka/20121208). According to Sarker, “[t]here’s a lot of accretion, and a lot of erosion, and they’re almost in balance. [...] We are gaining land – but it’s a net loss” (Inman 2009, p. 19). The reason why despite modest land gains Bangladesh is suffering an overall net land loss lies in the long time it takes for accreted land to be developed, averaging 12, 16 or 22 years depending on location (Sarker et al 2011, p. 209). Before landless or displaced people can settle in areas where sedimentation has produced new land, elaborate and expensive embankments have to be built to offer these coastal lands the needed protection from tides and storm surges. In short, “coastal areas ... take decades to become productive” (Inman 2009, p. 19; see also CEGIS 2009, Sarker et al 2011).

Given the dynamic nature of Bangladesh’s river delta system which has undergone remarkable morphological transformation during the last 250 years since modern mapping began (Sarker et al 2011, p. 206),¹³ the precise contribution of climate change to processes of erosion cannot be conclusively established.

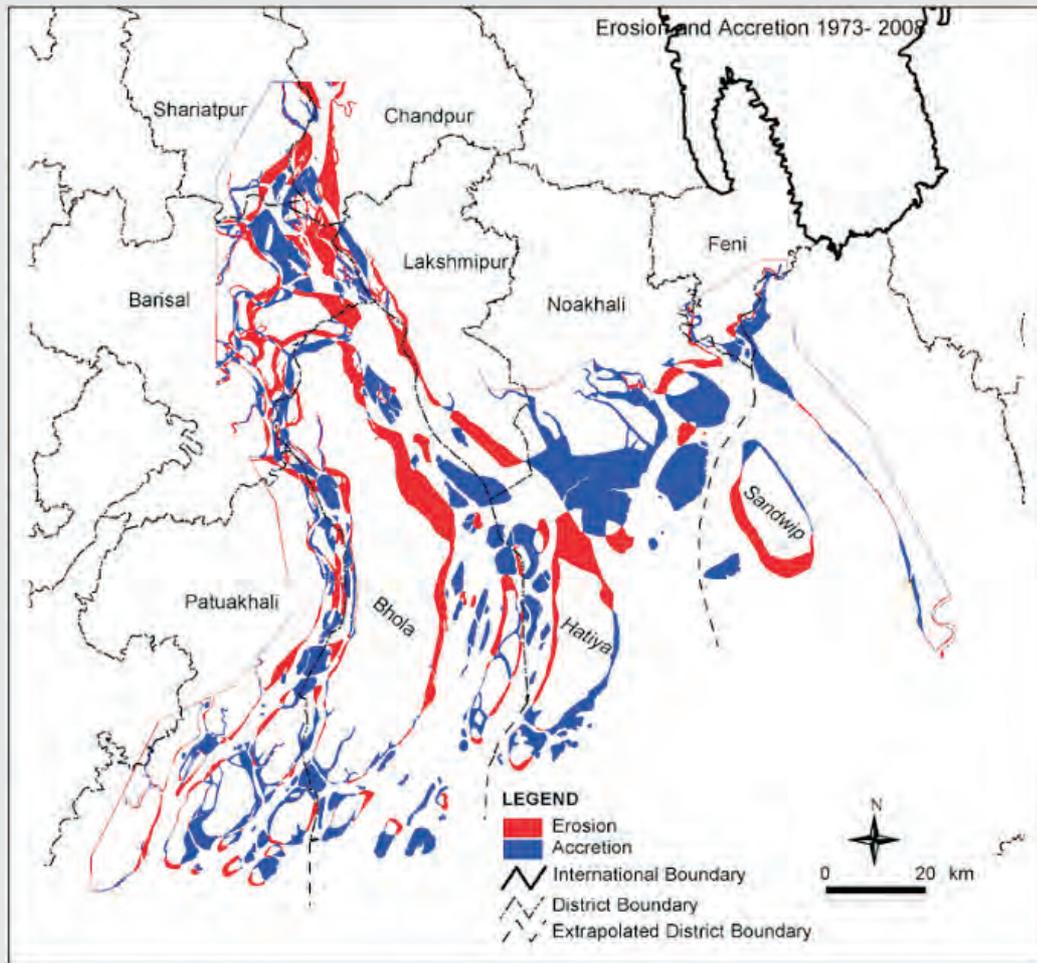
According to Sarker, “there is a lot going on at the same time” (Q33/Exp/Dhaka/20111208), with multiple interrelated issues shaping and reshaping the delta through

11 A total 20 respondents were interviewed in or from Bhola for this case study, with all those from the northeast coast indicating “erosion/land loss” as the main cause of human movement.

12 Expert interview with Dr. Maminul Haque Sarker at the Centre for Environment and Geographic Information Services (CEGIS), Dhaka, 8 December 2011.

13 Sarker et al (2011, p. 206) illustrate this through four maps showing four time periods.

Figure 5.8: Rate of erosion and accretion in the Meghna Estuary from 1973 to 2008



Source: Map quoted from Centre for Environment and Geographic Information Services (CEGIS 2009, p. 41)

storms, floods, sea level rise, land subsidence, an earthquake in 1950, and climate change (Sarker et al 2011). In this context it is difficult to project with precision how future climate change may impact on present-day processes of erosion and accretion (Figure 5.8). Notwithstanding these difficulties, Sarker et al concede that “intense human impact and sea level rise may make the entire system more vulnerable to inundation and erosion” (ibid, p. 203).

What appears to be decidedly less ambiguous is the effect that all aforementioned disasters are already having on human settlement through displacement.

Disaster homelessness

As discussed throughout this Doctoral Study, the precise contribution of climate change to migration is difficult to gauge, let alone quantify. However, as previously stated, “ab-

sence of evidence about a problem does not imply evidence of absence of a problem” (Myers and Kent 1995, p. 33). In fact, the gravest effect of climate disasters on human well-being in Bangladesh could be displacement or disaster induced homelessness.

The following account, excerpted from the United Nations Human Development Report *Fighting climate change: Human solidarity in a divided world*, illustrates the complex cause-and-effect relationship between natural disasters, climate change and human disaster homelessness:

“Flooding is a normal part of the ecology of Bangladesh. With climate change, ‘abnormal’ flooding is likely to become a standing feature of the future ecology. Experience following the flood event of 1998 – dubbed the ‘flood of the century’– highlights the danger that increased flooding will give rise to long term human development setbacks. The 1998 flood was an extreme event. [...] At its peak, the 1998 flood covered two-thirds of the country. Over 1,000 people died and 30 million were made homeless. Around 10 percent of the country’s total rice crop was lost. With the duration of the flood preventing replanting, tens of millions of households faced a food security crisis.” (UNDP 2007, p. 88; emphasis added)

Research by the World Bank found that 97.7% of people made homeless worldwide by natural disasters live in developing countries (Gilbert 2001, p. iii). The study found that “[b]y far the biggest causes are floods and windstorms, which together are responsible for 92.1% of all disaster homelessness” (Gilbert 2001, p. 1). Given that these disaster types abound in Bangladesh it seems unsurprising that the World Bank study identifies Bangladesh as the country with the highest prevalence of disaster homelessness in the world: between 1980 and 2000 more than 37.6 million Bangladeshis – or 29.9% of the population – were made homeless by disasters, over 13 million of them children (Gilbert 2001, pp. iii and 3; Luetz 2008a p. 5).

According to Dilley, climate disasters appear to be particularly destructive in terms of the cumulative damage caused:

“[h]azards related to climate and weather affect more people ... than any other type of natural hazard by far. Over the past three decades disasters triggered by cyclones, droughts, and floods occurred 5 times as frequently, killed or affected 70 times as many people, and caused twice as much damage worldwide as did earthquakes and volcanoes, the two major geological hazards... [With] secondary impacts, such as landslides, epidemics, and pest infestations ... also considered, it becomes all the more evident that *climate and weather are primary concerns for natural disaster and risk management.*” (Dilley 2000, p. 45; emphasis added)

A similar point is made by the United Nations Development Programme (UNDP):

“[o]n average around 262 million people were affected [by climate disasters] each year between 2000 and 2004, over 98 percent of them living in developing countries. [...] While over 98 percent of people affected by climate disasters live in developing countries¹⁴, economic impacts are skewed towards rich countries. The reason for this is that costs are assessed on the basis of property values and insured losses.” (UNDP 2007, pp. 30, 77)

According to Atiq Rahman, executive director of the Bangladesh Centre for Advanced Studies (BCAS) in Dhaka and lead author of the Intergovernmental Panel on Climate Change (IPCC), climate change is already having enough of an impact in Bangladesh that it is understood to be partly responsible for human displacement: “I believe there are climate change refugees already” (Inman 2009, p. 20). Research by Rajan also projects that climate change could see millions of South Asians displaced by the end of this century: “Most of these people will be forced to leave their homes because of the sea level rise and drought associated with shrinking water supplies and monsoon variability. The bulk of them will come from Bangladesh as most of the parts of that country will be inundated” (Bhattachali 2008). “Climate change is the biggest environmental threat faced by South Asia and may well be the biggest ... challenge that the developing world will have to face in the coming decades. While the world has woken up to the threat of climate change, the true enormity of what this implies is still sinking in. [...] About 125 million migrants, comprising about 75 million from Bangladesh and the remaining from densely populated coastal regions as well as other vulnerable parts of India could be rendered homeless by the end of this century” (Rajan 2008, p. 1). According to Rajan, the number of South Asians displaced by climate change could be “10 times greater than the number of people who migrated during and after the partition of India in 1947” (Bhattachali 2008, Rajan 2008b; cf, Byravan and Rajan 2005a, 2005b, 2006, 2008, 2009, 2010 for additional discourses and numerical predictions relating to possible scenarios of future forced migration in South Asia).

In summary, the combined synergistic effect of Bangladesh’s climate, demography, geography and topography have already made it the world’s number one hotspot for disaster homelessness. There is the chance that “climate change will almost certainly make these disasters worse, threatening to reverse the country’s progress” (Inman 2009, p. 18; see also Chowdhury 2001, p. xi). In this context the combined effect on human migration could be considerable.

14 For details see “Under-reporting climate disasters” (UNDP 2007, p. 77, Box 2.1, top of the page).

Preparedness matters

During field research in Bangladesh for this case study the aforementioned numerical predictions of possible future migrants on the move were described by two Dhaka migration experts as “unhelpful” and “hype” (Q24+Q25/Exp/Dhaka/20111205) because they tended to “scare people” and/or “lead to complete denial” (ibid). Similarly, academics and staff of international organisations have called numerical predictions of large numbers of future forced migrants “alarmist” (McAdam and Saul 2010, p. 238; IOM 2010, p. xv, 31, Gemenne 2009, Q24+Q25/Exp/Dhaka/20111205). While accurate prognoses of future forced migrants are inherently difficult to make as amply conceded in Section 2.4, this researcher measuredly rejects the use of the term “alarmist” on the grounds that its everyday use, including the definition given in the Oxford dictionary, seem to insinuate exaggeration: “alarmist ... someone who is considered to be exaggerating a danger and so causing needless worry or panic” (McKean 2005, p. 36). In light of the growing body of evidence linking climate change to the erosion of livelihoods the very notion of “exaggeration” appears not only scientifically ill-informed but also runs counter to the premise of preparedness which seeks to pre-empt problems *before* they materialise beyond reasonable hopes of resolution. Therefore, the mere possibility (not probability or certainty) of humanitarian scale displacements and resultant human suffering should be reason enough to invoke a response of preparedness, irrespective of whether or not large displacements will ultimately materialise. While gargantuan challenges can lead to torpidity, inaction or “paralysis of analysis”, the point bears repeating that the very notion of preparedness implies readiness *before* both need and certainty arise. As the United Nations Human Development Report has advocated regarding climate change adaptation: “Hoping – and working – for the best while preparing for the worst, serves as a useful first principle for adaptation planning” (UNDP 2007, p. 198). This argument calls for “no regrets” policy approaches and is developed further in the concluding synthesis discussion (Section 7.6).

The methodology of research into how preparedness and adaptation may be implemented in the context of Bangladesh is discussed next.

5.3 Methodological specificities of the Bangladesh research

Data for this case study were sourced in Bangladesh over the course of two weeks (27 November to 8 December 2011)¹⁵, and are supported by observations made and conversations conducted during that time, as well as during months of preparation and follow up. The Bangladesh field research was also aided by a preceding research visit (19-26 April

¹⁵ During this time fieldwork was conducted in Bhola Island, Chittagong and Dhaka.

2008)¹⁶ during which options for heightened community level disaster preparedness were explored, and data were gathered for the World Vision Asia Pacific Annual Disaster Report 2008 *Planet Prepare* (Luetz 2008). This earlier research visit also enhanced familiarity with pertinent issues (eg, cultural, environmental, socioeconomic vulnerabilities), and laid the foundation for strategic partnerships in areas of translation/interpretation, logistics and overall research support (Sections 1.1 and 3.4). In light of this earlier research visit it also made sense to return to people and places visited in 2008 to gauge if/how matters had changed over time.

As explained in Sections 3.4 and 3.5, the Bangladesh field research sought to assess the contributing role that climate disasters and environmental change have on human movement. To appreciate the forced migration experience over time and space across the spectrum of migration from initial displacement to temporary or permanent relocation, fieldwork in Bangladesh sought to engage respondents in both communities of origin and destination. To that end, semi-structured interviews were conducted in villages (“communities of origin”) on the east coast of Bhola, Bangladesh’s biggest island, where extreme levels of erosion on the order of several kilometres of coastline changes have been observed for a number of years (Q33/Exp/CEGIS-Dhaka/20111208). In Dalalkandi, Tajumuddin, community members consulted in 2008 (Luetz 2008, pp. 26-28¹⁷) were revisited for additional key commentaries on erosion and community displacement processes (Figures 5.9 and 5.10). In addition to “communities of origin” in Bhola, semi-structured interviews were also conducted in “communities of destination”, namely in several slums in Dhaka,¹⁸ and Chittagong,¹⁹ Bangladesh’s two biggest urban catchments, where in-migration continues on the order of 1,000-2,000 people per day (Baker 2007 pp. xi and xiii; Muriel 2012). As discussed in Chapter 3, this comprehensive micro-level approach sought to contribute to a more holistic understanding of displacement in Bangladesh, thereby aiming to raise options for more equitable human migration based on preparedness informed policy and practice. As mentioned in Section 3.4, a consolidated map detailing several fieldwork sites is available at <http://goo.gl/maps/byNOF>.

Given that individual interviewees were typically encountered in groups, generally made up of the respondent and by-standing acquaintances who were happy to elaborate

16 Disaster preparedness related field research following Cyclone Sidr (2007) conducted in Bangladesh 19-26 April 2008: Dhaka (19-20 April); Bhola Island (21-22 April); Khulna/Sundarbans (23 April); Morrelganj (24 April); Dhaka (25-26 April).

17 Both respondents are depicted on photographs, Abdul Mannan (Luetz 2008, pp. 26, 27 and 28), and Kaisor Ahamed (p. 28, bottom right).

18 Dhaka field research dates: 27 November, 4-8 December 2011.

19 Chittagong field research dates: 1-3 December 2011.



Figure 5.9: In Dalalkandi, Tajumuddin, a coastal community in Bangladesh's biggest Island Bhola, informants contacted in 2008 were revisited for additional commentaries on erosion and displacement processes. During the second encounter in 2011 community leader Abdul Mannan confirmed that land (Figure 5.10) where interviews had taken place in 2008 (Luetz 2008, pp. 26-28) had "disappeared" in 2009 (Q6/Exp/Migr/Orig/2011 | 129). (Photo: Johannes Luetz; 29 November 2011)

Figure 5.10: Photo and caption reproduced from Luetz et al 2008, pp. 26-28): "Community leader Abdul Mannan (centre) points out signs of severe erosion in Dalalkandi, Tajumuddin." Land pictured here has already "disappeared" (Q6/Exp/Migr/Orig/2011 | 129). (Photo: Johannes Luetz; 22 April 2008)



on issues discussed by volunteering their own personal experiences, the total number of people interviewed is far greater than the number of names recorded on paper questionnaires. With a minimum of 14 such focus group discussions taking place and between 9 to 35 respondents participating in each conversation the total number of respondents queried in this field research is estimated by this researcher to be 289. This estimate is based on photos (eg, Figure 5.11) and voice recordings, including pertinent transcripts (Appendix F). In a more narrowly defined sense there were 49 semi-structured interviews, of which 48 were conducted on-site in a personal, face-to-face manner. Eight semi-structured interviews were held in Bhola Island ("communities of origin"), 40 in Chittagong (17) and Dhaka (23) ("communities of destination"), and one 43-minute key informant interview with a Member of Parliament was conducted internationally via skype. Of all respondents queried, 96% had Bangladeshi nationality²⁰, 86% were Mus-

20 There were two disaster management expert interviewees, one each from the UK and Zimbabwe.



Figure 5.11: Focus group discussion in Noya Sohor Khulshi, Chittagong (Photo: Johannes Luetz; Q08/Dest/Chittagong/2011|201).

lim (4% Hindu, 10% Christian), and 53% were female. Precise ethnic background was inconsistently provided by respondents²¹ and is therefore inconclusive, albeit 92% of respondents²² can be described succinctly by the catch-all ethnicity “Bengali”.²³ Eleven key informant interviews (22% of the sample) were conducted with “experts”, including a researcher/morphologist, local government officials, water resources and migration experts, development project officers and managers, and both local and international disaster management professionals with expertise in disaster risk reduction and community resilience. Of all interviews conducted, 38 were carried out in the country’s *lingua franca* “Bengali” with the help of local guides and interpreters. The remainder was conducted in English. Respondent ages ranged from 18-82 years, with 37.5 years as the average age.²⁴

Having discussed methodological and statistical specificities the next section looks at the results.

5.4 Field research findings

Research results discussed in this section can be broadly grouped into qualitative and quantitative subsections. Qualitative findings are produced first and are supported by a selection of three key respondent commentaries which provide a richer context and offer nuanced insights not otherwise captured by quantitative results. Quantitative results which follow may be subdivided into migration push factors (environment related and

21 The question seemed confusing to both interpreters and interviewees alike.

22 There were four expatriate experts.

23 Two Bangladeshi experts identified themselves as “Garo” and “Santal”, otherwise the field for “ethnicity” was typically left blank.

24 All but 5 experts indicated their age, wherefore the average age is derived from a sample size of 44.

non-environment related) and migration pull factors. A discussion of key findings produced in this section will be undertaken in Section 5.5.

Qualitative Findings

The following three key commentaries and photos shed light on views, conditions, experiences, interpretations and value judgments pronounced by respondents in communities of out- and in-migration. Bengali verbatim citations of selected key commentaries are available in Appendix F.

(1) Figure 5.12 and the corresponding key commentary reflect the experience of land loss on Bhola Island (“communities of origin”) where progressive erosion has displaced thousands of people. The experience described is typical for the fate suffered by tens of thousands of erosion victims across Bangladesh:

“The bridge now leads to the open sea ... of the estuary. It used to be the road to Tajumuddin but the erosion took it away. An entire Union²⁵ (formerly called Molongchora) was lost, 35km² of land. This affected 100% of the people, about 40,000-45,000. The land loss occurred within the space of about five years. The government built a shelter for the displaced people to house them, but the water is already destroying the buildings and the people have abandoned them. Now people are hoping that concrete slabs can slow down the land loss...” (Motasim Billa, Batamara Paksia, Borhanuddin; Q02/Orig/Bhola/20111128; parts of this focus group interview were separately recorded on video; Bengali verbatim citation available in Appendix F.1)

(2) Figure 5.13 and the corresponding key commentary reflect the experience of a migrant from Bhola Island in her new home in a Chittagong slum (“communities of destination”):

“Everybody in this slum is a migrant, many from Barisal, most are here because of floods or cyclones. Rent in the slum is expensive. One room is 2,200 Taka²⁶, two rooms are 4,000 Taka. I migrated from Bhola where a partial Union disappeared [due to erosion]. My village [of origin] is called Mohammadpur, Keramatgonj, Upazila Chorfashion, District Bhola. The main reason I migrated is erosion.” (Khaleda Begum, Bondortila Ward 39, Chittagong City Corporation; Q08/Dest/Chittagong/20111201; Bengali verbatim citation available in Appendix F.2)

25 Bangladesh is organised into seven Divisions, 64 Districts, hundreds of Sub-Districts or Upazilas, and thousands of Unions comprising tens of thousands of Villages. A completely disappeared Union implies that several villages were lost to erosion (Q02/Orig/Bhola/20111128).

26 Approximately US\$29 (ie, on the day the interview took place; Section 1.7)



Figure 5.12: Approximately 35 villagers are talking to the research team about the eroded road to Tajumuddin and Molongchara and the hardship of moving away from the eroding coast. Numerous villages have disappeared in this area. (Batamara Paksia, Borhanuddin; Q02/Orig/Bhola/20111128; a Bengali verbatim citation of this group interview is available in Appendix F.1).



Figure 5.13: Khaleda Begum from Bhola Island describes the hardships of living in a Chittagong slum (Bondortila Ward 39, Chittagong City Corporation, Q08/Dest/Chittagong/20111201; Bengali verbatim citation available in Appendix F.2).

(3) Figure 5.14 and the corresponding commentary reflects the widely shared experience that people tend to remain in their communities of origin for as long as is feasible, even after being afflicted by slow or sudden onset disasters, but will feel compelled to move at the very moment (tipping point) when their livelihoods are compromised. While there was agreement among respondents that their places of origin were “better” (Q29/Dest/Dhaka/20111206) or their places of destination worse (“Dhaka is an unhealthy environment”; Q27/Dest/Dhaka/20111205), there seemed to be a broad consensus that the new life was overall preferable because “in Dhaka opportunities for income generation are a bit better” (Q26/Dest/Dhaka/20111205).

“Three years ago I came here with my husband and family, mother-in-law and father-in-law. Cyclone Sidr destroyed all household and other properties. At that time we had no income opportunity in that area and so we moved here. After Cyclone Sidr [15 November 2007] we stayed on for one more year, it was a struggle period, then we moved. We moved when there was nothing to earn, when we felt completely helpless [tipping point].” (Hanufa Sheik, Bondortila Ward 39, Chittagong City Corporation; Q09/Dest/Chittagong/20111201; Bengali verbatim citation available in Appendix F.2)



Figure 5.14: Hanufa Sheik (right) describes livelihood loss following Cyclone Sidr as the decisive tipping point of her migration; Bondortila Ward 39, Chittagong City Corporation (Q09/Dest/Chittagong/20111201; Bengali verbatim citation available in Appendix F.2).

Migrants also described that they typically chose their destinations based on “previous contacts”, and that they often felt vulnerable in the slums with “no security” (Q09/Dest/Chittagong/20111201): “At any moment the landlord can evict us if he wants to develop the area for higher profit” (ibid).

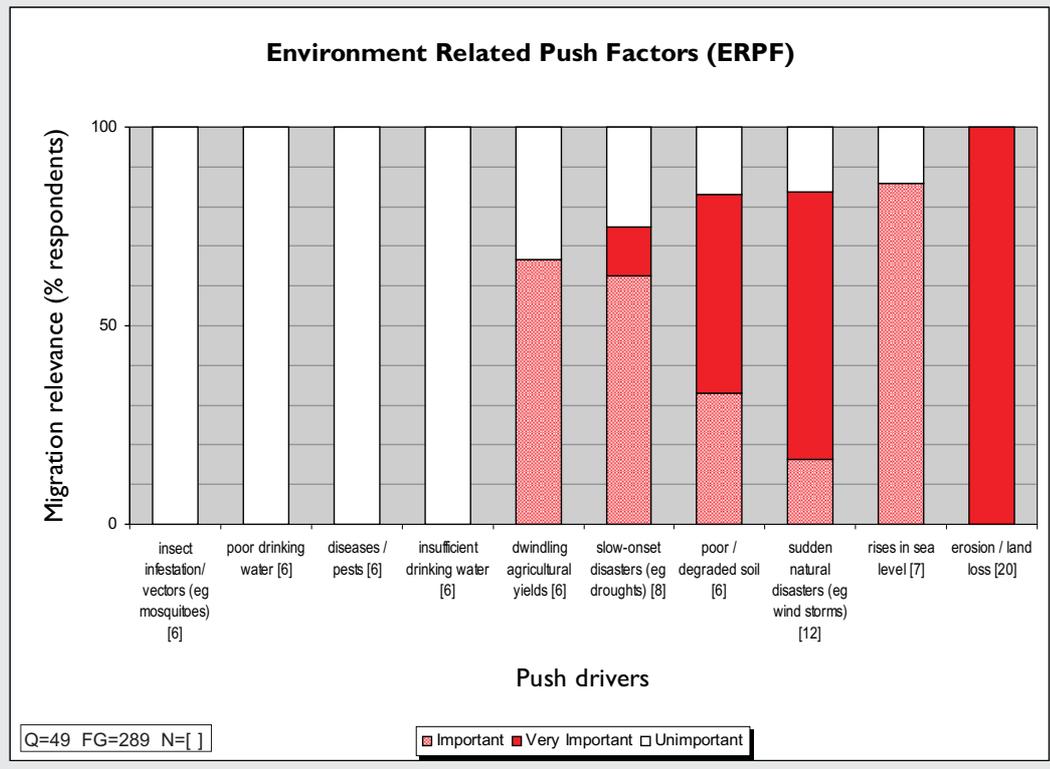
Having discussed selected qualitative results, the next section looks at quantitative findings.

Migration push factors: environment related pressures

Twenty respondents partially or completely discussed and rated environment related migration pressures, “push factors” (Figure 5.15). Not every interviewee addressed every questionnaire category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample size and incomplete data set, discussions yielded noteworthy insights.

Problems arising from “erosion/land loss” were viewed as the most important environment-related migration push factors (ERPF), with 100% of responding interviewees considering these pressures “very important” (20/20). The second-most significant migration driver appeared to be “rises in sea level”, with 86% of respondents considering this “important” (6/7). The third-most important migration driver seemed to be “sudden natural disasters/windstorms”, with 83% of respondents considering them “very important” (8/12) or “important” (2/12). Problems arising from “poor/degraded soil” were similarly rated as “very important” (3/6) or “important” (2/6) by 83% of those answering this question. Problems arising from “slow-onset disasters (eg, droughts)” were rated by 75% as “very important” (1/8) or “important” (5/8). Finally, “dwindling agricultural yields” were seen by 67% of respondents as “important” (4/6). Other environment related factors were seen as irrelevant for migration.

Figure 5.15: Environment Related Push Factors (ERPF)



Individual respondents also mentioned additional ERPF not included in the questionnaire that in their view contribute to migration: “floods”,²⁷ “forest related resource mismanagement; cutting down of trees, mangroves, etc”,²⁸ and “depletion of fish stocks due to over-fishing and a decline in water quality”.²⁹

What is the most important environment related push factor?

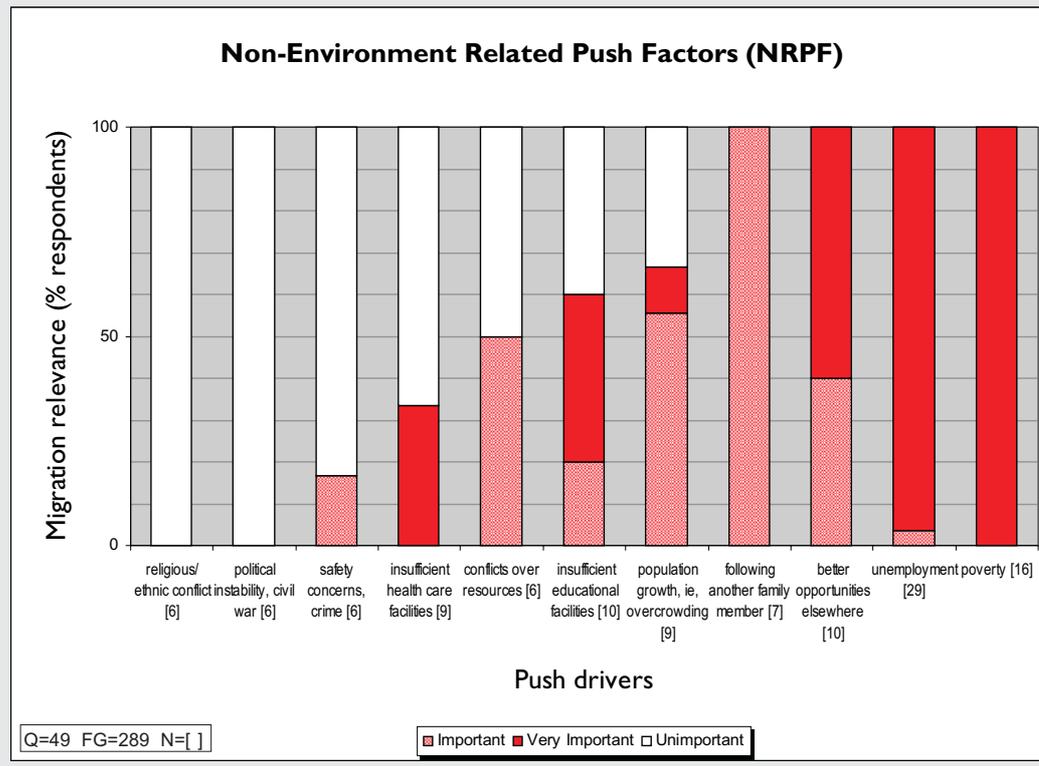
A total 22 respondents answered this question. While migration is typically triggered or enhanced by multiple factors this question specifically asked respondents to identify “the most important” issue involved. Responses to this question can be broadly grouped into three categories of natural disasters. The most frequently cited ERPF was seen to be erosion (“land loss”, “river erosion”, etc; 16 respondents), followed by windstorms (“windstorms destroyed my house”, “Cyclone Sidr”, etc; four respondents), followed by floods (two respondents). Multiple respondents explained that the primary destructive impact of natural hazard events resulted from the knock-on effect of livelihood loss.

27 Comments made in Chittagong on 2 and 3 December 2011.

28 Comments made in Dhaka on 4 and 5 December 2011.

29 Comment made in Dhaka on 5 December 2011.

Figure 5.16: Non-Environment Related Push Factors (NRPF)



Migration push factors: non-environment related pressures

A total 29 respondents partially or completely discussed and rated non-environment related migration pressures, “push factors” (Figure 5.16). Not every interviewee addressed every questionnaire category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample size and incomplete data set, discussions again yielded insightful perspectives.

By far the most significant non-environment related push factor (NRPF) appeared to be “unemployment”, which 100% of respondents considered “very important” (28/29) or “important” (1/29). Interestingly, this result was matched, if not superseded only by “poverty”, which the same percentage considered as no less than “very important” (16/16). Although “poverty” was not mentioned in the questionnaire as a possible cause of migration (Appendix D.2), and did not feature as a factor in other case studies discussed in this dissertation (cf, Sections 4.4 and 6.4), there was an overwhelming desire on the part of Bangladeshi respondents to see their challenges appreciated within their ever present context of “poverty”. Hence this factor was subsequently integrated into the vertical-bar graph (Figure 5.16). Moreover, 100% of respondents regarded “better opportunities elsewhere” as a “very important” (6/10) or “important” (4/10) factor for migration. Next, the research also appeared to confirm that established corridors can reinforce migration, with 100% of respondents considering “following another family member” as “important” (7/7) for migration. Despite Bangladesh’s high population density, “popula-

tion growth, ie overcrowding” appeared only as the fifth-most significant non-environment related push driver, with 67% of respondents considering this “very important” (1/9) or “important” (5/9). Next, “insufficient educational facilities” were regarded as “very important” (4/10) or “important” (2/10) by 60% of respondents. Finally, problems arising from “conflicts over resources” were seen by 50% (3/6) as “important”; “insufficient health care facilities” were regarded by 33% as “very important” (3/9); and issues related to “safety concerns, crime” were viewed as “important” (1/6) by 17% of respondents who answered this question. The remaining possible push drivers “political instability, civil war” and “religious/ ethnic conflict” were unanimously considered as “unimportant” (6/6 each) for migration.

Individual respondents also mentioned additional NRPF not included in the questionnaire that in their view also contribute to migration: “poverty”,³⁰ “new experience”,³¹ and “liquidation of assets to treat kidney disease”.³²

What is the most important non-environment related push factor?

A total 35 respondents answered this question. While human movement is typically triggered or enhanced by multiple factors this question specifically asked respondents to identify “the most important” issue involved. Responses to this question can be broadly grouped into four socioeconomic categories. The most frequently cited NRPF was seen to be lack of gainful employment (variously described as “lack of income generating opportunities”, “better income opportunities elsewhere”, “unemployment – we’re completely landless”, etc; 21 respondents). Other push factors mentioned were poverty (seven respondents), lack of education (four respondents), and finally, disparate factors variously described as “new experience”, “following another family member because family ties are strong”, “liquidation of assets to treat disease” (three respondents).

Migration pull factors: migrant aspirations

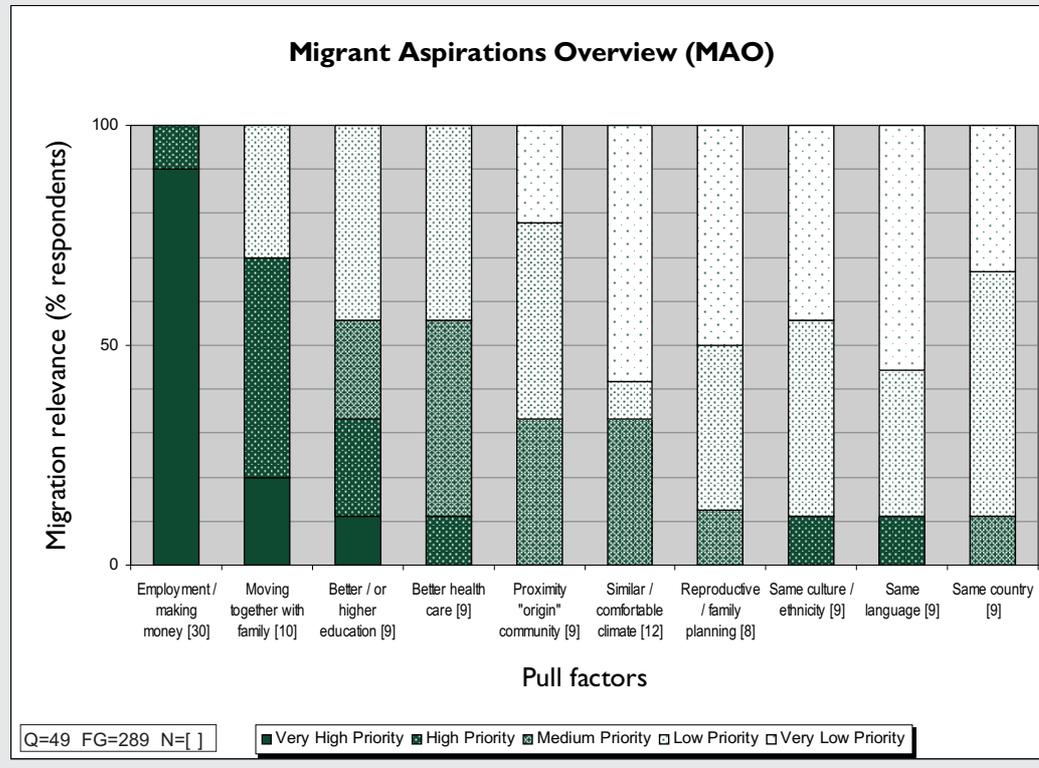
Thirty respondents partially or completely discussed and rated various possible migrant aspirations (“pull factors”). The comparative levels of prioritisation respondents ascribed each category are summarised by the Migrant Aspirations Overview (Figure 5.17) and

30 Throughout field research poverty was frequently raised as an important factor contributing to migration. In some instances it was declared as the underlying cause of the migration.

31 Comment made in Chittagong on 2 December 2011.

32 Comment made in Dhaka on 5 December 2011.

Figure 5.17: Migrant Aspirations Overview (MAO):
Comparative levels of prioritisation as ascribed by respondents



synthesised by the Migrant Aspirations Aggregate Index (Figure 5.18). Not every interviewee addressed every category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample size and disparate data set, discussions yielded noteworthy insights.

By far the strongest aspiration voiced by respondents was gainful employment, with 100% of respondents ascribing “employment / making money” a “very high priority” (27/30) or “high priority” (3/30). The second-strongest aspiration was “moving together with the family”, which 70% considered as having a “very high priority” (2/10) or “high priority” (5/10). Prospects of attaining “better / or higher education” and “better health care” may be seen as having medium overall priority, with 56% of respondents rating the former as having a “very high priority” (1/9), “high priority” (2/9), or “medium priority” (2/9), and the same percentage viewing the latter as having a “high priority” (1/9) or “medium priority” (4/9). All remaining issues may be seen as having a “low” or “very low priority” and are produced in descending order of attributed importance: “proximity to community of origin”, “same country”, “same culture / ethnicity”, “similar / comfortable climate”, “same language”, “reproductive health and family planning”.

Figure 5.18: Migrant Aspirations Aggregate Index (MAAI)

Aspirations of forced migrant communities	Ascribed importance
Employment/making money	4.9
Moving together <i>with</i> the family	3.6
Better or higher education	3.0
Better health care	2.7
Proximity to the <i>origin</i> community	2.1
Same country	1.8
Same culture/ethnicity	1.8
Similar climate	1.75
Same language	1.7
Reproductive/family planning	1.6

Ascribed importance: weighted average calculated from assigned values: very high priority = 5 points; high priority = 4 points; medium priority = 3 points; low priority = 2 points; very low priority = 1 point.

Respondents also volunteered additional aspirations not included in the questionnaire: “Achieving a politically predictable future, political stability”,³³ living in a “healthy environment, safety from fire and other risks”,³⁴ and living in a “better environment” generally.³⁵

What is the most important aspiration?

Thirty respondents answered this question. While human movement is typically triggered or enhanced by multiple factors this question specifically asked respondents to identify “the most important” issue involved. Responses to this question were again dominated by aspirations linked to gainful employment, which respondents variously described as “employment”, “making money”, “we came because my husband has work here”, “my husband has work as a construction worker”, “work – how can I continue my education if I have to feed my family?” (26 respondents). Only four respondents indicated a different “most important” aspiration: “healthy environment” (two respondents), “moving together” (one respondent), and housing: “I would prefer to return, that’s where my roots are, but there is no house for me to return to after Cyclone Sidr destroyed it in 2007” (one respondent).

33 Comment made in Dhaka on 5 December 2011.

34 Comment made in Borkot Slum, near Mohammadpur Beribadh embankment, Dhaka on 5 December 2011.

35 Comment made in Staff Bosti Slum, West Agargaon, Dhaka on 6 December 2011.

Preferred migration destinations

Questions about migration destinations can be broadly grouped into two categories. The first category of answers is indicative of where people *actually* go/went. The second category of answers was offered in response to the *hypothetical* question where migrants would go “if there were no restrictions” (political, financial, etc). Answers in response to the *actual* migration destinations highlighted the following five issues (cf, Heissler 2013, Bélanger and Rahman 2013, Black et al 2011a, Dannecker 2013):

First, there is unplanned movement which occurs piecemeal and in step with progressive environmental degradation. This movement may be described as reactive rather than proactive. “About 1% to 2% of people migrate to Dhaka and pull rickshaws, the majority stay in the region and just keep on moving away from the eroding coast” (Q3/Orig/Bhola/20111129).

Second, answers confirmed that migrants choose destination cities based on their perception of prospects of gainful employment. “People go to Dhaka, Chittagong, Khulna or wherever there are many options for jobs, even nearby district towns” (Q20/Exp/Chittagong/20111203).

Third, choice of destination was more often than not guided less by what was perceived as desirable than what was perceived as practically affordable. “We came to this area [Babuls Colony Slum, Beltola, Chandranegor, Chittagong] because it is cheaper than elsewhere” (Q19/Dest/Chittagong/20111203). “I came here because the house rent is cheaper” (Q30/Dest/Dhaka/20111206).

Fourth, migration takes place along established migration corridors as migrants follow in the footsteps of other migrants, usually neighbours or relatives. “My husband decided to come to this area [Chittagong] because he knew a relative, and didn’t know Bangladesh, or where else to go, ... the relative was his only contact.” (Q9/Dest/Chittagong/20111201; cf, Heissler 2013)

Fifth, settlement can be transient. “I would like to go back to my village – even with river erosion [problems]; if someone built a house [in a safe area], yes, we would go back” (Q17/Dest/Chittagong/20111202). “We’re trying to save some money. If we can save enough we would like to go back” (Q31/Dest/Dhaka/20111207).

Answers in response to the *hypothetical* question highlighted severe restrictions on human movement and seemed to underscore that migrants do not often consider what they might want in an “ideal world” but rather what seems practically attainable under the prevailing circumstances (cf, Bélanger and Rahman 2013). “There are two or three cases where people have migrated to Saudi Arabia, Oman, Malaysia... But now Saudi Arabia

gives no more visas. To go overseas young people need brokers. Because they are not economically solvent they sometimes borrow large amounts of money with 50% interest” (Q3/Q4/Orig/Bhola/20111129). “People pay the broker, or *dalal*, who collects money ... Saudi Arabia, Abu Dhabi, Kuwait, Qatar, Singapore, Oman are easier and not so expensive” (Q6/Orig/Bhola/20111129; cf, Dannecker 2013, p. 45). Unsurprisingly, the presence of Bengali people and/or culture was also a determining factor for choice of preferred migration destination. [People want to go] “to the same community, where the culture is already established” (Q1/Exp/Dhaka/20111123). However, rationality alone does not explain labour migration: “images and myths” also accompany the phenomenon, including perceived Muslim “Brother Country” affinities (Dannecker 2013, pp. 51,54).

In short, the “premise of preference” may be an unfathomable starting position for many poverty constrained forced migrants who have rarely been afforded the “luxury of choice”.

Preferred migrant self-images

Throughout field research there was little to no discernible desire on the part of respondents to discuss preferred nomenclature. Most respondents saw the question how forced migrants should be called or conceptualised as essentially meaningless. Almost all interviews were characterised by a complete lack of *Problembewusstsein*.³⁶ It is a definitive finding of this research that the problem of nomenclature – while hotly debated among academics – appears to be a non-problem in the minds of migrants in Bangladesh. In light of the very harsh circumstances of many respondents the question of “preferred nomenclature” seemed almost farcical, and there was very little apparent interest to engage. Notwithstanding, a few interesting views emerged. Selected verbatim citations produced below highlight three Bengali terms as attractive alternative terms vis-à-vis several English terms frequently used in the literature (ie, ক্ষতিগ্রস্ত “Khotigrosto” = damaged, harmed or injured person; বাস্তুহারা “Bastohara” = displaced / landless person; অভিবাসী Avibashi” = immigrant, migrant):

“I have nothing else due to river erosion, nothing, I lost everything, so now I am বাস্তুহারা ‘Bastohara’ ... [Why not ‘Khotigrosto’?] ক্ষতিগ্রস্ত ‘Khotigrosto’ means something [still] belongs to me. But now nothing ... belongs to me. I am landless, I am propertyless, I am resourceless, so ... বাস্তুহারা ‘Bastohara’ is best.” (Q17/Dest/Chittagong/20111202)

36 In a philosophical sense the German noun *Problembewusstsein* may be translated as “problem awareness”, or knowledge of the existence of a potential problem issue. It appeared that, experts excepted, interviewees were completely oblivious to the possibility of terminological problems.

“ক্ষতিগ্রস্ত ‘Khotigrosto’ is the most preferred term because [most] people still have some property and are only a partial victim. But a বাস্তুহারা ‘Bastohara’ has nothing.” (Q18/Dest/Chittagong/20111203)

“অভিবাসী ‘Avibashi’ is the best option, it is a neutral term which respects people.” (Q20/Exp/Chittagong/20111203)

“‘Refugees’ and ‘settlers’ are the least preferred terms, they have conflictual associations.” (Q21/Exp/Chittagong/20111203; interview conducted in English)

Interestingly, the term “victim” was recurrently rated as positive or favourable (including by a parliamentarian who was interviewed in English) “because the person [who] suffered” was not responsible and could not ultimately be blamed for his or her lot.³⁷

5.5 Critical discussion of core issues

This section offers a richer understanding of Bangladesh’s bigger context within which erosion, floods, sea level rise, cyclones and other climate change related factors contribute to human movement. It will discuss three areas of interest which appear particularly relevant to human migration in Bangladesh, namely the issues of poverty, education and urban planning.³⁸ While aspects of this discussion could have been highlighted under “Field research findings” (Section 5.4) it appeared to make more sense to introduce and embed them within the thematic discussion of the three aforementioned foci.

(1) Poverty matters, first and foremost

Throughout field research it was evident that poverty was a key underlying driver for human migration in Bangladesh, often working in concert with environmental issues to overwhelm human coping capacities. This was reflected in numerous interviewee commentaries which broadly resemble this featured sample:

“I came 18 years ago due to poverty after floods destroyed my house in the village of Dhormopur, Post Office Laxmipur, Upazila and District Gaibandha in northern Bangladesh. My husband and I are day labourers breaking bricks in Chittagong. My husband earns 200-250 Taka³⁹ per day, I earn 150-200 Taka. [Our salary] depends on the

37 The policy maker’s caveat was that this was his interpretative view (“my perception of their perception”)

38 Planning issues include service provision, urban planning and planned migration.

39 Approximately US\$2.50-3.00 (ie, on the day the interview took place; Section 1.7)



Figure 5.19: Woman breaking bricks at Beltola, T&T Colony Warles, Mohakhali, Dhaka (Q26/Dest/Dhaka/20111205).

(N.B. Woman pictured is not Josho Rani; cf, Appendix F.3)



Figure 5.20: Breaking bricks (here at Beltola, T&T Colony Warles, Mohakhali, Dhaka) is a livelihood for thousands of poverty constrained children and adults in cities like Dhaka and Chittagong (Q26/Dest/Dhaka/20111205).

volume of broken bricks [broken manually by hand with a hammer; eg, Figure 5.19]. Two of my children are also brick breakers. The rent for our one room is 1,000 Taka⁴⁰ per month. The pull to come to Chittagong was opportunities and employment, but the flood was the trigger. It's better here in the new place. In the old place there were no income generating opportunities, so it's better here." (Josho Rani, Noya Sohor, Chittagong; Q13/Dest/Chittagong/20111202 – This interview situation was separately recorded on video; a Bengali verbatim citation is available in Appendix F.3)

One humanitarian expert articulated what seemed to emerge during numerous interview situations, namely the impression that in many instances migrants were

“moving from one vulnerable situation [in rural areas] into what would seem ... an almost more vulnerable situation ... in the urban area, with limited security ... and at the mercy of exploitative landlords, and very poor services in the city for slum dwellers. [...] There is a real question mark ... whether they're actually moving into something better.” (Q22/Exp/Dhaka/20121204)

40 Approximately US\$13 (ie, on the day the interview took place; Section 1.7)

Figure 5.21: Income and education

Name	Age	Children	Monthly Income	Schooling	Reason for migrating
Samsunnar	35	3	3,300 Taka (1)	no school	income
Surma	25	2	3,400 Taka	grade 1	can only write
Rabea	19	1	2,500 Taka	grade 3	was born here
Honufa	20	2	1,500 Taka (2)	grade 2	lost parents in childhood, came to Dhaka as 10-year-old maidservant
Josna	20	1	6,300 Taka	grade 2	came here with mother for better income, to escape poverty
Jorina	30	5	4,000 Taka	no school	poverty, better income
Rashida	28	4	2,400 Taka	no school	poverty, better income
Fatema	31	4	8,500 Taka (3)	grade 3	poverty, better income
Razia	50	2	not working	no school	river erosion, moved 3 times
Averages	28.7	2.7	3,544 Taka	1.2 years	poverty implicated

(1) Husband earns 2,400 Taka per month (son 600 Taka, she 300 Taka). After paying 1,200 Taka house rent, the household has 2,000 Taka per month remaining to meet all household expenses.

(2) Has to pay 1,000 Taka [on rent], has only 500 Taka to live on (but with food provided).

(3) Husband earns 4,000 Taka per month as rickshaw puller, elder daughter 2,500 Taka per month as garment worker, and she earns 2,000 Taka per month as garment worker.

N.B: 1,000 Taka = approximately US\$13 (ie, on the day the interview took place; Section 1.7).

(Source: Focus group interview; Q27/Dest/Dhaka/20111206)

During the course of fieldwork the accompanying Bangladeshi research assistant, guide and translator succinctly synthesised the impact poverty is having on migrants in Bangladesh:

“People [we met during interviews] have moved for different reasons, [including] river erosion, Cyclone Sidr [2007], the Cyclone in 1991, income generation, ... children’s education, ... but poverty is always implicated. While climate change cannot always be identified as a cause of migration, poverty is present in all cases. If you ask around in the slums you find that most people come [to the cities to alleviate poverty through] income generation.” (Q7/Exp/Chittagong/20111201)

The severe hardships faced by the migrating poor in Bangladesh can also be deduced from a summary of two focus group discussions during which respondents indicated monthly incomes and highest levels of schooling. What seemed to emerge is a correlation between extreme levels of poverty and very low levels of educational attainment (Figures 5.21 and 5.22).

In sum, the two issues of poverty and educational attainment seem strongly interrelated and cannot be meaningfully discussed in isolation of each other. Hence the next section now looks at education.

Figure 5.22: Income and education

Name	Age	Children	Monthly Income	Schooling	Reason for migrating
Lucky	20	1 son	4,200 Taka (1)	grade 2	From Borhanuddin, Bhola. Came 6 months ago to join her factory worker husband. Married 4 years ago.
Hasina	34	0	unknown (2)	Secondary School Cert. (SSC) = 10 yrs. (3)	From Chandpur. Came 10 years ago because of poverty. Husband is a garment employee and runs small grocery shop.
Anowara	35	2	3,000 Taka (4)	grade 3	From Brammonbaria. Came 15 years ago because of poverty. Got married here. Husband only earning family member. Rent = 1,000 Taka p.m., rest 2,000 Taka p.m. for household.
Rina	30	3	8,000 Taka	no school	Husband microbus driver @ 7,000 Taka / month; She maidservant @ 1,000 Taka / month. Gov't property: works in 2 houses, washing dishes, clothes, sweeping floors; works 4 hrs p. day @ 8 Taka p. hr. ~ 32 Taka p. day
Roxana	30	2	She earns 800 Taka as a maidservant per month	grade 1	collects mango 30 days / month @ 8 Taka / hour. Two years ago husband went to Egypt: borrowed 4 lakh = 400,000 Taka; went through broker – only tourist visa – now illegal – until now hasn't sent money.
Averages	29.8	1.6	4,000 Taka	3.2 years	poverty implicated

(1) Husband's earnings.

(2) Involved with World Vision for four years. Has sewing machine, sometimes tailors.

(3) High School Certificate (HSC) = 12 years.

(4) Husband's monthly earnings as rickshaw puller.

N.B: 1,000 Taka = approximately US\$13 (ie, on the day the interview took place; Section 1.7).

(Source: Focus group interview; Q30/Dest/Dhaka/20111206)

(2) Education matters

Young children working were easily and recurrently seen throughout field research. It appeared that numerous parent respondents could not afford to send their children to school and instead sent them to work and contribute to the pool of disposable household income so the family could make meagre ends meet.



Figure 5.23: 18-year-old former student Md Sumon points out the remains of his eroded school in Hazikandi, Chandpur, Tajumuddin, Bhola. He said: "My home was 3km in [what is now] open sea. Five years ago I moved at age 13, it was the only time I moved." (Q05/Orig/Bhola/20111129).

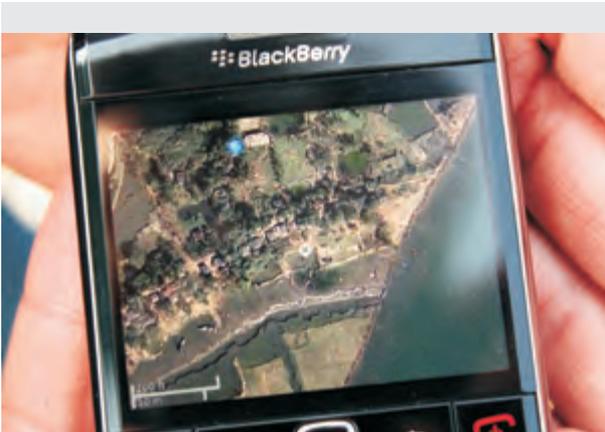


Figure 5.24: Blue dot indicates GPS derived position adjacent to the school ("accurate to three metres"). It appears erosion is outpacing Google Earth satellite map updates; the image shown still shows more than 100m of land already lost to the sea at the time of the research visit.

(Hazikandi, Chandpur, Tajumuddin, Bhola; Q05/Orig/Bhola/20111129).

<http://goo.gl/maps/1huUJ>

During an interview in Bhola Island a former student of a school that had disappeared due to erosion six months prior to the fieldwork visit (Figures 5.23 and 5.24) described how he had been forced to discontinue his education because of the need to work:

"The school that was here was abandoned five or six months ago. It was in use 15-20 years; 250-300 students attended grades one to five. The name of the [disappeared] school is Dorichandpur Mustafijur Rahman Registered Primary School, Hazikandi, Post Office Hatshoshigonj, Chandpur Union, Tajumuddin Upazila. Now the [new] school is in someone's home inside the embankment." (Md Sumon, 18 years, Hazikandi, Chandpur, Tajumuddin, Bhola; Q05/Orig/Bhola/20111129; Bengali verbatim citation transcribed from video available in Appendix F.4)

"I only finished grade four but didn't attend school after that. Since then I have been working to support my family because of poverty. I can't go back to school. My father is the only breadwinner. His earnings are not enough. If I start studying again my family will be in crisis. If someone else helps my family I could resume my studies. Others are also in this same situation. [Even at 18 years of age] I would have to be readmitted to grade five. I would be prepared to live through the humiliation but can't afford to [financially]." (Q5/Orig/Bhola/20111129). Bengali verbatim citation transcribed from audio recording available in Appendix F.5.

Figure 5.25: Years of schooling completed by interviewed non-expert adult migrants

Interview location	Age	Sex	Years attended	Highest level of education
Orig/Bhola	70	m	0	No school
Orig/Bhola	82	m	0	No school
Orig/Bhola	18	m	4	Primary
Orig/Bhola	55	m	5	Primary
Orig/Bhola	32	m	9	Secondary*
Orig/Bhola	32	m	9	Secondary*
Dest/Chittagong	20	f	5	Primary
Dest/Chittagong	20	f	5	Primary
Dest/Chittagong	30	f	0	No school
Dest/Chittagong	45	f	9	Secondary
Dest/Chittagong	49	m	0	No school
Dest/Chittagong	60	m	2	Primary
Dest/Chittagong	35	f	0	No school
Dest/Chittagong	45	f	0	No school
Dest/Chittagong	25	m	0	No school, neighbour taught bit
Dest/Chittagong	40	f	5	Primary
Dest/Chittagong	28	f	5	Primary, unaffordable school fees
Dest/Chittagong	26	m	7	Secondary
Dest/Chittagong	50	f	0	No school
Dest/Dhaka	57	f	2	Primary
Dest/Dhaka	26	m	1	Primary
Dest/Dhaka	34	f	9	Secondary*
Dest/Dhaka	35	f	0	No school
Dest/Dhaka	35	f	0	No school
Dest/Dhaka	25	f	1	Primary
Dest/Dhaka	19	f	3	Primary
Dest/Dhaka	20	f	2	Primary
Dest/Dhaka	20	f	2	Primary
Dest/Dhaka	30	f	0	No school
Dest/Dhaka	28	f	0	No school
Dest/Dhaka	31	f	3	Primary
Dest/Dhaka	50	f	0	No school
Dest/Dhaka	20	f	2	Primary
Dest/Dhaka	34	f	10	Secondary School Cert (SSC)
Dest/Dhaka	35	f	3	Primary
Dest/Dhaka	30	f	0	No school
Dest/Dhaka	30	f	1	Primary
Average Age	26		2.8	Average years of schooling

* precise grade unknown, grade 9 assumed

Throughout interviews it seemed that schooling was repeatedly aborted not merely because of unaffordable opportunity costs associated with deferred earnings but also because of unaffordable incidentals associated with daily primary or secondary education. Among such costs which respondents regarded as unaffordable were monthly tuition fees of 40 Taka⁴¹ and 50 Taka⁴² for primary school enrolment per student per month,⁴³ annual exam fees on the order of 50-100 Taka⁴⁴ (Q5/Orig/Bhola/20111129), and incidentals to cover notebooks, pens, pencils, school bags, etc (ibid) which respondents repeatedly deemed prohibitive without the assistance of either international development organisations (Q19/Dest/Chittagong/20111203) or help from the Bangladeshi government (Q29/Dest/Dhaka/20111206).

Four impediments to uninterrupted schooling were recurrently mentioned:

First, in several areas there seemed to be an apparent lack of available schools. During one focus group interview in a Chittagong slum⁴⁵ which included an estimated 40 children it emerged that not a single child present was attending school. Several mothers concurred: “in this place there is no school, it is too far away” (Q16/Dest/Chittagong/20111202). Of the 40 children who were not attending school, three had previously attended a school but were no longer doing so “because the school was closed” (Q17/Dest/Chittagong/20111202). During interviews in another Chittagong slum⁴⁶ one teacher estimated that “there are 5,000 school age children [aged 5-16 years] in this area; 50% do not attend school. This school is not sufficient for all children, we are four teachers, two male, two female, together we teach 500 students” (Q18/Dest/Chittagong/20111203).

Second, schools are frequently operating in two shifts (with children divided into two age groups). This practice has the tendency to limit the teaching exposure of children to *either* the morning (9am to 12pm) *or* the afternoon (12pm to 3pm) periods (Q5/Orig/Bhola/20111129; Q19/Dest/Chittagong/20111203).

Third, school buildings frequently serve dual or multipurpose functions, usually as schools, cyclone shelters, community and/or evacuation centres etc, wherefore education can be easily and lengthily interrupted, for example in the aftermath of disasters when children are routinely displaced from their classrooms. “During the rainy season people

41 Kindergarten through to grade two (40 Taka is US\$0.50, ie, on the day of the interview; Section 1.7).

42 Grades three to five (50 Taka is US\$0.65, ie, on the day the interview took place; Section 1.7).

43 Alhaz Abul Kashem Chowdhury Primary School, Chandranagor East Nasirabad, Chittagong.

44 Approximately US\$0.65-1.30 (ie, on the day the interview took place; Section 1.7).

45 Oli Sowdagor Colony, Hafiznagor, Bakulia Ward #18, Chittagong.

46 Gdi Moti Jhorna Lalkhan Bazar, Chittagong.

... move to the shelter house, ... it's a school shelter, people stay there before, during and after the cyclone" (Q18/Dest/Chittagong/20111203). A humanitarian expert interviewee said: "Cyclone seasons are October to November and March to May. People take shelter in cyclone shelters, but there aren't enough, so people also take shelter in schools" (Q7/Exp/Chittagong/20111201).

Fourth and finally, some respondents also indicated safety concerns: "[my husband and I] have three children. None attends school. The school is far and there is no one to accompany my young daughters on the way to school" (Q31/Dest/Dhaka/20111207).

Throughout field research the low level of education was evidenced by demographic details disclosed as part of the semi-structured interview process. Of 37 non-expert adult migrant respondents (average age: 26 years) who indicated their highest level of educational attainment, 14 said that they had never attended school. Based on these 37 respondents' data, the average adult migrant life-long school attendance is 2.8 years (Figure 5.25). This statistic broadly corresponds with UNDP data which estimates that the "[m]ean years of schooling" is 4.8 years (UNDP 2011, p. 129) and that the average "[p]upil-teacher ratio" is 45.8⁴⁷ (UNDP 2011, p. 160).

Most frequently school non-attendance was explained on the grounds of present-day livelihood pressures which were perceived to be so severe as to force the children to work and contribute family income as garbage collectors and/or recyclers, domestic workers / servants, street vendors, hotel boys, garage workers, burden bearers / carriers, couriers, etc (Q32/Exp/Dhaka/20111207; WVB ACC 2011, pp. 1-2). UNICEF Bangladesh estimates that there are approximately 4.7 million working children (aged 5-14) in Bangladesh, and that "half of all child labourers do not attend school at all. [...] As a result, working children get stuck in low paying, low-skilled jobs, thereby perpetuating the cycle of poverty" (UNICEF BD 2011, p. 3).⁴⁸

A model school which accommodates both the felt needs of livelihoods *and* education has been established by a development organisation in Dhaka.⁴⁹ The school centre for Access Challenged Children (ACC) caters exclusively to the needs of working children and their parents. While parents of working children commonly maintain that their children are indispensable as income-generators (with respect to the needs of today), the NGO maintains that the children's education is indispensable for income generation

47 Pupils per teacher; 2005-2010; data refer to most recent year available during period specified.

48 attributed to ILO Baseline Survey on Child Domestic Labour in Bangladesh, 2006.

49 The Access Challenged Children education programme is operated by World Vision Bangladesh in conjunction with local Community Based Organisations (CBOs) which assist in child selection processes (WVB KADP 2011, p. 14).

(with respect to the needs of tomorrow). A vibrant classroom with 100+ ACC students was encountered during the research visit (Q32/Exp/Dhaka/20111207). With 400 students enrolled (WVB ACC 2011) and hundreds of children waitlisted (Q32/Exp/Dhaka/20111207), community uptake in one of Dhaka's most dire slum contexts already appears to have been positive, and there are hopes that the prototype school model may be more widely replicated and mainstreamed (WVB ACC 2011; WVB KADP 2011). Incidentally, features of this prototype school closely resemble the Basic Education for Hard to Reach Urban Working Children (BEHTRUWC) which UNICEF supports in conjunction with the Government of Bangladesh (UNICEF BD 2007, pp. 4 and 7).

In summary, if education raises options, lack of education forecloses them. According to recent interagency research, “[o]ver eight percent of 7-17 year-olds, almost three million [Bangladeshi] children in absolute terms, have never attended school. [...] Children’s employment in Bangladesh appears incompatible with schooling, underscoring the importance of child labour as a barrier to achieving Education For All” (UCW 2011, p. ii). In this context it seems unsurprising that education emerged as the third-most highly valued migrant aspiration mentioned by respondents during field research. Preparing for a better tomorrow (through education) while meeting the needs of today (through livelihoods) seems to emerge as the predominant challenge facing development organisations and policy makers today. One expert interviewee said:

“The two priorities [for migrants] are education and livelihoods. But livelihoods is more important than education for the destitute person because it feeds them today. Education is about tomorrow. And they don’t have the option of thinking about tomorrow. And it’s back to the old poverty trap again. This is where policy makers and NGOs need to push harder on the things that provide for today but not ignoring the future.”
(Q22/Exp/Dhaka/20121204)

Having discussed the interrelated issues of poverty and education, the next subsection will look at prospects for a policy posture of better urban planning, including planned migration.

(3) Planning matters

Throughout field research the importance of planning the urban demographic development of burgeoning cities was recurrently highlighted as an important priority for policy makers to focus on. With an estimated 300,000 to 400,000 newly arriving migrants crowding into Dhaka each year (Baker 2007, pp. xi, xiii), and thinly stretched social services struggling to meet rising demands, it is not hard to see why proactively planning the city’s demographic evolution would be fundamental to more equitable migration

management outcomes (Black et al 2011a; Kartiki 2011). Service supply shortages were an issue of concern for numerous respondents as the following commentary exemplifies:

“In this place there is no school, ... no water supply, ... no gas line, ... no toilet. We only use a tube well with saline water, we only use firewood ... one case costs 10 Taka. There are only two toilets for 31 families, and one tube well for 31 families.” (Q16/Dest/Chittagong/20111202)

This perspective is mirrored by Baker who reports that

“only 43 of the 1925 identified slums have a public toilet within 100 meters. [...] Social services can be quite far for some slum dwellers exacerbating problems of access. Only seven percent of slums have a public health clinic and 26 percent have a government school” (Baker 2007, p. xiv). “The largest slum, Korali Basti in Banani, with more than 12,000 households, does not have a single public toilet or health clinic. Problems of poor sanitation are made worse by the high population density in slums, which have considerable implications for transmission of communicable diseases and other negative externalities.” (ibid, p. 7)

One humanitarian expert interviewee explained that dire slum conditions were a consequence of poor urban planning:

“The government has the responsibility but no interest in the slum areas. It guarantees security in residential areas where people have an identity and a permanent address, but not in the slums. People in the slums do not pay taxes, so the government takes little interest [in these] ... floating people; the majority of people in the slums are floating people. You seldom see government officials conducting surveys, and if there are any, there is no follow-up or action evident based on the survey findings or any reports. *What is needed is urban planning...*” (Q32/Exp/Dhaka/20111207; emphasis original)

One Member of Parliament interviewed for this case study underscored the critical role of planned housing and urban governance:

“The slums, in fact, are all over ... because ‘slum’ doesn’t have a definition, so you have pockets in many parts of the city, but these are the two [Bhashantek Bosti and Kuril Bosti] where you’ve got a lot of people who are housed, the density is probably 200 times greater than is otherwise the case in Bangladesh. [...] Work ... would really have to start with the slums that you already have in Dhaka city. I’m not saying that everyone has actually moved because of climate reasons. But it gives you a possible scenario of what might happen in the future when you have [more] people moving. *The slums are there because it’s not planned. If you had planned migration then you wouldn’t actually have slums. So the slums are an indication of the fact that you have not been able to put in place a policy of planned migration.*” (Saber Hossain Chowdhury, interviewed 23 November 2011; emphasis original)

Several humanitarian expert interviewees underscored the need for “better city planning” (Q20/Exp/Chittagong/20111203; Q24/Exp/Dhaka/20111205) and “decentralisation” (Q21/Exp/Chittagong/20111203) to alleviate congestion pressures of cities that were already “quite full” (ibid).

Notwithstanding the plausible rationale for more effective planning, a fourth humanitarian expert was sceptical whether planned migration could ever work in practice:

“I honestly doubt [migration] would ever work as a pre-planned exercise, because it requires the huge huge drive by policy makers and authorities to actually plan the process of relocation and prepare somewhere for these people to go which would have all sorts of implications for land, for housing, for livelihoods, for all sorts of things. And it would also require the commitment of the communities involved to be actively planning towards that, and they would need to know that there was something worth going towards before they agreed to actually leave their home, regardless of their vulnerabilities at home, and I’m convinced that people act in very rational ways, and they don’t leave their homes unless they absolutely have to, so I honestly don’t think it would work in practice. I don’t think you’d ever get the commitment, nor specifically in Bangladesh would you get the policy makers to drive a process that would enable that to happen.” (Q20/Exp/Dhaka/20111204)

According to Mohammed Maboud, an expert from Dhaka’s North South University, prospects for planned migration could be enhanced by education:

“... investing in educating Bangladeshis would not only help train professionals to work within the country but also make them desirable as immigrants to other countries – sort of a planned brain drain. Emigration could relieve some of the pressure ... in the decades ahead. It’s also a way to bolster the country’s economy; remittances sent back by emigrants account for 11 percent of the country’s GDP. ‘If people can go abroad for employment, trade, or education and stay there for several years, many of them will stay.’ [...] By the time climate change hits hardest, the population of Bangladesh could be reduced by 8 to 20 million people – if the government makes out-migration a more urgent priority.” (cited in Belt 2011, p. 81)

To conclude this discussion section it should be emphasised that addressing matters of poverty, education and planning may also be regarded as a “no regrets” policy prerogative that appears to make sense irrespective of which climate change scenario is ultimately realised, and would even seem to make sense in the complete absence of climate change. It should be noted, however, that these development priorities are coupled to long lead times and will therefore require strong and sustained institutional and policy maker support.

5.6 Synthesis of the Bangladesh case study

Everyday 1,000-2,000 new arrivals come to settle in Dhaka, the majority of this migration can be linked to income generation. Dhaka is presently the world's fastest-growing megacity (Baker 2007 pp. xi and xiii; Muriel 2012). Unless there is a change in current trends Dhaka is also on course to become the "world's third largest city" within the space of one decade (ibid). It is not clear whether initiatives by the national government to advance rural development and livelihood options can adequately reduce the present rate of rural-urban migration which outpaces the supply of urban land, housing and basic amenities and services.

(1) *Livelihoods*

Environmental change – of which climate change is a part and to which it contributes – was repeatedly stated as the primary reason for migration (though not by a majority). Several interviewees indicated that they had "lost everything" due to river erosion, coastal erosion or cyclonic devastation, and found themselves without land and/or means to rebuild their lives. Patience and tolerance levels naturally vary from respondent to respondent with some of those interviewed trying longer and harder to stay in the degraded, destroyed, salinated and often eroding regions before (eventually) concluding that to go is better than to stay. It is a clear finding of this research that there is a migration "tipping point" which is commonly shared across all strata of society at the precise point in time when livelihoods are compromised beyond reasonable hopes of recovery. When this point is reached, people migrate. This finding is also mirrored by field research conducted in Bolivia (Chapter 4). Livelihood security appears to emerge as the last line of defence beyond which uncontrolled migration may be unavoidable. The creation of sustainable livelihoods in predominantly rural areas is therefore thought to be an important priority for migration management planning and preparedness directed climate change adaptation. Moreover, numerous interviewees noted that their urban life was preferable to their (former) rural subsistence on the grounds that income generation opportunities in urban slums are superior to those generally encountered in rural areas. Notwithstanding this qualified preference, a majority of interviewees added the caveat that they "liked" their rural areas and lives better and would return immediately if income generation was more readily available in those places (cf, Gray and Mueller 2012).

(2) *Urban vulnerabilities*

There is overwhelming evidence that many migrants move from rural vulnerability to compounded urban vulnerability with poor or absent amenities such as electricity, health



Figure 5.26: Sakina Begum (left) shares losing her home when she was a child (river erosion), her family as a young adult (cyclone), and three little children as a mother (typhoid and pneumonia).

Sakina Begum, 45,
Noya Sohor Khulshi, Chittagong,
Q08/Dest/Chittagong/20111201).

care, water and waste management facilities. Prevailing conditions in many informal settlements have been labelled “subhuman”⁵⁰ by researchers who unanimously agreed with the sentiment expressed by one expert that “if people knew about the conditions in the slums they might not go there” (Q23/Exp/Dhaka/20111205). This view appears to be shared not only by researchers (eg, Black et al 2011a), but also by many newly arriving slum dwellers who seemed genuinely *surprised*⁵¹ by the adverse realities of daily life encountered in informal slum settlements and struggle severely for daily survival. Respondents queried indicated monthly household incomes in the range of 1,500 to 4,500 Taka (with 3,000 BDT⁵² given as the approximate average monthly figure). Rent in informal settlements averages around 1,200 to 1,400 BDT per month⁵³ for a space of approximately 2.5m x 2.5m. Some rental quarters were significantly smaller than that and recurrently characterised by moist or wet concrete floors with no furniture, and often housing extended families with little children. In such conditions diseases can combine with other difficulties to make a bitter fate worse as the following testimony exemplifies (Figure 5.26):

“My old village is called Gattchua, Sandip Upazila and District. When I was five years old we migrated to Chittagong with my family. We left because of river erosion. I know this because my parents told me the story. A few years later, in 1991, my father, mother and older brother returned to Gattchua for a short visit. As they were returning [by boat] the cyclone hit the launch and it sank. All my family members drowned. I’m still grieving. My brother’s wife’s family lives with me now. I was 25 when it happened. I also lost three children (two sons, one daughter) to sickness (typhoid and pneumonia) caused by financial difficulties [in tears]. My deceased children were 2 ½ and 1 ½ years

50 Defined by McKean (2005, p. 1685) as “of a lower order of being than the human [or] not worthy of a human being.”

51 This “element of surprise” is an important preparedness opportunity discussed in the dissertation’s cross-cutting and concluding analysis (Section 7.3).

52 3,000 Taka is equal to US\$40 (ie, in early December 2011; Section 1.7)

53 Approximately US\$16-18 (ie, in early December 2011; Section 1.7)



Figure 5.27: Children playing in Bhai-Bone Bosti slum, Mohammadpur, Dhaka. One expert described slums conditions like this: “the most exasperating thing, ... is the hopelessness of the little children ... whose future is now locked into the slums, ... who are assailed by all the health [and] sanitation problems, ... who have no opportunity to go to school ... and yet they are in a school going age ... I couldn't live with that.” (Q23/Exp/Dhaka/20111205; elaborated in Appendix F.7)

old when they died, the youngest died of pneumonia at 2 ½ months of age. I survive as a maidservant. I earn 1,500 to 2,000 Taka per month [about US\$20-26; Section 1.7]. My son is 26 years old and works as a rickshaw puller.” (Sakina Begum, Noya Sohor Khulshi Chittagong, Q14/Dest/Chittagong/20111202; This interview situation was separately recorded on video; a Bengali verbatim citation of parts of this conversation is available in Appendix F.6)

(3) *Education free and compulsory for all*

There is overwhelming evidence that a majority of slum dwelling children are not attending school but are instead helping their parents as full- or part-time income generators. Moreover, there is overwhelming evidence that the source of / solution to subhuman slum subsistence lies in the absence / presence of “education”. A vast majority of migrant respondents interviewed indicated “primary school” or “no schooling” as their highest level of educational attainment. Confirmation through further research pending, the average number of school years completed by slum dwelling migrants is likely no more than an average primary school grade three or four. Naturally education raises options, and inversely, lack of education limits them. There can be no doubt that the unequivocal remedy with which to tackle Bangladesh’s present and possible future forced migration scenarios will invariably involve a heightened commitment to free and compulsory education for all. This should be understood and prioritised as “no regrets” good development practice which will pay dividends irrespective of which climate change scenario is ultimately realised (Starke and Mastny 2010, pp. 55-82). As one humanitarian expert put it: “educate those children in the slum [Figure 5.27], and you will break that vicious cycle of poverty in which they find themselves” (Q23/Exp/Dhaka/20111205; elaborated in Appendix F.7). Moreover, education also represents sound preparedness practice in general and will both heighten community resilience and improve overall well-being and future prospects of children. Enhanced options for international migration in the future may also become more viable to a highly educated populace.

(4) Transitional education for working children

World Vision Bangladesh's "Access Challenged Children" (ACC) programme in Kamalapur Area Development Programme (ADP) is tailored specifically (and exclusively) to meet the needs of working and street children so as to open doors of opportunities to youth whose education could not otherwise be realised. The growth of this project underscores both the high demand and local community uptake of this project which appears well-suited as an educational "bridge" for the uneducated poor. In the view of this researcher options for more involvement and investment in such education programmes should perhaps be more proactively explored so that similar and additional education programmes can be more widely developed, funded and implemented.

(5) Strengthened government institutions

There are strong indications that initiatives to formalise the informal sector are likely to bring about more equitable conditions in urban slums. Influence and power needs to be wrenched from *mastaans* ("musclemen", hoodlums) controlling local level availability of rental space, land, amenities, etc and exacting exorbitant fees for the same. Apparently fearing reprisals, a number of respondents were visibly afraid to speak openly when asked to comment on the activities of *mastaans* in their area of residence. Strengthening the capacity of local level government institutions and better interagency coordination will likely lead to a more equitable balance of power and thereby result in better recognition of the needs of the poorest. A stronger state presence and stronger and accountable state institutions in urban slum areas also seem necessary if the power vacuum in "state-absent" areas is not to remain filled by *mastaans* in the future, and if the mounting needs for services desired by the urban poor are to be adequately met. One unidentified respondent affirmed that economic structures of many government agencies are poorly developed: "higher wages for the local police would make them less inclined to accept bribes... salary structures are very poor, so police officers collude with criminals to obtain 'top-ups', for example to pay for their children's education. Officials need higher salaries" (Unidentified respondent; Tajumuddin, Bhola Island; 29 November 2011).

(6) Research: fertile land development

Notwithstanding Bangladesh's apparent environmental challenges, land accretion presently outpaces erosion to produce a slight overall net increase of land (Dr. Maminul Haque Sarker, morphologist; Q33/Exp/Dhaka/20111208). However, given that the full development of newly accreted land typically takes multiple decades, on balance Bangladesh is losing slightly more fertile land through erosion than the country is gaining

through sedimentation and resultant accretion.⁵⁴ At the same time it is not clear that processes of land gain observed over recent decades will continue into the future, given that these rates of accretion appear to have been supported by an earthquake which occurred last century:

“The Assam earthquake of 1950 caused huge landslides in the Himalayas, which discharged billions of cubic metres of sediment into the Brahmaputra River in India. The fine fraction of this sediment (silt and clay) reached the estuary within a few years and until the 1970s and caused net accretion of about 1100 km². [...] The coarser fraction of the earthquake-derived sediment moved through the river system more slowly, [reaching] the Meghna Estuary during the mid-1980s and again increased the net accretion. [...] This high accretion rate will not be maintained (unless there is another event delivering huge amounts of sediment occurs), because the effect of the Assam earthquake has already diminished.” (Sarker et al 2011, pp. 215-216; cf, Verghese 1999, Sarker and Thorne 2006)

It is also not clear that land accretion trends can continue as climate change progresses with projected impacts on river discharge, coastal erosion, sea level rise and cyclonic activity. In fact, Sarker notes that under climate change sediment input could be compromised, “unless a method of planned and effective sediment injection into the polders is adopted” (Sarker et al 2011, p. 216). More research into “vertical accretion by injecting sediment into polders” seems to be expedient to enhance prospects for “an effective adaptation strategy against sea level rise due to climate change” (Sarker et al 2011, pp. 203, 216). Moreover, the Char Development and Settlement Project (CDSP) sponsored by the Government of Bangladesh, and supported by the Government of the Netherlands, is a promising land reclamation, reinforcement and resettlement project aimed at developing accreted land areas for the benefit of displaced populations. To date the multiagency⁵⁵ initiative has developed nearly 100,000 ha of accreted land for a population of 896,000 (CDSP, no date, p. 3), with plans underway to expand operations:

“Demand for land to settle landless households and for other purposes is only expected to increase in the years to come ... feasibility studies have already been carried out for prospective areas where char development programmes can be undertaken in future. [The Bangladesh Water Development Board (BWDB) is also due to] experiment with

54 Char development can take several decades: “It takes possibly an average twenty to thirty years from the first deposits to the emergence of new land” (CDSP, no date, p. 2).

55 Implementing agencies: Bangladesh Water Development Board (BWDB) [Ministry of Water Resources]; Local Government Engineering Department (LGED) [Ministry of Local Government, Rural Development and Cooperatives]; Department of Public Health Engineering (DPHE) [Ministry of Local Government, Rural Development and Cooperatives]; Ministry of Land (MoL); Department of Agriculture Extension (DAE) [Ministry of Agriculture]; Department of Forest (DoF) [Ministry of Environment and Forest].

construction of cross-dams in a number of places... Such dams are expected to accelerate the rate of land accretion.” (CDSP, no date, p. 6)

In light of both current demographic and environmental trends and future climate change projections, adaptation programmes such as the Char Development and Settlement Project (CDSP) appear to merit even stronger research and funding commitments than already observed.

(7) Nomenclature

It is a finding of this research that the problem of nomenclature – while hotly debated among academics – appears to be a non-problem in the minds of migrants in Bangladesh. In light of the very harsh circumstances of many respondents the question of “preferred nomenclature” seemed almost farcical, and there was very little apparent interest to engage. Notwithstanding, a few interesting views emerged which tended to highlight Bangla terms (ক্ষতিগ্রস্ত “Khotigrosto” = damaged, harmed or injured person; বাস্তুহারা “Bastohara” displaced / landless person; and অভিবাসী “Avibashi” = immigrant, migrant) as attractive alternatives vis-à-vis several English terms frequently used in the literature. It is conceivable that migrant interest in nomenclature may increase if certain terms are coupled to “entitlements”. At present there are no such entitlements claimable by displaced people in Bangladesh (Q24+Q25/Exp/Dhaka/20111205). Therefore the question of preferred nomenclature appears to be virtually irrelevant to a majority of migrants with its present significance remaining a matter of mere semantics.

(8) Research limitations

The research findings of the Bangladesh field research are subject to at least three limitations. First, with no Bangla speaking proficiency on the part of this researcher and 78% of interviews benefiting from Bangla interpreter/s it is conceivable that information could have been “lost in translation” or lack thereof. Second, given the researcher’s association with World Vision – although this did not feature explicitly in interviews – it is conceivable that the responses of some respondents may have been coloured by a possible hope to gain certain benefits or influence ongoing development programming commitments. While this researcher appraises the influence of this association on overall research outcomes as comparatively low, the possibility cannot be excluded. Third, research findings are based in part on a comparatively small sample size and should be confirmed through other independent research. Given several limiting factors involved (eg, many interviews took place in slum contexts, many interviewees had little or no formal educa-

tion, plus establishing comprehension through interpreters was often time consuming), it is doubtful that a larger data sample could have been compiled within the budgetary constraints of time and money available for this field research. Some of these difficulties may be inferred from Appendix F, for example, F.2.

(9) Future research

There seemed to be strong agreement among experts that more human movement mapping was needed, and that nongovernmental organisations had a key role to play to contribute to a more robust knowledge base through “evidence based” research (Q24+Q25/Exp/Dhaka/20111205). Although migrant respondents did not use the word “research” they recurrently appeared to express similar sentiments by requesting that more people learn about their situation and make it known to others, stating that the media was not generally available as a mechanism to raise awareness because “journalists demand money” (Q5/Orig/Bhola/2011129).

5.7 Conclusions and tentative policy recommendations

As this research has shown, reasons for migration are numerous, interdependent and complex. In the view of this researcher it is not possible to disaggregate the intertwined mix of factors why people decide to move. A monocausal attribution of reasons why people in Bangladesh migrate therefore appears methodologically unsound, given that causes for migration are inclusive, not exclusive (Betts 2010, p. 378; see also Andersen 2002, p. 8). Throughout fieldwork the amalgamation of reasons why people move was as varied and diverse as the circumstances of the individual respondents involved. While climate change cannot always be isolated or identified in the mix of factors contributing to human migration, poverty is always unmistakably implicated. Hence there is far “more push than pull” (Q22-25/Exp/Dhaka/20111204-20111205) – “survival migration” is evident in an overwhelming proportion of people who are streaming to the cities in search of better fortunes (Betts 2010). Environmental problems generally compound existing vulnerabilities and can at times even be isolated as the primary “triggers” or tipping elements that push people “over the edge”. The following analogy by a Bangladeshi government official aptly illustrates how climate change appears to be increasingly adding to the cumulative burden shouldered by millions of Bangladeshis:

“Let’s say for example, one person is able to carry only 40kg on his shoulders. That’s his limit, and he’s a poor man. Now on the top of that, I come and I give him one kilogram on top of that. So now the question will be: who is responsible for killing him? Is this the 40 kilograms he was already carrying on his head, or the one kilogram I have now put

on the top of that?” (Abal M Kamal Uddin, Comprehensive Disaster Management Programme (CDMP); cited in McAdam and Saul 2010, p. 240)

A careful investigation of climate change and migration in Bangladesh highlights a number of conclusions and tentative policy recommendations which are presented in this section. Issues discussed are covered in more depth in the discussion and synthesis sections of this chapter. As stated before, migration is viewed in this case study through the humanitarian lens of preparedness which by definition is anticipatory in nature. While in terms of messaging this conclusion section could focus on any number of issues that would be worth addressing to ameliorate the conditions of forced migrants in Bangladesh, no other issues seem to hold as much preparedness promise as the areas of livelihood security, education, and state planning. These three priorities appear to emerge as the three legs of a solid policy tripod by implementation of which poverty and climate induced forced migration outcomes may be significantly improved.

First, reduce poverty and promote livelihood security and resilience: Since poverty is the overwhelming reason why people are struggling to absorb the shocks of extreme weather events, disaster risk is best reduced through poverty reduction and the widespread mainstreaming of livelihood creation. It is a clear finding of this research that there is a migration “tipping point” which is commonly shared across all strata of society at the precise point in time when livelihoods are compromised beyond reasonable hopes of recovery. When this point is reached, people migrate. Livelihood security therefore appears to emerge as the last line of defence beyond which uncontrolled migration may be unavoidable. Moreover, livelihood security also appears to emerge as the first policy priority en route to sustainable development in predominantly rural areas. Finally, it offers to pay multiple dividends with respect to increasing the overall resilience of rural populations.

Second, promote free and compulsory education for all: There is overwhelming evidence that a majority of slum dwelling children are not attending school but are instead helping their parents as full- or part-time income contributors. There is overwhelming evidence that the source of (and solution to) subhuman slum subsistence lies in “education”. A vast majority of migrant respondents interviewed indicated “primary school” or “no schooling” as their highest level of educational attainment. The average number of school years completed by slum dwelling migrants is likely to be no more than an average primary school grade three or four. Naturally education raises options, and inversely, lack of education limits them. There can be no doubt that the unequivocal remedy with which to tackle Bangladesh’s present and possible future forced migration scenarios will invariably involve a heightened commitment to education, free and compulsory for all! This should be prioritised as “no regrets” good development practice which will pay dividends irrespective of which climate change scenario is ultimately realised. Moreover, education also represents sound preparedness practice in general and will both heighten community re-

silience and improve overall well-being and the future prospects of children. Enhanced options for international migration in the future may also become more viable to a highly educated populace. More transitional and informal education programmes in slums should also be explored and implemented as “bridges” into the formal education system.

Third, reduce urban vulnerabilities through targeted planning and service provision: There is overwhelming evidence that many migrants move from rural vulnerability to increased urban vulnerability where problems are compounded by poor or lacking amenities such as electricity, health care, water and waste management facilities. Prevailing conditions in many informal settlements have been labelled “subhuman” by researchers who unanimously concurred with the sentiment expressed by one expert that “if people knew about the conditions in the slums they might not go there” (Q23/Exp/Dhaka/20111205). This view appears to be shared not only by researchers (eg, Black et al 2011a), but also by newly arriving slum dwellers who seem genuinely surprised by the adverse realities of daily life encountered in informal slum settlements and struggle severely for daily survival. Mounting service supply pressures can also force migrants with no other options to source services outside of official government supply grids, thereby forcing them to pay even higher prices than the wealthy. These urban vulnerabilities are thought to be best addressed through concerted and coordinated interagency planning, including the mainstreaming of government institutions and services into slum areas where these are both absent, and where mounting congestion and service supply gaps are currently on the rise beyond reasonable hopes and prospects for human displacement with dignity. Moreover, current trends of coastward people movements imply that people are moving toward risk – when they should be guided to migrate away from it. Politically incentivised urban construction projects and/or condoned informal slum proliferation in vulnerable areas need to be re-examined and reconfigured where rising population densities are occurring on marginal, hazard prone or non-climate proof lands. While interagency coordination is advised, the clear onus for planning and planned migration inevitably falls on government.

Given the long lead time to implement and mainstream the above mentioned preparedness priorities it is essential that the development of appropriate strategies begins both now and in earnest. To distil it further, and to conclude, the following three preparedness priorities and policy recommendations are advised:

- (1) Create and safeguard livelihoods *before* these are compromised beyond reasonable hopes of recovery.
- (2) Invest in education free and compulsory for all *before* options are foreclosed and the hopes of a whole generation eclipsed.

(3) Plan migration and mainstream services *before* slum conditions deteriorate beyond all reasonable prospects for human displacement with dignity, and importantly, *before* conditions degenerate beyond all hopes for remediation.

Chapter 6: Maldives Case Study

6.1 Case study summary and chapter overview

Drawing on field research conducted in the Maldives in December 2011 and January 2012, this case study examines the linkages between climate change and human movement with a view to raising policy options for more equitable human migration. The significant level of government coordinated migration makes the Maldives a useful microcosm for the study of migration relevant success factors. Although at present the majority of migration across the Maldives is internal and not climate change related, useful lessons can be learned from how the government has planned and implemented macro-managed migration.

It is a finding of this research that ongoing urbanisation trends are likely to continue well into the future, implying that more and more people will be living on fewer and fewer inhabited islands, likely artificially adapted, reinforced and/or raised to higher and higher heights. Climate change can be expected to catalyse this trend, making decentralisation an important countermeasure of congestion. It is an unequivocal finding of this research that planned migration is experienced as inherently more positive than *ad hoc* migration. While natural disasters and environmental change can swiftly overwhelm communal coping capacities, triggering rapid and uncontrolled migration responses which are lacking in critical coordination, preparation and funding support, policy maker foresight and anticipatory preparedness can enable more benign migration processes. Equitable service provision, expansive education, social integration initiatives, and proactive government planning are recommended as essential policy priorities for preparedness informed and more positive migration outcomes. Education is a particularly important success factor in this case study: it holds the dual promise of enhancing options for emigration *and* contributing critical knowledge for *in situ* adaptation.

As pointed out in Section 1.1 and 3.4, this case study visit was aided by a preceding research visit to the Maldives (23-31 May 2009) which facilitated strategic partnerships in areas of translation/interpretation, logistics and overall research support (Section 6.3).

In keeping with the research questions posited previously in Sections 2.7 and elaborated in Section 3.5, this case study does not seek to argue for or against the causality nexus between migration and climate and/or environmental change. To the contrary, it conceptualises both present and future forced human movement, including that which may be related to climate change, as causing the least disruption and suffering, if dealt with *before* its manifestation and development into a humanitarian crisis requiring impromptu measures.

As one of three international case studies that deal with climate change related migration the Maldives research sought to assess the contributing role that climate change may have on human movement in a small island environment. As explained in Sections 3.4 and 3.5, the objective was to conduct grassroots level field research across the whole spectrum of human migration or displacement, incorporating both communities of origin and destination (Section 6.3). Again there was a special emphasis on hearing from people *directly* affected by migration over and above people primarily knowledgeable *about* them.

This chapter is subdivided into seven sections. Section 6.2 discusses the climate change and human migration context in the Maldives. Section 6.3 mentions methodological specificities relating to the Maldives research. Section 6.4 discusses quantitative and qualitative field research findings, including migration relevant environmental and non-environmental pressures (“push factors”), and migrant aspirations (“pull factors”). Section 6.5 critically examines field research findings and the contributions of selected key informants. It also highlights the three areas of education, demographic consolidation and climate change as important foci for future migration. Section 6.6 contains a synthesis of the key discussion. Section 6.7 highlights policy implications and concludes with tentative policy recommendations.

As noted in Section 1.7, selected transcribed and translated verbatim commentaries are preserved in Dhivehi (Appendix G). The next section introduces the climate change and migration context in the Maldives.

6.2 Climate change and migration in the Maldives

In the Maldives human movement appears to be influenced by environmental and climatic change together with traditional labour migration patterns. To introduce the country’s migration context this section will commence with a discussion of its contextual backdrop regarding relevant demographic and environmental issues, including sea level rise and natural disasters.

(1) Demographic issues

The Maldives, officially the Republic of Maldives, is an archipelagic nation made up of two long chains of a total of 26 atolls located southwest of India and Sri Lanka. According to the United Nations Development Programme (UNDP 2011, p. 128) the Maldives is currently rated as a Medium Human Development country with the third-highest Human Development Index (HDI) ranking among countries in South Asia: 109 out of 187. Despite being known internationally as a high-end tourist destination the Maldives continues to be plagued by numerous “development challenges, especially for its women,

children and burgeoning adolescent population” (UNICEF 2011, p. 2). Recent years, in particular, have seen a steep increase in the amount of substance abuse and trafficking, a problem especially affecting young people aged 16-24 years (UNICEF 2011 p. 3; GOV MAL 2009 p. 19).

Comprising an estimated 1,190 coral islands which are scattered over a distance of more than 850 km of ocean (Godfrey 2007, p. 9), and with 99.9% of the nation’s territorial area (90,000 sq km) consisting of water (Masters 2006, p. 16), the Maldives is numbered among the most geographically dispersed countries in the world. The total number of islands is non-static because some islands are “being eroded and washed away”, others are “being formed”, and still others “have been reclaimed”, including Thilafushi and Hulhumalé (Godfrey 2007, p. 10). According to one expert interviewed for this case study,

“[i]n Maldives we have about 1,192 islands, and that number depends on the tide which you are seeing, so if it is high tide you will see less, and if it is low tide you will see a couple of more sand banks coming up. So that itself shows that our land is very low-lying, and on an average it’s about a metre above sea level, so usually at the high tide you will see that it’s only 0.5 metres which is left of the island, normally.” (Mohamed Imad, Assistant Executive Director Department of National Planning; Q30/Exp/Malé/20120102)

Moreover, the Maldives is also Asia’s smallest nation, both in terms of its small land area¹ of 300 sq km (ibid; MPND 2006, p. 3), and in terms of its comparatively small population numbering 320,081 (World Bank, WDI 2011). Notwithstanding, having a population density of approximately 1,053 people per sq km of land² the Maldives is grouped among the most densely settled nations in the world, even by small island state standards (World Bank, WDI 2011).

This already high population density would increase even further if another important demographic detail was also considered: the vast majority of Maldivian islands are uninhabited (Godfrey, 2007, p. 10). According to the Ministry of Planning and National Development, “[t]he population is spread over 193 inhabited islands. [...] The rest of the islands are largely uninhabited, except for 88 islands which have been developed exclusively as luxury resorts” (MPND 2006, p. 3). Hence with the population located on less than 30% of available islands, the *de facto* population density (on inhabited islands) is far

1 According to Shaig (2006), “[t]he official land area of Maldives is generally cited as ... 300 sq km ... approximating to about 1,000 persons per sq km in 2006. The actual land area may even be smaller than the official figure, as highlighted by ... recent studies [which] reported the vegetated land area as 185 sq km ... and ... the upper limit of land area, inclusive of beach and newly reclaimed land as 235 sq km².” (Shaig 2006, p. 2)

2 Territory consisting of ocean is typically discounted. Inversely, if included, it would result in “extremely low population density.” (cf. WB ADB UN 2005, p. 4)



Figure 6.1: Aerial photo taken of the Maldives' capital Malé shows significant island urbanisation and development in what has been called the "densest city in the world" (MHUD 2008 p. 14; cf GOV MAL 2009 p. 19). (Photo: Shahee Ilyas; date: 18 October 2004).

higher than the national average (based on all islands) would seem to suggest. However, Shaig (2006) notes that, "most unutilised islands are small and contribute little to total land area ... inhabited islands alone represent 59% of total land area" (Shaig 2006, p. 1). Further, the scope for expanding the population to other undeveloped areas or uninhabited islands is severely restricted: "[a]lready 34 of the inhabited islands do not have additional land for new housing and another 17 islands will reach their carrying capacity by 2015" (Shaig 2006 p. 5, cited in MEEW NAPA 2007, p. 22).

The country's capital Malé is a case in point, exhibiting both exceptional population density and exemplifying an extraordinary urbanisation process observed over recent decades (Figures 6.1 and 6.3). A few years ago this heavily urbanised small island measuring 1.77 sq km (Masters 2006, p. 88) already accommodated "more than a quarter of the [country's] population" (WHO SEARO, n.d.; cf MPND 2005, p. 10), and more recently, "more than one-third" (MPND 2007, p. 22; cf also GOV MAL 2009, p. 19). According to 2006 census data published by the Ministry of Planning and National Development, Malé's population of 103,693 (MPND 2006, p. 8), ranks "[t]he population density of Malé ... among the highest in the world" (MPND 2006, p. 41), given at more than 50,000 people per sq km of land³ (Figure 6.1). The Maldives National Housing Policy, prepared by the Ministry of Housing and Urban Development, notes:

"[t]here is an increasing housing need due to natural population growth plus continuing in-migration from islands / atolls. Currently about one third of the nation's population is living in Malé on less than two square kilometres – making it the *densest city in the world*" (MHUD 2008, p. 14, emphasis added; cf GOV MAL 2009, p. 19).

3 Dividing the 2006 census population of Malé Island of 103,693 inhabitants (MPND 2006, p. 8) by the island's land area of 1.77 sq km (Masters 2006, p. 88) produces a population density of 58,584 people per sq km of land. This does not include the islands of Villingili and Hulhumalé which are separate islands in the vicinity of Malé that are sometimes included within Malé's administrative boundaries (Godfrey 2007, p. 10). At any rate Malé's population density is exceptionally high. Another undated source puts Malé's population density at "37,035 people per square kilometre." (WHO SEARO, n.d.)

Figure 6.2: Share of urban population in the Maldives (%) for selected years

1960	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011
11.17	11.89	22.25	25.84	27.71	33.75	34.99	36.25	37.50	38.75	39.99	41.11

(Source: World Bank 2011c, World Development Indicators WDI, 2011)

This general urbanisation trend in the Maldives can be expected to continue, with the share of the urban island population vis-à-vis the remote/rural island population continuing to increase (Figure 6.2; based on World Bank, WDI 2011). According to the Ministry of Planning and National Development,

“[t]he expansion of the Malé population from 74,069 to 103,693 over a period of only six years, [underscores] the need for a pragmatic response: more than one third of the whole population was living in the Malé, the only urban area. This is expected to swell in the coming years, as more people migrate to Malé seeking better opportunities and services. The migration of people from the rural atolls to Malé has had a positive impact on the economy and on the people themselves. However, accommodation of people in the already densely populated Malé is not possible, and is bound to lead to a major catastrophe. The population density of Malé is among the highest in the world. Therefore, development of regional urban centres within the Atolls is the only policy option for addressing the current problems and beyond.” (MPND 2006, p. 41)

Over recent years the country’s population growth rate has declined somewhat “from 3.43 percent in 1985-1990 to 1.69 percent in 2000-2006” (MPND 2006, p. 11). Notwithstanding, if population growth rates registered during the 2006 census⁴ were to be sustained in the foreseeable future, “the population of the Maldives [would] double in about 40 years” (ibid, p. 11).

Given that the archipelago’s geospatial properties, general shortage of land, human migration, rapid urbanisation and population consolidation trends are working in concert to put a growing premium on what limited land is available for settlement and development, it is not hard to appreciate why policy makers are increasingly taking steps to more proactively guide the nation’s demographic evolution. Already housing appears to be unaffordable for parts of society, “with prices in Malé exceeding 12 times the average annual income” (GOV MAL 2009, p. 64). It is in this context that the government is seeking to address congestion, urban sprawl, housing shortages, rental increases and “[w]orsening standards of housing within the existing units, sometimes reaching slum

4 Most recent census at the time of thesis submission in March 2013.



Figure 6.3: Available space in Malé comes at a premium, with housing rents already unaffordable for parts of society. “Today, Malé, with a land area less than two square kilometres, accommodates more than a third of the country’s population [ie, more than 100,000 people], causing congestion and urban problems” (GOV MAL 2009, p. 64). This urbanisation trend is expected to continue, calling for decentralisation (MHUD 2008 pp. 14-15; cf GOV MAL 2009 pp. 19, 64). (Photo: Johannes Luetz; 21 Dec 2011).

conditions” (MHUD 2008, p. 15) by “relieving the housing pressures in Malé ... through effective decentralisation and development of the provinces” (GOV MAL 2009, p. 64).

One expert from the Ministry of National Planning who was interviewed for this case study put the present population of Malé (including expatriates) even higher than official census data, estimating that 130,000 to 140,000 inhabitants were now living in Malé,⁵ and synthesising that this extreme population density is creating “a lot of social problems” (Q30/Exp/Male/20120102). According to another source, “[t]he rapid growth in the number of expatriate workers – estimated to be around 80,839 (2008) representing more than 25 per cent of the Maldivian population and just less than 80 per cent of total Maldivian employment is becoming an area of concern. There are economic and social implications of such a large contingent of expatriate workers” (Baum 2012, p. 25). And according to Ali Rilwan of the Maldives environmental NGO Bluepeace, the number of expatriates living in Maldives (mostly in proximity of Malé) is on the order of 100,000 people, with many migrant workers coming from Bangladesh (Q2/Exp/Malé/20111222).

In this overall geographic and demographic context two fundamental development challenges appear to emerge:

“First, the dispersion of the population across the archipelago raises the cost of delivering social services to the population, as it is difficult to realize economies of scale in service provision. Second, some inhabited islands have become ecologically uninhabitable and the Government has recognized that many islands are threatened by global warm-

5 Key informant commentary in context: “If you look at Malé you will see that we have a lot of social problems, because too many people have ... migrated to Malé, and the total population of Male could be now about 130,000 to 140,000 including the expatriate population. So it means that because there is such a huge demand [and] all these buildings coming up, and all the construction growth that is going on, ... you ... need labour and ... alternate means of getting labour, and that ... means ... importing labour from neighbouring countries, and they are working at very low costs, so that is a reason why you see so many people in Malé, that Malé is being so congested.” (Mohamed Imad, Assistant Executive Director Department of National Planning; Q30/Exp/Male/20120102)

ing. The long term strategy of the Government to address rising sea levels attributed to global warming has been to attract parts of the population to so-called focus islands; focus islands have been selected, among other criteria, based on the ability to defend them in the future.” (WB ADB UN 2005, pp. 7-8)

It appears that the Indian Ocean Tsunami that struck multiple Asian countries on 26 December 2004 provided the nation an additional impetus to see the government strategy of population consolidation implemented more rapidly (MHTE 2009, MEEW NAPA 2007). The influence that the tsunami, and more generally, the Maldives’ vulnerability to natural disasters and climate change have had on internal migration across the archipelago is significant. These issues will be discussed next.

(2) Environmental issues, vulnerability to natural disasters, climate change and sea level rise

The *Seventh National Development Plan* prepared by the Ministry of Planning and National Development underscores the exposure and vulnerability of islands in the Maldives:

“Global warming and the associated sea level rise threaten the fragile ecosystems of the Maldives where 80 percent of islands are less than 1 meter above mean sea level. The tsunami of 26 December 2004 truly exposed the vulnerability of the Maldives. Most of the islands that suffered damage had little or no coastal protection. The islands are fully exposed to the dangers of wave action, erosion and flooding. While a tsunami of the magnitude experienced in December 2004 is an extremely rare event, with the predicted sea level rise, flooding may become a more frequent phenomenon.” (MPND 2007, p. 9)

Godfrey notes that the tsunami “affected every island in the Maldives – some more than others – and highlighted the economic and environmental vulnerability of the country” (Godfrey 207, p. 13). According to a needs assessment paper jointly prepared by the World Bank, Asian Development Bank and United Nations, the tsunami waves ranged “from 4 to 14 feet” in height and were noted “in all parts of the country”, leaving 83 people “confirmed dead,”⁶ “significantly” damaging 39 islands, “completely” destroying 14, and “severely” affecting one third of the country’s population (WB ADB UN 2005, p. 4). In total the tsunami caused the displacement of more than 20,000 islanders (8,500 intra-island and nearly 12,000 inter-island). Thus, with 7% of the population displaced, and with estimated total damages equal to 62% of the nation’s Gross Domestic Product, plus with the livelihoods of thousands compromised, “the Maldives experienced a disaster of national proportion” (ibid, pp. 3-4).

6 An additional 25 people are missing, assumed dead (WB ADB UN 2005, p. 4).

In summary, the tsunami has had a profound effect on the country's psyche, focusing demographic development and accelerating the implementation of government coordinated migration processes throughout the archipelago (MHTE 2009, MEEW NAPA 2007):

“Following the tsunami, the government initiated a voluntary migration incentive scheme to reduce the number of inhabited islands and consolidate isolated settlements. Most of the islands destroyed by the tsunami had little or no coastal protection and as part of the ongoing atoll development strategy, the concept of tsunami ‘safe islands’ is being implemented. The idea of safe islands is to extend the population consolidation approach to establishing building and construction codes to provide safe areas where basic services in an emergency, particularly health, communication, transport and a buffer stock of food and water, can be provided. The features of safe islands are improved coastal protection, communication and transport facilities, housing, infrastructure, social services and adequate capacity and preparedness to manage emergencies and disasters. The basis for selection of safe islands was size, availability of existing government offices and availability of free space to serve as host islands for relocating population.” (Godfrey 2007, p. 13).

The tsunami also appears to have served as a powerful reminder just how vulnerable the country is to climate change induced sea level rises (WB ADB UN 2005, MEEW NAPA 2007, Vince 2009a). According to the National Adaptation Program of Action (NAPA) prepared by the Ministry of Environment, Energy and Water, “[m]ost islands in Maldives are barely 1m above sea level. Under the predicted worst case sea level rise scenario, large areas of Maldives could be inundated” (MEEW NAPA 2007, p. 19). Vulnerabilities are exacerbated by the small size of many islands: “96% of the islands are less than 1km² in area [which] forces people to live next to the sea. [...] 44% of the settlement footprints of all islands are within 100m of coastline” (ibid, pp. 18-19).

Recent scientific sea level rise projections which are detailed and referenced below have raised the submersion and implied forced human emigration from islands in the Maldives as a possibility. While it is beyond the scope and focus of this case study to provide an in-depth discourse on the physical causes and complexities associated with the study of sea level changes, a discussion of state-of-the-art sea level science appears helpful for a meaningful discussion of plausible future scenarios.

In its fourth and most recent assessment report (AR4) the Intergovernmental Panel on Climate Change (IPCC) released substantive scientific forecasts about possible future climate change impacts, projecting a rise in global average sea level of 18-59 cm this century while conceding that the model-based range “exclud[es] future rapid dynamical changes in ice flow” (IPCC 2007, pp. 8, 45). Highlighting that this range reflects primarily sea level rise induced by thermal expansion of the oceans (warmer water occupies more

space) and not dynamic changes in ice sheet disintegration (melting of land based ice), the panel emphasised that the published projections should “not ... be considered upper bounds for sea level rise” (ibid) because “understanding of some important effects driving sea level rise is too limited” (IPCC 2007, pp. 7, 45).

Moreover, the IPCC conceded that “[p]artial loss of ice sheets on polar land could imply metres of sea level rise, major changes in coastlines and inundation of low-lying areas, with greatest effects in ... low-lying islands. Such changes are projected to occur over millennial time scales, but more rapid sea level rise on century time scales cannot be excluded” (IPCC 2007, pp. 13, 54).

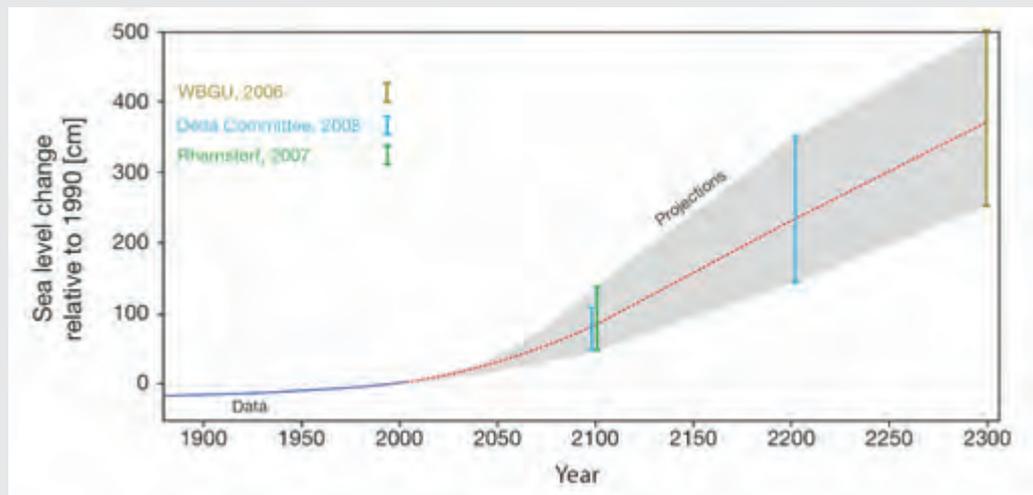
In its 2007/2008 flagship annual Human Development Report *Fighting climate change: Human solidarity in a divided world*, the United Nations Development Programme (UNDP) treated this projected sea level rise range with caution:

“So far, the rise in sea level has been dominated by thermal expansion due to increased temperatures rather than glacial melt – but this could change. For humanity as a whole, the accelerated disintegration and eventual demise of the Greenland and West Antarctic ice sheets are perhaps the greatest of all the threats linked to climate change. [...] One of the reasons for uncertainty about the future is that ice sheet disintegration, unlike ice sheet formation, can happen very rapidly. [...] The IPCC sets out what can be thought of as a lowest common denominator consensus. However, its assessment of the risks and uncertainties does not include recent evidence of accelerated melting, nor does it factor in the possibility of large-scale, but imperfectly understood, carbon cycle effects. The upshot is that the headline risk numbers may err on the side of understatement.” (UNDP 2007/2008, p. 37)

In *The Copenhagen Diagnosis* (2009), a consortium of 26 distinguished climate scientists came to a very similar conclusion with respect to the IPCC’s projected sea level range:

“Sea level is likely to rise much more by 2100 than the often-cited range of 18-59 centimeters from the IPCC AR4. As noted in the IPCC AR4, the coupled models used in developing the 21st century sea level projections did not include representations of dynamic ice sheets. [...] Satellite measurements show sea-level is rising at 3.4 millimeters per year since these records began in 1993. This is 80% faster than the best estimate of the IPCC Third Assessment Report for the same time period. [...] By 2100, global sea-level is likely to rise at least twice as much as projected by Working Group 1 of the IPCC AR4; for unmitigated emissions it may well exceed 1 meter. The upper limit has been estimated as ~ 2 meters sea level rise by 2100. Sea level will continue to rise for centuries after global temperatures have been stabilized, and *several meters of sea level rise must be expected over the next few centuries.*” (Copenhagen Diagnosis 2009, pp. 9, 40, emphasis added; cf p. 39; Figure 6.4)

Figure 6.4 Past and future sea level rise (1900 to 2300)



Source: Copenhagen Diagnosis 2009 p. 38; available: <http://www.copenhagendiagnosis.com/> cf, slide 18
Map quoted from: http://www.crc.unsw.edu.au/Copenhagen/Copenhagen_Diagnosis_FIGURES.ppt
(last accessed 10 Oct 2013)

Another synthesis report by distinguished scientists which includes results from several studies similarly notes that “updated estimates of the future global mean sea level rise are about double the IPCC projections from 2007” (Richardson et al 2009, p. 9, linked to Dahl-Jensen et al 2009).

Over recent years, leading sea level scientists have corroborated the view that IPCC projections from 2007 could be unrealistically optimistic. Research by Rahmstorf et al (2012, p. 4) “suggests that the 21st Century sea-level projections of the last two IPCC reports may be systematically biased low.”

In a recent research presentation at the University of New South Wales (UNSW) a member of Working Group I of the IPCC involved in preparation of its *Fifth Assessment Report* (AR5) due to be published in 2013/2014 discussed

“... future sea level change: Global sea level is projected to rise as much as 190cm above 1990 levels by 2100. I’m actually working on chapter 13 of the sea level change chapter of the IPCC AR5 and I’m not allowed to tell you what we are talking about, but we are – at the moment – not talking about a single number in the way that Vermeer and Rahmstorf and people like that are talking about it, but it certainly is likely that in the IPCC’s Fifth Assessment Report there will be a significant upscaling of sea level rise projections for 2100 and beyond. [...] Again I would say that this is clearly going to make it far more difficult for people to continue to occupy coastal settlements in places like the Pacific Islands and maybe also places like Brisbane in the future.” (Professor Patrick Nunn speaking at the UNSW Climate Change Research Centre in Sydney, 15 February 2012; audio recording on file with this researcher)

There are also a number of sea level rise issues that can complicate precise future projections.⁷ First, climate change induced sea level rise is superimposed on natural variability. Second, local sea level change can be subject to uplift or subsidence. Third, sea level changes reached in the future essentially depend on what temperature increases are ultimately realised, and how soon – which in itself is speculative and subject to assumptions about complex and interrelated issues, including policy decisions on mitigation (Rahmstorf 2012, Bindoff et al 2007). Finally and importantly, sea level rise is globally non-uniform (Bindoff et al 2007; Amos 2012b; <http://www.altimetry2012.org/>) and influenced both by changes in ocean currents (Levermann et al 2005) and by changes in the gravitational pull of continental ice (Mitrovica et al 2001). More specifically, “the global coverage of satellite altimetry provides unambiguous evidence of non-uniform sea level change in open oceans, with some regions exhibiting rates of sea level change about five times the global mean. For the past decade, sea level rise shows the highest magnitude in the western Pacific and eastern Indian oceans...” (Bindoff et al 2007, p. 411).

At the Four Degrees Or More? conference in Melbourne, Australia (12-14 July 2011), opening keynote speaker Professor John Schellnhuber explained the non-uniformity of sea level rise by reminding his listeners of the

“...injustice of sea level rise. That’s really an extremely important point. [...] On average you have about a metre of sea level rise by 2100, that’s more or less the central value we can expect, a metre of sea level rise all over the globe. But the ... very vicious thing is, that this sea level rise will be distributed in a highly inhomogeneous way across the planet, ... in particular if a lot of that comes from Greenland. [...] Elementary physics – if Greenland is losing mass, that means its gravitational pull for seawater will be diminished – that means, around Greenland, sea level may even drop, in particular for the north-eastern part of the American continent, while there will be a sort of ridge of water, in particular in the Pacific around the equator, and the Pacific Islands ... that haven’t done anything to contribute to global warming, will again get the brunt of it, will get all the water which is released from Greenland, for example. And those who are most responsible for that, northern Europe, northern America, will be spared sea level rise, at least for a while. So you see nature can be extremely unfair if humanity is sort of provoking that injustice.” (Transcribed by this researcher and conference delegate from Session 1 recording @ ~ 51:00mins; mp3 @ <http://www.fourdegrees2011.com.au>)

In summary, it appears that the sea level rise range projected by the IPCC in AR4 in 2007 is likely biased low, and that a significant upward revision can be expected for AR5 due to

7 During field research in 2008 Professor Chalapan Kaluwin elaborated on the inherent complexities related to sea level science: “The causes of sea level rises are manifold, intertwined and acting in concert. Research requires a prolonged, multidisciplinary investigation with scientific contributions from different fields of study – glaciologists, oceanographers, geodesists, geologists, meteorologists, and climate scientists.” (Kaluwin, cited in Luetz 2008, p. 21)

be published in 2013/2014. According to Mimura et al (2007), relative sea level rise measurements in Maldives “show trends of about 4 mm/yr (Khan et al, 2002), with the range from three tidal stations over the 1990s being from 3.2 to 6.5 mm/yr (Woodworth et al, 2002). Church et al (2006) note that the Maldives has short records and that there is high variability between sites, and their 52-year reconstruction suggests a common rate of rise of 1.0 to 1.2mm/yr” (Mimura et al 2007, p. 692).

Even though it seems nobody knows for certain how high (and how soon) sea level will rise in the Maldives, both recent research (Solomon et al 2009, Ananthaswamy 2009, Rahmstorf 2012, Rahmstorf et al 2012, Schaeffer et al 2012, World Bank 2012) as well as distinguished scientists appear to corroborate the view that preparedness seems prudent in the context of contemporary emissions trajectories now on course to produce global average temperature increases on the order of 4°C by 2100⁸ (WBGU 2009a; World Bank 2012, <http://www.fourdegrees2011.com.au>; cf Schellnhuber 2008; Vince 2009, New et al 2011, Stewart and Elliot 2013, Nicholls et al 2011, Hamilton 2010, pp. 190-208).

Respecting sea level rise, the implications of such high temperature increases could have far-reaching consequences for many small island states. Research by Schaeffer et al (2012) suggests that limiting global warming to below 1.5°C or 2°C would produce 75-80cm sea level rise (above the year 2000) by 2100, and 1.5m (1.5°C warming) and 2.7m (2°C warming) respectively, by the year 2300 (Schaeffer et al 2012, p. 867). In this context preparedness seems prudent at multiple levels (Nicholls et al 2011, Stewart and Elliot 2013). And perhaps especially so in the Maldives “where 80 percent of the land area is less than 1 metre above sea level” (UNDP 2007, p. 100) and where “severe” scenarios “would submerge much of the Maldives” (World Development Report 2010, p. 6).

According to Professor James Hansen (2008) of NASA’s Goddard Institute for Space Studies and Columbia University Earth Institute,

“[c]limate can reach points such that amplifying feedbacks spur large rapid changes. Arctic sea ice is a current example. Global warming initiated sea ice melt, exposing darker ocean that absorbs more sunlight, melting more ice. As a result, without any additional greenhouse gases, the Arctic soon will be ice-free in the summer. More ominous tipping points loom. West Antarctic and Greenland ice sheets are vulnerable to even small additional warming. These two-mile-thick behemoths respond slowly at first, but if disintegration gets well underway it will become unstoppable. Debate among scientists is only about how much sea level would rise by a given date. In my opinion, if emis-

8 The caveat being, of course, unless successful climate change mitigation policy can pave the way for a rapid revolution in global energy regimes and an effectively decarbonised global economy by the middle of the century (WBGU 2009a; <http://www.fourdegrees2011.com.au>; World Bank 2012). This represents a commitment level for which there appears to be little political appetite if recent climate summits are to be seen as a reliable guide (Harrabin 2012a, 2012b).

sions follow a business-as-usual scenario, sea level rise of at least two meters is likely this century. Hundreds of millions of people would become refugees. No stable shoreline would be reestablished in any time frame that humanity can conceive.” (Hansen 2008, p. 2)

In a recorded video interview conducted for this case study Pacific island expert Patrick Nunn came to the following implicational conclusions regarding current state-of-the-art sea level rise projections:

“Whole nations, in the Pacific, and of course the Maldives in the Indian Ocean, will become uninhabitable as a result of [a 1-2m sea level rise]. We’re not talking anymore about 15-20cm, we’re talking about ten times that amount, and that makes a huge difference. And it really means that all the very earnest attempts to try and prepare islands like those in the Maldives and Kiribati for future sea level rise in the past are really no longer relevant. You can’t expect an atoll island, unless there are exceptional circumstances, to survive under a sea level that’s 1.2m higher than today. A lot of people in the early days thought that coral reefs would suddenly start to grow up and continue to protect islands,⁹ but there’s no evidence that coral reefs have ever done that because it requires a huge ecological change... so many reefs are degraded in the Pacific, so it’s not a straightforward process. So I think it’s time for Pacific Island nations and island nations everywhere in the world to talk seriously now about relocation.” (Professor Patrick Nunn; Q33/Exp/UNSW-Sydney/20120216; unabridged transcript available in Appendix G.1)

For decades Maldivian presidents have publicly expressed concern that climate change induced sea level rises could jeopardise their country’s existence:

(1) President Maumoon Abdul Gayoom¹⁰ (in Office 11 November 1978 to 11 November 2008) has said:

“... there must be a way out. Neither the Maldives nor any small island nation wants to drown. That’s for sure. Neither do we want our lands eroded nor our economies destroyed. Nor do we want to become environmental refugees either. We want to stand up and fight.” (Small States Conference on Sea Level Rise, Malé, 1989; cited in MEEW NAPA 2007, p. 1)

9 An early IPCC report states: “[i]f the rate of sea-level rise exceeds the maximum rate of vertical coral growth (8 mm/yr), then inundation and erosive processes begin to dominate, leading to the demise of the coral atoll. However, if the rate of sea-level rise is small, then coral growth may be able to keep pace.” (IPCC 1992, p. 107)

10 According to Schmidl (2009), “[w]hen Gayoom wasn’t abroad predicting that Maldivians could become the first environmental refugees, however, he was crushing dissenters back home. His 30 years in office were punctuated by regular, uncontested elections that he won each time with at least 90 percent of the vote. One of those he jailed – at least 13 times, by the prisoner’s count – was a spunky journalist named Mohamed Nasheed” – who would later succeed him as the country’s fourth (and first democratically elected) president.

(2) President Mohamed Nasheed (in Office 11 November 2008 to 7 February 2012) is well-known internationally for his preoccupation with climate change (Schmidle 2009), gaining notoriety not only by conducting a scuba gear-decked underwater cabinet meeting (Lang 2009b), but also by featuring as the main protagonist in an award-winning documentary called *The Island President* in which he is shown as confronting “a problem greater than any other world leader has ever faced – the literal survival of his country and everyone in it” (Shenk 2011; <http://theislandpresident.com/synopsis/>).

On 10 November 2008 he famously announced the creation of a sovereign wealth fund to pool some of his nation’s earnings from tourism to buy land elsewhere should rising sea levels inundate his country and necessitate the resettlement of its population (Vince 2009a, pp. 37-39; cf Schmidl 2009; UNDP 2009 p. 45, attributed to Revkin 2008; BBC 2008a, Henley 2008, Lang 2009a, 2009b). If recent media coverage is to be trusted, his initial announcement was reiterated in January of 2012 (AVB 2012, Doherty 2012, Burgess 2012). Apparently considering locations in Sri Lanka and India for reasons of cultural affinity and as far away as Australia, President Nasheed explained:

“We do not want to leave the Maldives, but we also do not want to be climate refugees living in tents for decades.” (Henley 2008, Ramesh 2008)

In expert interviews conducted for this case studies several key informants downplayed the comments. President Nasheed himself could not be reached for comment by this researcher. The question whether the Maldives may disappear beneath the ocean waters will be covered in Section 6.6.

(3) Most recently, President Dr Mohamed Waheed (in Office since 7 February 2012, incumbent) addressed the United Nations Conference on Sustainable Development 1st Plenary Meeting at Rio + 20 saying:

“Mr President; The Maldives’ international advocacy on matters of environmental sustainability, especially relating to climate change, is well-known. We have stood resolutely in forums and conferences around the world and asserted our right to survival. I am here today to reassert that right. But I also stand here to say that the Maldives wants more than that. We want not only to survive, but also to thrive.” (TPO 2012)

To conclude Section 6.2, this field research represents an inquiry into what lessons may be learned from present-day intra-atoll and inter-atoll human migrations in the Maldives. While the majority of this movement is not presently associated with climate change, valuable lessons can be learned from the government’s management of it. These lessons are highly relevant for future climate migration scenarios, both in the Maldives itself, as well as in other countries. In point of fact, the Maldives is a particularly useful case study because much of the internal migration can be characterised as macro-managed

and pre-planned. Moreover and importantly, a majority of respondents seemed to be genuinely appreciative of both migration processes and outcomes. The field research approach and methodology are discussed next.

6.3 Methodological specificities of the Maldives research

Data for this case study was sourced in the Maldives over the course of two weeks during December 2011 and January 2012, and is supported by observations made and conversations conducted during that time, as well as during months of preparation and follow-up.¹¹ The Maldives field research was also aided by a preceding research visit in May 2009 during which tsunami related human resettlement was studied.¹² This earlier research visit also enhanced familiarity with a number of pertinent issues discussed in this case study (eg, cultural, environmental, socioeconomic vulnerabilities) and laid the foundation for strategic partnerships in areas of translation/interpretation, logistics, and overall research support (Sections 1.1 and 3.4). Given this earlier research visit it also appeared sensible to interview some of the same experts again to gauge if/how matters in the country had changed.

Key informant interviews sought to establish not only the extent to which climate change (including related disasters) may be implicated in the migration and displacement of human populations in the Maldives, but also how inter- or intra-island migrations may be managed to minimise negative impacts on communities and individuals. As in Bolivia and Bangladesh, field research sought to appreciate the migration experience over time and space across the whole spectrum of movement, from initial displacement or departure to temporary or permanent relocation. Hence fieldwork in the Maldives aimed to engage respondents in both island communities of “origin” and “destination” so as to gain a comprehensive understanding of migration across the archipelago. Holistic approaches and perspective are taken to be crucial if preparedness policy and practice relating to future human migration management is to be appropriately informed.

As mentioned in Section 3.4, a consolidated map detailing several fieldwork sites is available at <http://goo.gl/maps/byNOF>.

11 PhD field research into climate change and non-climate change related human migration and resettlement conducted in Maldives: Malé (19-24 December 2011); Hanimaadhoo (24 Dec 2011 - 1 Jan 2012); Malé/Hulhumalé (1-3 January). These islands served as hubs from which numerous day trips were organised to migration relevant islands of interest located in their vicinity.

12 Self-funded PhD research scoping visit (23-31 May 2009) conducted in conjunction with environmental NGO Bluepeace Maldives to explore tsunami induced displacement from the Island of Kandholudhoo to Dhuvaafaru following the 2004 Indian Ocean tsunami. A guest commentary was subsequently submitted to Bluepeace Maldives and posted on the environmental NGO's weblog at <http://www.bluepeacemaldives.org/blog/2009/06>



Figure 6.5: Focus group discussion at Araamagu Café on Hanimaadhoo Island (“community of destination”, Q28/Dest/Hanimaadhoo/20111231).

Given that a number of islands in the area of investigation had already been completely abandoned by their islander communities at the time of this research it did not prove feasible to conduct an equal share of interviews among communities of origin and destination.¹³ Hence semi-structured interviews were primarily conducted on islands where government coordinated in-migration was the dominant process of demographic change. Communities of destination include human settlements in the following islands and atolls. Parentheses indicate number of *in situ* interviews conducted in each locality: Malé Atoll: Malé (3), Hulhumalé (1); Haa Dhaaluu Atoll: Hanimaadhoo (13), Nolhivaranfaru (8), Kulhudhuffushi (1); Ihavandhippolhu Atoll: Huvarafushi (2). Abandoned human settlements were also visited in Hathifushi Island (Ihavandhippolhu Atoll) which may be classified as a community of origin. However, given that Hathifushi Island was hastily and completely abandoned in 2007 and no longer has a resident human population – aside from three temporary caretakers who perform administrative roles – interviews on Hathifushi were restricted to one caretaker and three former residents who accompanied this researcher to their former island home on a one-day excursion aboard a speed boat specifically hired for the purpose. In addition, three experts were interviewed in Colombo (Sri Lanka), Singapore, and Sydney (Australia).

In total there were 33 semi-structured on-site interviews conducted in a face-to-face manner. However, given that individual interviewees were more often than not encountered in groups, generally made up of the respondent and by-standing acquaintances who were happy to elaborate on issues discussed by volunteering their own personal experiences, the cumulative total of informants is significantly greater than the number of names recorded on paper questionnaires. With a minimum of seven such focus group discussions taking place and between three to five respondents participating in each conversation the total number of respondents involved in this field research is estimated to be

13 The area of investigation comprised primarily the northern South Thiladhunmathee (Haa Dhaaluu) Atoll, as well as islands and atolls in its vicinity.

90. This estimate is also based on photos (Figure 6.5 depicts a typical focus group interview), voice and video recordings, and pertinent transcripts (Appendix G).

Of all respondents queried, 88% had Maldivian nationality, of whom 100% were Muslim, and 21% were female. Eleven key informant interviews (33.3% of the sample) were conducted with “experts”, including a senior sea level researcher, island chief, professional tour guide, co-founder of an environmental NGO, writer and civil society activist, council office director, senior education administrator, court office assistant, senior coastal researcher, parliamentarian (Minister of Housing and Environment), and senior public administrator (Assistant Executive Director Department of National Planning). Of all interviews conducted, 27 were carried out in the country’s *lingua franca* “Dhivehi” with the help of a local guide and interpreter. The remainder was conducted in English. Respondent ages ranged from 20-82 years, with 43.4 years as the average age.¹⁴ Having discussed the methodology, the next section looks at the results.

6.4 Field research findings

Research results discussed in this section can be broadly grouped into qualitative and quantitative subsections. Qualitative findings are produced first and are supported by a selection of three key respondent commentaries which provide a richer context and offer fine-grained insights not otherwise captured by quantitative results. Quantitative results which follow may be subdivided into migration push factors (environment related and non-environment related) and migration pull factors. A discussion of key findings will be undertaken in Section 6.5.

Qualitative Findings

The following three key commentaries and photos shed light on the views, conditions, experiences, interpretations and value judgments of respondents in communities of out- and in-migration. Verbatim renditions of selected key commentaries are available in Dhivehi and English in Appendix G.

(1) Figures 6.6 and 6.7 and corresponding key commentaries reflect the experience of out-migration from the Island of Hathifushi (Ihavandhippolhu Atoll) which occurred in the wake of the December 2004 Indian Ocean Tsunami and storm surges in June 2007. Following these two natural disaster events Hathifushi Island was swiftly and completely

14 All but five experts indicated their age, wherefore the average is derived from a sample size of 28.

abandoned by its 295-strong islander community (65 families) on 5 July 2007. The commentary was provided by a former Hathifushi islander who accompanied this researcher on a day-trip to her former island home. Revisiting her abandoned house (“community of origin”), Fatimath Hussain recounted how environment related and non-environment related push drivers are working together to encourage out-migration from remote, inaccessible islands where facilities and basic services are in short supply. Her commentary is a typical example of the difficult decision facing islanders in the Maldives who have to carefully weigh the benefits of living on a “very beautiful island” (Q27/Orig/Hathifushi/20111231) against numerous disadvantages this can imply.

It is a clear finding of this research that even though the small community of islanders had long considered leaving Hathifushi Island primarily for non-environment related reasons (ie, being attracted by the prospect of basic services, health and education being more readily available on more populated islands), and many had done so, including Fatimath Hussain herself, it is beyond doubt that environment related push factors ultimately triggered the island’s hasty evacuation (tipping point). This may also be deduced from the fact that the islanders did not first want to wait for housing to be constructed in Hanimaadhoo (“community of destination”), but instead made a brisk decision to leave collectively within weeks of the storm surges inundating their island in June 2007 when “the whole island was flooded on a worse scale than the tsunami [which] flooded 90% of the island” (Q6/Migr/Exp/Dest/Hanimaadhoo/20111226).

“There were many trees earlier, ... coconut palms, stone apple, trees which provide fruits, breadfruit, [...] rampe leaf plants, papayas, and other fruit-bearing trees. All the trees were completely damaged [because of the tsunami]. It was also very difficult to grow trees again. There were no fruit-bearing trees remaining ... water was inside this house up to three or four feet. [...] [During the Southwest Monsoon] there were times when it was not possible for the boats to access the jetty over there. At such times, the boat [would] be out in the sea and passengers [would] access the island on a small boat through this lagoon. [...] There were no [health care] facilities, ... we had to go to [the Island of] Huvarafushi. There was only one health assistant [here]. [...] [Even while I was living here] people had such thoughts [about leaving] to some extent. As the island was so small, there were so few resources, the quality of education was low, people thought about moving since a long time ago. But people did not seriously want to leave because this was a very beautiful island... not like this. [We were living] very comfortably, very happily. [...] This coconut palm grove belonged to us [with] a large number of coconuts. We were selling them too ... and earning a good income. But we don’t have that now [and] don’t get income from that now. I feel sad. [...] The main reason [for moving was to provide education for my children]. In this region, only Huvarafushi [has] a school [with] grades 10, 11 and 12. [In Hathifushi] the quality of education was very poor. [...] It had classes up to grade 7. [...] It was not possible for students to improve their English...” (Fatimath Hussain; Q27/Migr/Orig/Hathifushi/20111231; un-abridged verbatim citation available in Appendix G.2; cf, Figures 6.6 and 6.7)



Figure 6.6: Fathimath Hussain talking to this researcher in front of her abandoned house during a day-trip to the now uninhabited Island of Hathifushi. The island was significantly damaged by the 2004 Indian Ocean Tsunami, and by storm surges in June 2007. (Hathifushi Island, “community of origin”, Q27/Orig/Hathifushi/20111231).



Figure 6.7: On 5 July 2007 the Maldivian government moved the entire community of Hathifushi Island (“community of origin”) to settle on Hanimaadhoo Island (“community of destination”). With the exception of three temporary resident caretakers Hathifushi is now classified as “uninhabited”. Affected respondents indicated that they are still waiting for new houses in Hanimaadhoo, expressing disappointment at the slow resettlement process. (Hathifushi Island, Q27/Orig/Hathifushi/20111231).

(2) Figure 6.8 and the two corresponding key commentaries reflect the process of a planned, government-coordinated migration initiative. The three sparsely settled islands of Faridhoo, Kunburudhoo and Maavaidhoo were completely abandoned in January 2011, and the three island communities were collectively and quasi-simultaneously resettled on the “host” Island of Nolhivaranfaru (“community of destination”) over the course of three days in January 2011 (Haveeru Daily 2011, The President’s Office 2011, SAMN 2011). The following passages pertain to a key informant audio- and video-recorded interview conducted with local government officials at the Island Council of Nolhivaranfaru on 29 December 2011. The commentary elaborates both the rationale of population consolidation as well as relevant implementation challenges encountered during the integration and assimilation of the three migrating islander communities into the existing “host” community. This interview also involved questions about whether island population consolidation could be broadly likened to rural-urban migration trends observed elsewhere in the world, and whether as a result of present consolidation trends the number of inhabited islands in the Maldives could be expected to decrease further in the future. Finally, the notion of the idyllic remote island life, idealised and romanticised by tourists all over the world, was put to the Council for comment (“some people in Western countries see it as a very pleasant thing to live on a small island with few people. Is it?”).



Figure 6.8: Hussain Abdulla (Assistant Director Nolhivaranfaru Council Office, right) and Mohamed Hassan (Councillor Nolhivaranfaru Council Office and migrant from Faridhoo Island, left) discuss government-coordinated migration to the Island of Nolhivaranfaru (Council Office, Nolhivaranfaru Island, Q15+16/Exp/Migr/Dest/Nolhivaranfaru/20111229).

As made clear in Section 1.7, the inclusion of longer verbatim quotes is a deliberate emphasis of this research which aims to maximise contextuality/originality and minimise interpretive bias by allowing respondents to speak for themselves without being interpreted, shortened or paraphrased. As will be seen, the following two *contextually authentic local-level respondent commentaries* highlight both a successful macro-managed migration process and once more seem to underscore the critical importance of preparedness in migration (Figure 6.8):

“My name is Hussain Abdulla. I am now working as Assistant Director at the Council Office of Nolhivaranfaru. At the time when people from Faridhoo, Maavaidhoo and Kunburudhoo were moved to Nolhivaranfaru, I was working as the Island Chief of Nolhivaranfaru. Hence, when the work was going on concerning the migration of the people from three islands to Nolhivaranfaru, I had to play a role liaising with the government as a public official from Nolhivaranfaru. Hence, we made considerable efforts in collaboration with the Island Development Committee that existed at that time to facilitate the migration of people from three islands by including that in the government’s policies. [The government] was planning and implementing a housing project to move people from Faridhoo, Kunburudhoo and Maavaidhoo. If I remember correctly, 325 people from Kunburudhoo, 230 people from Faridhoo and 546 people from Maavaidhoo moved. [...] At that time the population of Nolhivaranfaru was 587. Now the total population of the four islands reached 1,757.¹⁵

Through this process I have realised how difficult it is to move an island population to another island and develop a community. I have so far learned the challenges facing the migrant communities, their miseries, their happiness and feelings. Similarly, I have

15 Although migrant numbers do not add up to 1,757 the figures appear reliable in view of similar data obtained separately: Nolhivaranfaru (pre-settlement): 587; Faridhoo: 237; Kunburudhoo: 355; Maavaidhoo: 557; Total (post-settlement): 1,762 (Q5/NMigr/Dest/Hanimaadhoo/20111225; Q21/Exp/Nolhivaranfaru/20111230; cf Haveeru 2011). It was impossible to reconcile statistical differences methodologically or otherwise, however it is possible that some people moved only “on paper” and not “in person” because at the time they were “living in Malé.” (Q14/Exp/Hanmaadhoo/20111228)

learned that after the migrant population moved to Nolhivaranfaru, it has resulted in some improvements to Nolhivaranfaru itself. It has also led to improvements to the lives of the migrant population from those three islands too. However, to sustain a real development it will take some more time. We will be able to develop Nolhivaranfaru only through the unified efforts of people from two or three islands. It will take about two to four years to achieve that. People's views and ideas will align and they will start having common goals... In my own experience this is very difficult to implement ... in an island nation such as the Maldives. It is very difficult to implement a housing project. It is very costly too. Moreover, the work required to physically move people from one island to the other is also difficult. While the people were moved to Nolhivaranfaru ... the Maldivian police made a considerable effort... they were involved in that day and night... taking all this into consideration, it is a very costly process... However, it will lead to considerable savings to [the] government's budget later.

In my opinion the migration of the population of three islands to Nolhivaranfaru is very significant. We hope that it will lead to improvements and progress to Nolhivaranfaru. However, it is only natural that some social issues arise during the early stages of the migration. Hence, we are experiencing such issues. In our opinion, the solution to those problems is to increase the job opportunities. If the people who are staying idle, especially the youth, get more job opportunities, then the hopes and aspirations of the people of our four islands will be fulfilled. I believe it will lead to more development and create a socially active and healthy community. [...] Most social issues we face are caused by the youth. Even the Council's Office has noticed that most crimes are also committed by the youth. While people from four islands are living here, if we could facilitate an ideal environment for development in education, health and social and economic progress, this will become the ideal island that we are hoping for.

[The number of inhabited islands in the Maldives] will continue to decrease. Even though there are about 200 inhabited islands now, some of those islands have a [small] population of 200. [...] It is impossible to spend from the government budget to provide services to islands with about 200 people. It is not possible. [...] Now there are 13 [inhabited] islands [in Haa Dhaaluu Atoll] ... In my opinion this atoll [with a total 33 islands, including uninhabited islands] should have six inhabited islands... The number of [inhabited] islands of Maldives has to be decreased. The atmosphere of a small island is very pleasant. However, life is difficult for the inhabitants because of the lack of access to facilities and services." (Hussain Abdulla, Assistant Director Nolhivaranfaru Council Office; Q16/Exp/Dest/Nolhivaranfaru/20111229; Dhivehi verbatim citation available in Appendix G.3)

(3) Speaking both as a migrant and as a local government administrator, Mohamed Hassan (Figure 6.8) elaborated that the process of planned migration required persistence, patience and "several efforts" (Q15/Exp/Migr/Dest/Nolhivaranfaru/20111229):

"Some people might have such views [that it is pleasant to live on a small island]. For example, a tourist spending a holiday in a resort might have such thoughts, however



Figure 6.9: Queue of men at the only Automated Teller Machine (ATM) available in Haa Dhaaluu Atoll comprising 33 islands, of which 13 are inhabited. The Island of Kulhudhuffushi is the atoll's regional hub. Education, health care and basic public services were recurrently highlighted as important aspirations for islanders across the archipelago. (Q8/Exp/Dest/Kulhudhuffushi/20111227).

when a person starts actually living [in a small island they see a different reality]. [...] *We had made several efforts through requests to the government to move here.* A total of 237 people [from the Island of Faridhoo] moved here to Nolhivaranfaru. In reality Faridhoo was an island with a very small population, an island where it was difficult to live. After we migrated to Nolhivaranfaru we have received several benefits and advantages. Those include easy access to [the regional hub] Kulhudhuffushi (Figure 6.9) and other islands and access to a better harbour. In all aspects we see Nolhivaranfaru as a better island to live. However, in the initial days after the migration, there [were] some issues that caused dissatisfaction. However, our belief is that in the future Nolhivaranfaru will be a convenient island to live. [...] This pattern [of population consolidation in the Maldives] will continue. The problem is that the population [on many islands] is too small. There is no adequate education or health, it is so difficult to use the harbour, there are no jobs available... However, now that we have moved here ... transportation will be easier [and] health too, it will be a better place. Hence, in all aspects islands with larger populations will develop faster.” (Mohamed Hassan, Councillor Nolhivaranfaru Council Office, and migrant from Faridhoo Island; Q15/Exp/Migr/Dest/Nolhivaranfaru/20111229; Dhivehi verbatim citation available in Appendix G.3)

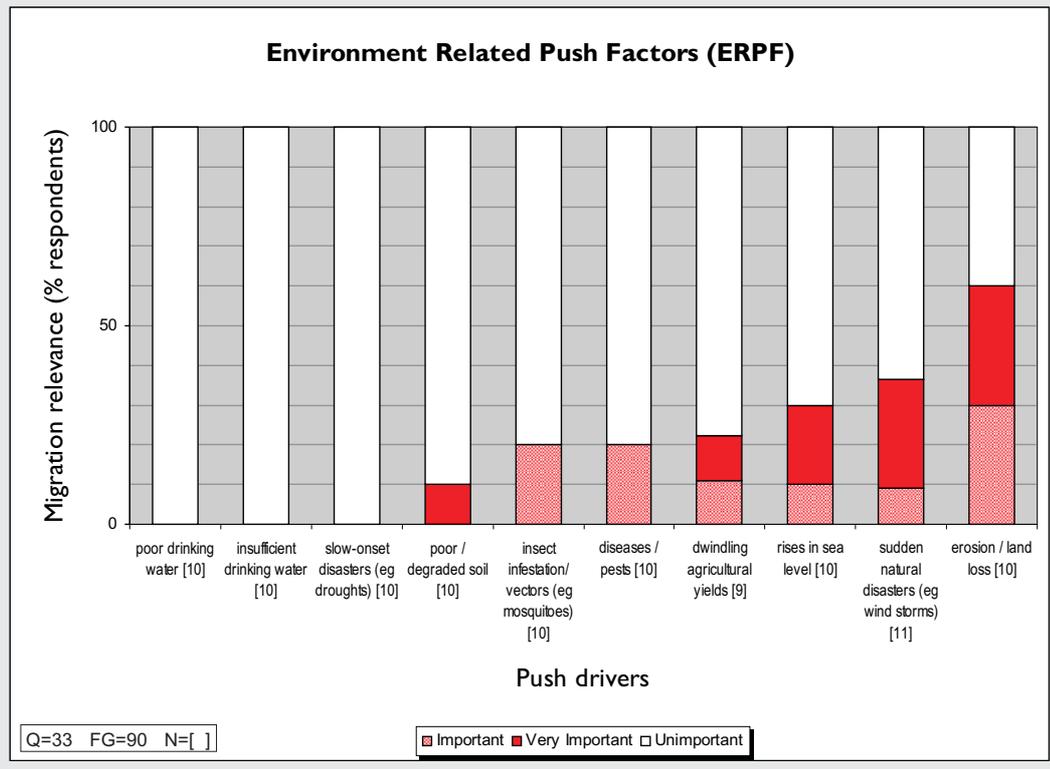
Having discussed selected qualitative results, the next section looks at quantitative findings. As mentioned, a discussion of these findings will be undertaken in Section 6.5.

Migration push factors: environment related pressures

Eleven respondents partially or completely discussed and rated environment related migration pressures, “push factors” (Figure 6.10). Not every interviewee addressed every questionnaire category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample size, discussions yielded noteworthy insights.

Problems arising from “erosion/land loss” were viewed as the most important environment-related migration push factors (ERPF), with 60% of responding interviewees considering these pressures “important” (3/10) or “very important” (3/10). The second-most

Figure 6.10: Environment Related Push Factors (ERPF)



significant ERPF appeared to be “sudden natural disasters / windstorms”, with 36% of respondents considering them “important” (1/11) or “very important” (3/11). The third-most important seemed to be “rises in sea level”, with 30% of respondents considering this “important” (1/10) or “very important” (2/10). Next, problems arising from “dwindling agricultural yields” were rated as “very important” (1/9) or “important” (1/9) by 22% of those answering this question. Problems arising from “diseases / pests” and “insect infestation / vectors” were rated by 20% as “important” (2/10). Finally, “poor / degraded soil” was seen by 10% of respondents as “very important” (1/10). Other environment related factors were seen as irrelevant.

An explanatory note about these findings may be helpful. The fact that environmental factors, particularly rises in sea level, were perceived to be relatively unimportant migration drivers in the Maldives may perhaps seem surprising, however it needs to be remembered that the wording in questions was retrospective and not prospective (ie, based on *past and present* experience, how important are “rises in sea level” for migration *today*?) Had the questions asked about future concerns, a very different perspective might well have emerged.

Individual respondents also mentioned additional ERPF not included in the questionnaire that in their view contribute to migration. Interestingly, a majority of respondents highlighted problems arising from an island’s isolation as the most important environment related reason to relocate. Related problems were variously described as “inaccessi-

bility”, “no natural harbour”, “isolation”, “remoteness”, “lack of connectedness”, etc. Other push factors mentioned include: “tsunami”,¹⁶ “island too small”,¹⁷ and “pollution, unhealthy and congested environment [ie, Malé].”¹⁸

What is the most important environment related push factor?

Twelve respondents explicitly answered this question. While human movement is typically triggered or enhanced by multiple factors this question specifically asked respondents to identify “the most important” issue involved. Responses to this question can be grouped into three categories. The most frequently cited ERPF was island inaccessibility (“remoteness”, “isolation”, etc; 8 respondents), followed by other island problems (“erosion; two respondents) or attributes (“island size too small”, “pollution”; two respondents).

Numerous other respondents who did not answer this question explicitly did so implicitly in the course of describing their problems in conversation. There can be no doubt that the vast majority of respondents interviewed during research in the Maldives consider their island’s remote/isolated location and implied lack of mobility and service provision constraints as the number one factor for migration.

Migration push factors: non-environment related pressures

Ten respondents partially or completely discussed and rated non-environment related migration pressures, “push factors” (Figure 6.11). Not every interviewee addressed every questionnaire category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample size and incomplete data set, discussions again yielded insightful perspectives.

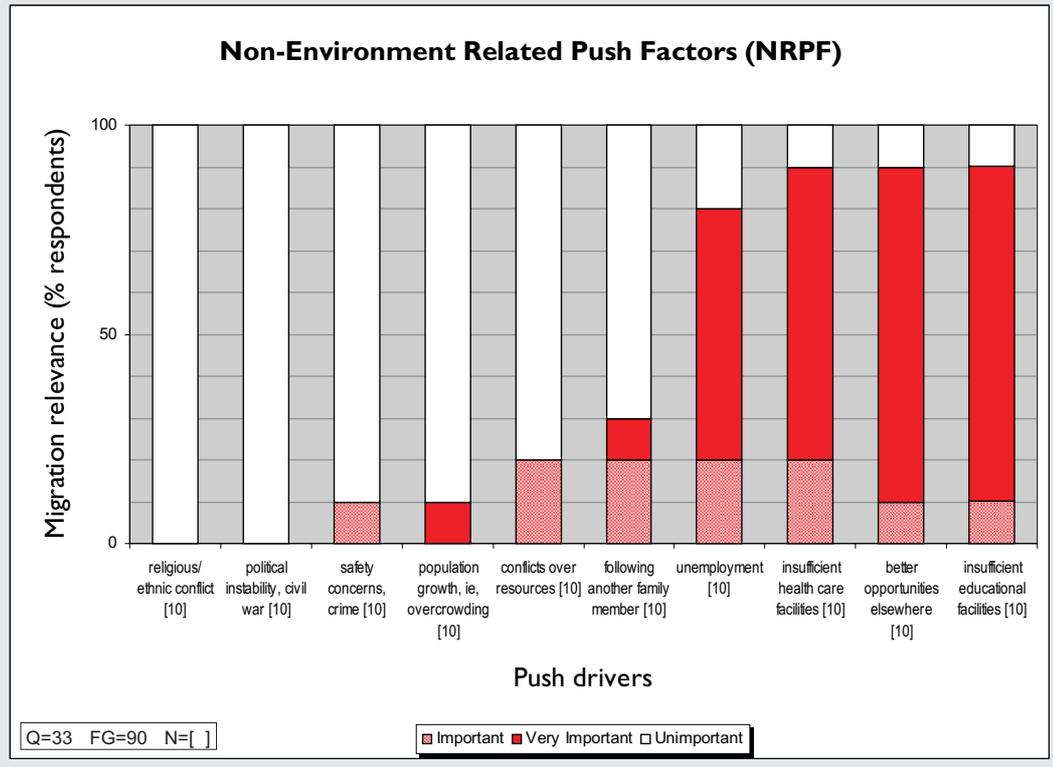
The most significant non-environment related push factors (NRPF) appeared to be “insufficient educational facilities” and “better opportunities elsewhere”, each of which were considered as “very important” (8/10) or “important” (1/10) by 90% of respondents. The same percentage of respondents regarded “insufficient health care facilities” as “very important” (7/10) or “important” (2/10). Next, “unemployment” was regarded as

16 Comments made on 29 December 2011 during interviews on the Island of Nolvhivanfaru by migrants from the tsunami affected island of Maavaidhoo.

17 Comments made on 31 December 2011 during interviews in Huvarafushi by a migrant from the very small and “very beautiful island” of Hathifushi.

18 Comment made on 2 January 2012 during interviews in Hulhumalé by a settler from Malé who preferred the artificially designed, reclaimed and raised island to the overpopulated Island of Malé.

Figure 6.11: Non-Environment Related Push Factors (NRPF)



“very important” (6/10) or “important” (2/10) by 80% of those who answered this question. In the minds of respondents these four categories of push drivers seemed to be primarily responsible for driving internal migration in the Maldives, and by direct comparison all remaining options appeared virtually irrelevant. Merely 30% regarded “following another family member” as “very important” (1/10) or “important” (2/10), and 20% viewed “conflicts over resources” as “important” (2/10). Interestingly, “population growth, ie overcrowding” was seen to be practically irrelevant for migration (only 10% of the sample), with the majority of respondents considering “low population” as the far more important incentive for migration. This finding differs markedly from responses recorded in Bolivia (Chapter 4) and Bangladesh (Chapter 5), including the Pacific atolls of Tulun and Nissan (Section 7.2) where respondents overwhelmingly regarded “population growth, ie overcrowding” as a strong incentive to migrate. A possible explanation for this dissimilarity could be divergent levels of urbanisation in each locality (elaborated in Chapter 7). Similarly, problems of “safety concerns, crime” were only viewed by 10% of the sample as “important” (1/10). “Political instability, civil war” and “religious / ethnic conflict” were unanimously regarded as irrelevant for migration.

Individual respondents also mentioned additional NRPF not included in the questionnaire that in their minds also contribute to migration. One respondent explained why “small population” and “population decline” resulting from out-migration were reasons for concern: “If population is too small the government won’t provide schools and other services”, a development which in the view of the respondent lowered overall qual-

ity of life by even further reinforcing the out-migration trend (Q6/Migr/Hanimaadhoo/2011126). In total there were four respondents¹⁹ who independently added “low population” to the list of non-environment related migration pressures. Respondents also mentioned island “accessibility” concerns²⁰, “cheaper cost of living”²¹, “more family friendly environment”²² and “too many people competing for jobs at the mosque”²³ as drivers which were supporting migration.

What is the most important non-environment related push factor?

Sixteen respondents answered this question. While human movement is typically triggered or enhanced by multiple factors this question specifically asked respondents to identify “the most important” issue involved. Responses to this question can be broadly grouped into four socioeconomic categories. The most frequently cited NRPF was seen to be lack of education opportunities (eight respondents). One respondent indicated that prior to the community abandoning their island and migrating to Nolvivaranfaru there was “no school on Kunburudhoo Island, the school was closed after [too many] students went to other islands” (Q16/Exp/Migr/Dest/Nolvivaranfaru/20111229). Other push factors mentioned were lack of health care (three respondents), low population (three respondents), and lack of access to basic services (two respondents).

Migration pull factors: migrant aspirations

Fifteen respondents partially or completely discussed and rated various possible migrant aspirations (“pull factors”). The comparative levels of prioritisation respondents ascribed each category are summarised by the Migrant Aspirations Overview (Figure 6.12) and synthesised by the Migrant Aspirations Aggregate Index (Figure 6.13). Not every interviewee addressed every category which explains the discrepancy in categorical values. Notwithstanding the comparatively small sample and disparate data set, discussions yielded noteworthy insights.

19 Comments made twice on 26 December 2011 and once on 28 December 2012 during interviews on the Island of Hanimaadhoo, and once on 29 December 2011 on the island of Nolvivaranfaru.

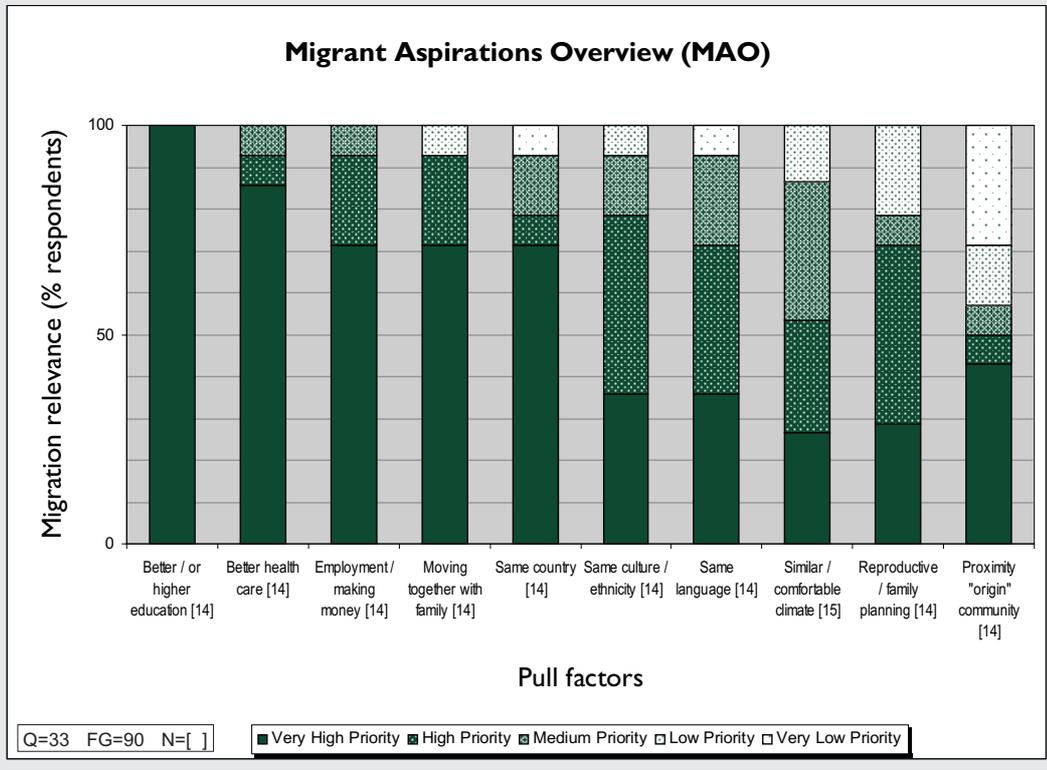
20 Comment made in Hanimaadhoo on 26 December 2012.

21 Comment made in Hulhumalé (vis-à-vis Malé) on 2 January 2012.

22 Comment made during interviews in Hulhumalé (vis-à-vis Malé) on 2 January 2012.

23 This respondent on the Island of Nolvivaranfaru (interview on 29 December 2011) indicated that since his emigration from the Island of Kunburudhoo he had been unable to continue in his profession as an Imam at the local mosque because the position had quickly been filled by others.

Figure 6.12: Migrant Aspirations Overview (MAO): Comparative levels of prioritisation as ascribed by respondents



The top three aspirations were education, health care and employment. Of these, the strongest aspiration voiced by respondents was education opportunities, with 100% of respondents ascribing “better/or higher education” a “very high priority” (14/14). The second-strongest aspiration was “better health care”, which 93% considered as having a “very high priority” (12/14) or “high priority” (1/14). Gainful employment was similarly regarded by 93% of respondents as having a “very high priority” (10/14) or “high priority” (3/14).

Of medium overall priority were the following four aspirations: “moving together with the family”, and migrating within the “same country” (as opposed to international emigration), “same culture / ethnicity”, and “same language”. Moving “with the family” and migrating within the “same country” were regarded by 71% as having a “very high priority” (10/14). Moving within the “same culture / ethnicity” and remaining within the “same language” group were similarly viewed by 36% of respondents as having a “very high priority” (5/14).

All remaining issues may be seen as having a “low” or “very low priority” and are produced in descending order of attributed importance: “similar / comfortable climate”, and “reproductive health and family planning”.

Figure 6.13: Migrant Aspirations Aggregate Index (MAAI)

Aspirations of forced migrant communities	Ascribed importance
Better or higher education	5.0
Better health care	4.8
Employment/making money	4.64
Moving together <i>with</i> the family	4.57
Same country	4.4
Same culture/ethnicity	4.1
Same language	3.9
Reproductive/family planning	3.8
Similar climate	3.7
Proximity to the <i>origin</i> community	3.2

Ascribed importance: weighted average calculated from assigned values: very high priority = 5 points; high priority = 4 points; medium priority = 3 points; low priority = 2 points; very low priority = 1 point.

Interestingly, “proximity to community of origin” received a more nuanced rating. While 43% considered this as having a “very high priority” (6/14), the same percentage ascribed it a “very low priority” (4/14) or “low priority” (2/14).

Respondents also volunteered additional aspirations not included in the questionnaire: moving to a place with “airstrip”;²⁴ “accessibility”;²⁵ living among people who “follow the same religion”;²⁶ and living in a “comfortable environment” that affords “cheaper cost of living”.²⁷

What is the most important aspiration?

Eighteen respondents answered this question. While human movement can be attracted or enhanced by multiple factors this question specifically asked respondents to identify “the most important” issue involved. Responses to this question were again dominated by aspirations linked to education, health care and gainful employment: there were four respondents who grouped all three aspirations together (education, health care and gainful employment) as comprising “the most important”; five indicated only gainful employment (“jobs”, “making money”, etc) as their most important aspiration, and an

24 Hanimaadhoo, 26 December 2011.

25 Nolvivaranfaru, 29 December 2011.

26 Nolvivaranfaru, 29 December 2011.

27 Hulhumalé, 2 January 2012.

additional four singled out only education as the most highly valued pursuit. The remaining five respondents each indicated a different “most important” aspiration, namely, “free government-sponsored house”, “accessibility”, “moving with family”, “cheaper cost of living and comfortable environment”, and a “better integrated inter-island transport system” for enhanced mobility.

Preferred migration destinations

Questions about favoured migration destinations can be broadly grouped into two categories. The first category of answers is indicative of where people *actually* go/went. The second category of answers was offered in response to the *hypothetical* question where migrants would go “if there were no restrictions” (political, financial or otherwise). Answers in response to the *actual* migration destinations highlighted the following issues.

First, people migrate as and when and where directed by the government. Such migration appears to be catalysed by the broader government objective of gradually decreasing population dispersion by providing more and more services – in fewer and fewer places – to increase economies of scale (Q2/Exp/Malé/20111222; Q15/Exp/Nolhivaranfaru/20111229; Q29/Exp/Malé/20120102). Such consolidation migration is induced by attractive government incentives. The following commentary reflects both government incentives as well as beneficiary appreciation:

“My name is Hussain Shahdy. I moved from Hdh. Hondaidhoo to Hdh. Hanimaadhoo on 27 December 1997. One of the happiest things about the migration was that our government provided us transportation for moving, provided a house for each house [we left behind in Hondaidhoo], provided compensation for our trees and coconut palms [which had to be abandoned] and kept our island inaccessible for any other people for six months to enable us to have access to our property there [while gradually retrieving our possessions and finalising the migration process]. [...] When we moved to this island we received several benefits. Among them were job opportunities, better education compared to the island where we lived before, better healthcare, easier transportation and other amenities. There were several vacancies at Hanimaadhoo airport when I moved here and I, along with several other people who moved with me, were able to get jobs from the airport.” (Q7/Migr/Dest/Hanimaadhoo/20111226; Dhivehi verbatim citation available in Appendix G.4)

It is important to reiterate that this kind of government directed migration is neither new/recent, nor immediately related to any perceived threat of climate change, nor is this trend of population consolidation likely to dissipate anytime soon (Q3/Exp/Hanimaadhoo/20121224). As will be discussed in Section 6.5, important lessons can be learned from these pre-planned migrations which may also inform the macro management of fu-



Figure 6.14: Government sponsored houses constructed for migrant communities from Faridhoo, Kunburudhoo and Maavaidhoo on the Island of Nolhivaranfaru. Houses were allotted to families by chance when two students from the “host” island drew lots to determine which house would be allocated to which family. This allotment procedure was seen as a “fair and good process”. (Q18/Migr/Dest/Nolhivaranfaru/20111229).

ture climate induced movement. To synthesise, the government’s role in coordinating and facilitating inter-island migration appears to be predominantly viewed as a positive migration enabling factor which was gratefully acknowledged on numerous occasions and by various beneficiaries. On the Islands of Hanimaadhoo,²⁸ Nolhivaranfaru,²⁹ Huvarafushi,³⁰ and Dhuvaafaru³¹ this researcher was welcomed into such government provided houses (eg, Figure 6.14).

Second, migrants appear to elect preferred destination islands based on their perception of prospects of employment, education, transportation and health care provision. “[My preferred migration destination is the Island of] Hanimaadhoo [because] it has a hospital, airport, it is easy to go to Malé, the school is up to grade ten” (Q24/Migr/Dest/Huvarafushi/20111231). This finding is mirrored by census data from 2006: “[o]ver 33 percent of all lifetime migrants ... migrated in search of better education opportunities. To live in the island and employment were the other two most often cited reasons for migration” (MPND 2006, p. 57).

Third, Maldivians appear to want to stay *in* their country, if at all possible, preferring inter-island migration over international emigration (Q3/Exp/Hanimaadhoo/20121224). The high percentage of internal “lifetime migrants”³² also appears to corroborate the conjecture that Maldivians are not adverse to mobility *per se*: while 33% of Maldivians may be classified as “lifetime migrants” (MPND 2006, p. 46), according to the *World*

28 visited 24 December 2011 to 1 January 2012.

29 visited 29 and 30 December 2011.

30 visited 31 December 2011.

31 visited 28-30 May 2009.

32 Defined by the Ministry of Planning and National Development as people “born outside their island of usual residence [who] lived in that island for more than one year.” (MPND 2006, p. 45)

Bank Migration and Remittances Factbook 2011 the stock of international emigrants from the Maldives (as a share of population) is a mere 0.6% (Ratha et al 2011).

Therefore, the question arises whether Maldivians do not emigrate internationally in greater numbers because intrinsically they prefer not to do so, or whether such desires are extrinsically constrained. This question seems highly relevant in view of numerous media reports suggesting that Maldivians are seeking to migrate in large numbers to countries like Australia (AVB 2012, Doherty 2012, Burgess 2012, Schmidl 2009, Henley 2008). Hence it seemed useful to also ask the *hypothetical* question where migrants would go “if there were no restrictions” (political, financial or otherwise). Five “most preferred destination” categories emerged, namely, (1) Maldives; (2) Saudi Arabia; (3) Asia/South Asia; (4) Western nations (generally), and (5) Australia (specifically). Selected sample responses highlighting each “most preferred destination” are produced below.³³

A clear majority of respondents indicated a desire to remain in the Maldives:

“I’ve never thought about or wanted to go anywhere else.”
(Q27/Migr/Orig/20111231)

Although there were some nuanced views, several respondents suggested Asia/South Asia as a convenient and comfortable region to live:

“Maldivians watch Hindi drama, soap operas, Indian songs; the climate is also very similar, and proximity is an issue; people also go to India for medical reasons; even now there is a considerable community of Maldivians living in Sri Lanka. India and Sri Lanka could be two places” (Q3/Exp/Hanimaadhoo/20111224). “We are more comfortable in this region, for example, Sri Lanka, India” (Q31/Exp/Migr/Dest/Hulhumalé/20120102). “India, the climate is similar, I can’t live in a cold climate” (Q12/Migr/Dest/Hanimaadhoo/20111228).

Incidentally, a tour guide interviewed in Sri Lanka’s commercial capital Colombo confirmed that Maldivians

“... have a big community here [in Colombo]” and that “if something happens there [sea level rises flooding the country], more than half they come to Sri Lanka. Everything is here now, they can come. They have money now, they have business there, they can stay a posh life here but in Maldives they can’t rent [housing and] don’t have enough space also.” (Q1/Exp/Colombo/2011219)

A minority highlighted Saudi Arabia and Australia as desirable countries to settle.

33 This question was exclusively directed to Maldivian nationals, all of whom are sunni Muslim.

“I would prefer Saudi Arabia – people speak Arabic, and there are many holy places in Saudi Arabia. However, most people would probably prefer Australia, it has a good reef” (Q6/Exp/Migr/Dest/Hanimaadhoo/20111226). “The sea, beach and reef are good in Australia” (Q11/Migr/Dest/Hanimaadhoo/20111228).

A small minority of respondents indicated Western nations as desirable emigration destinations.

“One of the main barriers in the Maldives is finance. In the absence of constraints people would like to go to Europe or USA. In Europe there are galleries, cafes, exhibitions, creativity. These things nurture you. And the U.S. is a land of opportunity, giving people a fair chance to progress, with access to capital, finance. I have visited both [continents], I found life very fascinating in those places.” (Q3/Exp/Hanimaadhoo/20111224)

In summary, and as already noted in the Bolivia and Bangladesh case studies, answers in response to the *hypothetical* question again highlighted significant restrictions on human movement and seemed to underscore that migrants do not generally consider what they might want in an “ideal world” but rather what seems practically attainable under “prevailing circumstances”. Notwithstanding, it appears that a majority of respondents evidently prefer to remain in the Maldives vis-à-vis all other alternatives, whether practically *or* hypothetically attainable.

Preferred migrant self-images

Throughout this fieldwork there was no discernible desire on the part of any respondents to discuss preferred nomenclature, and it seemed that respondents saw the question how forced migrants might be called or conceptualised as utterly meaningless. Throughout interviews it seemed that the tested characterisations (ie, migrant, evacuee, refugee, exile, victim, settler, displaced / dislocated person) were similarly regarded as “good” (Q3/Exp/Hanimaadhoo/20121224), and that even alternative Dhivehi terminology (ދިވެހި ފަރާތްތަކުގެ ފަރާތް “Hijura Kura Meehun”³⁴ = people who migrate; ބަދަލު ފަރާތްތަކުގެ ފަރާތް “Badhalu Vaa Meehun”³⁵ = people who move) was not necessarily perceived as preferable in terms of any changes in semantic nuances (ibid). It may be hypothesised that this apparent and seemingly unanimous disinterest could be linked to the overall sense that present-day migration in the Maldives is overwhelmingly “more pull than push” (Q29/Exp/Malé/

34 Phonetic approximation.

35 ibid.

20120102). This is in stark contrast to Bangladesh where the element of “force” in migration was more identifiable and where human movement was recurrently perceived as incited by “more push than pull” (Q22-25/Exp/Dhaka/20111204-20111205). Despite these differences the findings from Bangladesh were essentially replicated in the Maldives, namely that the problem of appropriate nomenclature – while hotly debated among academics – appears to be a non-problem in the minds of Maldivians. A concluding discussion is undertaken in Section 7.5.

6.5 Critical discussion of core issues

This discussion section offers a richer understanding of the Maldives’ bigger context within which environment related pressures such as sea level rise, erosion and storms, and non-environment related inducements such as government incentivised population relocation and consolidation measures are contributing to human movement. It will discuss three areas of interest which appear particularly relevant to human migration in the Maldives, namely the issues of education, demographic consolidation and climate change. Given that these issues appear to be inseparably intertwined, this section will approach them through one contiguous discourse rather than separate them into identifiable headlined subsections.

As highlighted by Figures 6.10 and 6.11, migration push factors appear to be predominantly non-environment related. This is not to imply that environment related push factors are irrelevant (as indeed the latter part of this discussion will demonstrate). However, throughout fieldwork there was a strong sense that present-day migration in the Maldives appears more heavily influenced by non-environment related factors. This is hypothesised to change in the future both as a result of increasing climate change awareness and education, and as a consequence of sea level rise predictions being progressively borne out over the coming decades (Section 6.2). Although present-day migration in the Maldives is overwhelmingly non-climate induced, this section will explore issues that are also beneficial to the management of future climate migration.

At present, the high level of prioritisation ascribed to education seems second to no other aspiration. The very high esteem in which education is held was made apparent not only in quantitative results which highlighted “insufficient educational facilities” as the most important “push driver” (Figure 6.11), and “better / higher education” as the most important aspirational “pull factor” (Figures 6.12 and 6.13), but was also underscored in numerous key commentaries which broadly resemble the following sample:

Father: “I had to leave [this island] because I had to provide education for my children.”
(Q24a/Migr/Orig/Hathifushi/20111231)



Figure 6.15: Abandoned school building on the evacuated Island of Hathifushi. This school offered classes only up to grade seven. Several islanders had already left Hathifushi for educational and other pursuits before natural disasters triggered the island's final and community level abandonment (Q24a+b/Migr/Orig/Hathifushi/20111231).

Teenage son: “There were only two teachers [before we left]. There was a partition here, ... there were only two classes back then... and classes were up to grade seven only. That is why we moved: I was about to finish grade seven.” (Q24b/Migr/Orig/Hathifushi/20111231; interview location depicted in Figure 6.15)

As mentioned in Section 6.3, Hathifushi Island where these interviews were conducted was abandoned by its 295 islanders on 5 July 2007 after two successive large-scale flooding events (tsunami in December 2004 and storm surges in June 2007) inundated much of the island. While these two rapid onset flooding disasters instilled fear and exasperation, and ultimately overwhelmed the community's coping capacity, it is significant to note that the above cited respondents had already left the island for educational pursuits *before* these disaster events triggered a formal, final and government supported community-level evacuation, leaving Hathifushi henceforth abandoned.

The high esteem in which education appears to be held by Maldivians may also be inferred from demographic details which were disclosed as part of the semi-structured interview process. The consolidated overview (Figure 6.16) reflects the level of education among migrant respondents interviewed for this case study in the South Thiladhunmathee (Haa Dhaaluu) and Ihavandhippolhu (Haa Alifu) Atolls.³⁶ Of 24 adult migrant respondents who indicated their highest level of educational attainment, three said that they had never attended school. Of the remaining 21, twelve had only attended primary school, eight secondary school, and one had completed tertiary education for which migration to the country's capital Malé had been necessary. The average lifelong school attendance of this sample is 5.2 years (Figure 6.16). This statistic broadly corresponds with UNDP data which reflects that the “[m]ean years of schooling” is 5.8 years (UNDP

³⁶ Island names were de-identified to ensure respondent anonymity.

Figure 6.16: Years of schooling completed by interviewed non-expert adult migrants

Interview locations (Atolls)	Age	Sex	Years attended	Highest level of education
Haa Alifu/Haa Dhaaluu	66	m	2	Primary, grade 1 or 2, "basic" (1)
Haa Alifu/Haa Dhaaluu	57	m	4	Primary
Haa Alifu/Haa Dhaaluu	46	m	0	No formal education, has govt. cert.
Haa Alifu/Haa Dhaaluu	30	m	10	Secondary GCE O-Levels, grade 10
Haa Alifu/Haa Dhaaluu	36	m	15	Tertiary: Bachelor of Arts in Educ.(2)
Haa Alifu/Haa Dhaaluu	40	f	2	Primary, "traditional"
Haa Alifu/Haa Dhaaluu	53	f	2	Primary, "traditional"
Haa Alifu/Haa Dhaaluu	24	m	12	Secondary, GCE - grade 12
Haa Alifu/Haa Dhaaluu	65	m	2	Primary, "basic" (1)
Haa Alifu/Haa Dhaaluu	42	m	6	Primary
Haa Alifu/Haa Dhaaluu	39	m	10	Secondary, GCE O-Levels, grade 10
Haa Alifu/Haa Dhaaluu	42	m	4	Primary
Haa Alifu/Haa Dhaaluu	49	m	0	No formal education, has admin exp.
Haa Alifu/Haa Dhaaluu	54	m	7	Secondary
Haa Alifu/Haa Dhaaluu	25	f	10	Secondary
Haa Alifu/Haa Dhaaluu	24	f	6	Primary
Haa Alifu/Haa Dhaaluu	53	m	2	Primary, "basic" (1)
Haa Alifu/Haa Dhaaluu	36	f	7	Secondary
Haa Alifu/Haa Dhaaluu	33	m	7	Secondary, plus Dipl. in Office Mgmt.
Haa Alifu/Haa Dhaaluu	82	m	0	No formal education, basic literacy
Haa Alifu/Haa Dhaaluu	30	m	7	Secondary
Haa Alifu/Haa Dhaaluu	38	m	6	Primary
Haa Alifu/Haa Dhaaluu	78	m	2	Primary, "basic" (1)
Haa Alifu/Haa Dhaaluu	42	f	2	Primary, "basic" (1)
Averages	45.2		5.2	Average years of schooling

(1) Several respondents indicated "basic" education, meaning 1 or 2 years

(2) Tertiary education obtained in Malé

2011, p. 128),³⁷ and that the "[p]opulation with at least secondary education"³⁸ is 37.3% (male) and 31.3% (female). This data re-emphasises the finding that Maldivians are keen to see education opportunities expanded.³⁹ It also confirms similar results previ-

37 UNDP (2011, pp. 128, 130, 175) attributed to "UNESCO Institute for Statistics: Data Centre." <http://stats.uis.unesco.org> ; accessed 15 May 2011.

38 (% ages 25 and older)

39 The Maldives' Gross Enrolment Ratio (GER) for primary school of 108.8% in 2011 may also be seen as a sign that education is being extended to those eclipsed in previous years ("GER can exceed 100% due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition"; World Bank Catalogue Sources World Development Indicators, attributed to UNESCO Institute for Statistics). Accessed 14 December 2012 @ <http://data.worldbank.org/indicator/SE.PRM.ENRR/countries/MV-8S-XT-1W?display=graph>

ously produced by Tsunami Impact Assessment (TIA) and Vulnerability and Poverty Assessment (VPA) surveys: “[i]n the Atolls, the quality of education was given the highest priority by households in both VPA and in the TIA surveys” (MPND 2007, p. 22). “The island population has indicated that one of their highest priorities is improving education” (TIA 2005, p. 96).

During interviews school non-attendance or discontinuation were most frequently attributed to “lack of adequate education” (Q24/Migr/Dest/Huvarafushi/20111231), schools with classes “only up to grade seven and very low quality of education” (Q27/Migr/Orig/Hathifushi/20111231) or sparse populations on small or remote islands “where schools up to high grades were not feasible to operate” (Q5/Migr/Dest/Hanimaadhoo/20111225).

As noted in Section 6.2, for years Maldivian governments have sought to consolidate the spatially dispersed population to ensure that resources are not spread out too thinly across the vast area of the archipelago. According to the National Population Policy submitted by the Ministry of Planning and National Development (MPND) in 2005, the Maldives’ “extremely dispersed population distribution and the small size of many island communities are important concerns for cost-effective provision of basic infrastructure and social services. Although significant progress has been made in this area, the costs are extremely high, often 4-5 times the level recorded in continental developing countries” (MPND 2005, pp. 10-11).

These expenses are particularly relevant with respect to education: “with the sparsely dispersed population, the education sector is challenged to be creative in finding cost effective ways to cater for the education needs of the smaller islands. Double-shift system is the norm in all schools which limits providing the full curriculum for the primary and secondary cohorts” (MPND 2007, p. 126). The archipelago also has a comparatively high proportion of government spending earmarked for education. In 2009⁴⁰ more than 16% of public expenditure in the Maldives⁴¹ was budgeted for education (World Bank, WDI 2012). By way of comparison, in the same year the government expenditure on education in the United States was 13.1%, in South Asia 12.6%, and in the European Union 11.5% (ibid).

40 Data pertains to 2009, the most recent year available.

41 NB: “Public spending on education, total (% of government expenditure) ... the total public education expenditure (current and capital) expressed as a percentage of total government expenditure for all sectors in a given financial year. Public education expenditure includes government spending on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other private entities).” (World Bank Catalogue Sources World Development Indicators, attributed to UNESCO Institute for Statistics). Accessed 14 Dec 2012 @ <http://data.worldbank.org/indicator/SE.XPD.TOTL.GB.ZS/countries/MV-1W-8S-US-EU?display=graph>

As made clear in Section 6.2, the “[s]mallness, remoteness and wide dispersal of island communities” (MPND 2007, p. 8) represents a well-known challenge to prospects of sustainable development in the Maldives. Public expenditure and macro-economic investments need to be strategically allocated if economies of scale are to be realised, and if high quality services are to be consistently offered and equitably enjoyed. This calls for creative macro-managed migration approaches.

According to the Ministry of Planning and National Development recent years have seen a policy departure from the former Atoll Development Programs which “aimed to develop infrastructure and services on all inhabited islands on an equitable basis” (MPND 2007, p. 26), a policy that essentially failed because it was “not sustainable due to budget limitations and diseconomies of scale in the provision of resources” (ibid). The Ministry also sees the failure of that policy evidenced by unabated migration to the country’s capital Malé: “one third of the country’s population now lives in Malé and of this nearly 58% are migrants. This is the consequence of vast inequalities existing in the composite availability of educational, health services and employment opportunities between Malé and other islands” (ibid).

More recently the Ministry has promoted Population and Development Consolidation (PDC) as part of its Regional Development Policy, hoping that the consolidation of island communities will lead to a “fall in infrastructure expenditure per person, ... increase the quality of essential services, ... encourage small to large businesses and home industries to develop, [generate] more opportunities for investment, [and] boost the local economy” (MPND 2007, p. 26). In its *Seventh National Development Plan 2006-2010* three modes of population consolidation are enumerated: (1) conjoining neighbouring islands (eg, through land reclamation, bridges or causeway linkages); (2) implementing regular government subsidised ferry services to interlink clusters of islands; (3) sponsoring the “relocation of small populations in remote and small islands to islands with better infrastructure, services and expansion potential” (MPND 2007, p. 27).

With regard to the third model the Ministry stipulated prerequisites, insisting that relocations need the “explicit agreement between the relocating community and potential host community, ... should be voluntary and would only be facilitated when the whole community formally lodges the decision to move” (ibid). Moreover, the Ministry offered a number of incentives: “[e]ach relocating family will receive a house for an occupied house and Rf 50,000 (US\$ 3,900) as relocation compensation” (ibid). According to several respondents, compensation was also promised for fruit-bearing trees which relocating islanders had to abandon in their “communities of origin” (Q17/Migr/Dest/Nolhivarvaranfaru/20111229). In light of recent construction cost increases which have seen the unit cost per house rise from US\$23,400 in 2005 to US\$28,300 in 2007, the Ministry has advocated “to speed up” the migrations and “establish urban areas in the regional di-

visions of the country that provide an alternative to Malé” (MPND 2007, pp. 22, 27). This demographic decentralisation and urbanisation process was formalised with the passing of the Decentralization Act in October 2010 and intends to relieve congestion pressure in Malé and build up local governance capacities in the regional atolls (SOEM 2011, pp. 3, 15, 28-31).

In two expert interviews four key demographic consolidation phases were identified by the Minister of Housing and Environment, and by the Assistant Executive Director of the Department of National Planning: (1) the Relocation and Housing Model (1980s to 1998) evolved into the (2) Population and Development Consolidation Model (1998-2004), and was again modified (in the wake of the 2004 Indian Ocean Tsunami) to become known (from 2005) as the (3) Safer Island Model.⁴² At the time of the research visit the Safer Island Model was in the process of being re-branded into the (4) Resilient Island Model which largely appears to be a continuation of the Safer Island Model concept but with an added focus on grouping islands into “clusters”, and a stronger emphasis on human-social adaptation and “soft-systems” community resilience and participation (Dr. Mohamed Aslam and Mohamed Imad; Q29+30/Exp/Malé/20120102; also MPND 2007, p. 9).

In sum, population consolidations and macro-managed migrations are neither new nor sporadic but have been strategically pursued and sponsored by Maldivian governments for more than two decades, essentially reinforcing a countrywide urbanisation process which is unlikely to dissipate soon (Mohamed 2000, MPND 2006, 2007). In point of fact, it appears that the threat of tsunamis and climate change induced rises in sea level has further heightened the sense of urgency with which populations are to be concentrated in safe and future-proof urban centres (WB ADB UN 2005 p. 3; MPND 2007; MTAC 2012; Q29+30/Exp/Malé/20120102). According to a recent climate change resilience report published by the Maldives Ministry of Tourism, Arts and Culture with support from UNDP and GEF, a “shift in population was evident following the tsunami of 2004. Climate change will speed up the population displacement” (MTAC 2012, p. 7). Again it needs to be reiterated that while climate change looms large as a *future* threat with a significant potential to affect *future* migrations, present-day migrations are primarily influenced by aspirational pursuits, especially education. This particular predilection for education should be recognised as a critical asset for successfully macro-managed migration and adaptation outcomes. Pertinent implications are explored below.

42 Also known as the Safer Island Development Program (SIDP), the primarily “hard-systems” Safer Island Model “targets to provide the infrastructure necessary to adapt to climate change and to be better prepared for natural disasters. A Safer Island will have better coastal protection, elevated public [sic] buildings for vertical evacuation, emergency supplies, appropriate harbour and also more reliable communications systems.” (MPND 2007, p. 28)

As discussed in Section 6.2, climate science indicates that global average sea level rises should be expected on the order of 1m (above 2000 levels) by the year 2100, and that larger values cannot be excluded. Moreover, sea level rise will not suddenly stop in 2100 but will continue for many centuries, eventually producing sea level rises on the multi-metre scale (Figure 6.4; Section 6.2). For obvious reasons this projection poses an existential threat to the long-term survival of the Maldives “where 80 percent of the land area is less than 1 metre above sea level” (UNDP 2007/2008, p. 100). Hence the fundamental question arises whether Maldivian islands can be reinforced such that they can safely see the small island state population through the 21st Century and beyond, or whether climate change induced sea level rises will eventually overwhelm the country’s collective coping capacity to result in large-scale emigration from the archipelago as suggested by Maldivian presidents and news media outlets (MEEW NAPA 2007 p. 1; Vince 2009a, pp. 37-39; Schmidl 2009; BBC 2008a, Henley 2008, Lang 2009a, Lang 2009b, AVB 2012, Doherty 2012, Burgess 2012).

Before exploring pertinent adaptation measures which include education and macro-managed migration concepts it should be noted that sea level rise is not the only climate change related pressure potentially thwarting the perpetuity of the Maldives, and perhaps not even the most severe peril. Interviews conducted for this case study also raised other climate change problems which will now be introduced. Thereafter the question will be discussed how the Maldives may try to adapt in the face of these, and what role education, migration and emigration may play.

During field research a Maldivian environmentalist emphasised that the warming of the ocean itself, along with implicit detrimental consequences for coral formation, would be a fate far worse – and suffered much earlier – than the longer-term and slower-onset threat posed by sea level rises (Q3/Exp/Hanimaadhoo/20121224).

The concern is well-founded and well-documented in the literature. As sea-surface temperatures rise and ocean acidity intensifies through continued oceanic absorption of global greenhouse gas emissions, reef-building conditions and processes are increasingly undermined, with coral banks in many parts of the world already suffering growing stress, bleaching and terminal morbidity (Nunn 2009, Frieler et al 2012, Hoegh-Guldberg 2010, Barnett and Campbell 2010 pp. 11-15, De’ath et al 2009, 2012). According to the UNEP’s global *Millennium Ecosystem Assessment*, “coral reefs buffer land from waves and storms and prevent beach erosion” (UNEP 2006, p. 14), but worldwide 20% of coral reefs are “severely damaged and unlikely to recover; 70% are destroyed, critical, or threatened”⁴³ (UNEP 2006, p. 11).

43 2004 estimate.

The Maldives is no exception to this global trend. The report *State of the Environment Maldives 2011* indicates that all across the small island state coral bleaching “[o]ccurred in 1977, 1983, 1987, 1991, 1995, 1997, 1998” (SOEM 2011, p. 67), and that “bleaching events were also reported in 2010” (SOEM 2011, p. 131). It states that following the bleaching event in 1998 live coral cover was “reduced to 5% after the event” (SOEM 2011, p. 66), and that “[t]he coral bleaching events of 1999 reduced coral cover to a mean of 2.1 percent compared to the pre-bleaching level of 30-40 percent” (SOEM 2011, p. 131). Bleaching events in the Maldives have “caused devastating damage to reefs and their inhabitants” (SOEM 2011, p. 131), “caused decline of live bait” (SOEM 2011, p. 67), and “caused the disappearance of two reef fish species” (ibid). The Maldives Ministry of Environment and Energy anticipates that bleaching incidences will “increase with the rise in temperature” (SOEM 2011, p. 70).

Recent research suggests that coral reefs are even more acutely sensitive to sea-surface temperature increases than previously thought, and that even “limiting warming to as little as 1.5°C may not be sufficient to protect reef systems globally” (Frieler et al 2012; cited in World Bank 2012, p. 61). A recent report prepared for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics synthesises the effects of global warming on coral reefs:

“Reefs provide protection against coastal floods, storm surges, and wave damage as well as nursery grounds and habitat for many fish species. Coral reef growth may stop as CO₂ concentration approaches 450 ppm over the coming decades (corresponding to a warming of about 1.4°C in the 2030s). By the time the concentration reaches around 550 ppm (corresponding to a warming of about 2.4°C in the 2060s), it is likely that coral reefs in many areas would start to dissolve. The combination of thermally induced bleaching events, ocean acidification, and sea-level rise threatens large fractions of coral reefs even at 1.5°C global warming. The regional extinction of entire coral reef ecosystems, which could occur well before 4°C is reached, would have profound consequences for their dependent species and for the people who depend on them for food, income, tourism, and shoreline protection.” (World Bank 2012, p. XV; cf Frieler et al 2012)

As discussed in Section 1.3, climate system inertia implies that based on past emissions of greenhouse gases humanity is already committed to a minimum of 1.3°C global warming (WBGU 2009a, 2009b, Hansen 2008, 2009; Woo et al 2011; UNDP 2007, p. 4). Given that the planet is presently on a 4°C global warming trajectory to be reached by 2100 in the absence of successful climate change mitigation leading to a largely decarbonised global economy by the middle of the century (WBGU 2009a; World Bank 2012; <http://www.fourdegrees2011.com.au> ; cf Schellnhuber 2008; Vince 2009, New et al 2011, Stewart and Elliot 2013, Nicholls et al 2011, Hamilton 2010, pp. 190-208) – and given that “even a 2°C world has been projected to exceed the ability of coral reefs to recover” (World Bank 2012, p. 52), – the future of coral reefs as extremely sensitive ma-

rine ecosystems now appears to hang in a delicate balance. For the Maldives, losing the diverse ecosystem services provided by the seventh-largest reef system in the world would not only be detrimental for tourism and local fisheries but would also leave the archipelago more vulnerable to future storms (MPND 2007, p. 5; GOV MAL 2009; SOEM 2011, MTAC 2012).

“The 2004 Indian Ocean tsunami that hit the Maldives killed more than 100 people and affected more than 27,000. By 2100, 90 percent of coral reefs that protect islands from ocean waves and storms could disappear, making natural disasters more likely still” (UNDP 2011, p. 36).

In view of such enormous adaptation challenges now facing sensitive reef systems globally it would appear questionable whether coral cover should/can still be relied upon for coastline protection in the future⁴⁴ (IPCC 1992, p. 107). In an expert interview conducted for this case study Pacific island expert Professor Patrick Nunn cautioned that the effect of rising sea levels should not be expected to be countervailed by concurrent coral growth:

“You can’t expect an atoll island, unless there are exceptional circumstances, to survive under a sea level that’s 1.2m higher than today. A lot of people in the early days thought that coral reefs would suddenly start to grow up and continue to protect islands, but there’s no evidence that coral reefs have ever done that because it requires a huge ecological change ... in addition to everything else – so many reefs are degraded.” (Q33/Exp/UNSW-Sydney/20120216; also Appendix G.1)

It would therefore seem that as the growing conditions for coral reefs are gradually eroding, so are realistic hopes of artificially “planting” coral cover for future coastline protection (Nunn 2009; Vince 2009a, pp. 37-39; IPCC 1992, p. 107).

During fieldwork numerous respondents also indicated coastal erosion as a significant concern. While erosion cannot be simplistically attributed to climate change as a monocausal effect of the same (Mimura et al 2007 p. 698; SOEM 2011 p. 27), there was much anecdotal evidence provided by islanders and experts alike that suggests erosion in the Maldives could already be getting worse:

“Erosion was not a major occurrence in the past. Erosion in islands started in the late 1960s. Major erosion issues arose like that [because of climate change]. Storm surges

44 An early IPCC report states: “[i]f the rate of sea-level rise exceeds the maximum rate of vertical coral growth (8 mm/yr), then inundation and erosive processes begin to dominate, leading to the demise of the coral atoll. However, if the rate of sea-level rise is small, then coral growth may be able to keep pace.” (IPCC 1992, p. 107)



Figure 6.17: Dhuvaafaru Island was developed according to the Safer Island Concept and settled in 2008 to accommodate 4,000 displaced tsunami victims who collectively relocated there after Kandholhudhoo Island was devastated by the 2004 Tsunami. Erosion turned out to be a big problem on Dhuvaafaru. According to local eyewitnesses in one week in May 2009 the west monsoon surges claimed “20 feet of land”. Islanders initially piled up rubble to slow down the waves and protect their houses.



Figure 6.18: Following the 2004 Indian Ocean Tsunami islander Easa Mohamed moved to Dhuvaafaru on 10 December 2008. At the time of the interview in 2009 he was concerned that the island's bad erosion problem could force him to abandon his brand new house (depicted on the far right).



Figure 6.19: Easa Mohamed with two of his grandchildren, Mohamed Yamin (left) and Abdulla Rizan (right). He said that unless the coastline was reinforced, the following year's west monsoon surges would wash his house into the sea. According to an environmentalist a number of government built hard engineering measures appear to have contained Dhuvaafaru's erosion problem (Q3/Exp/Hanimaadhoo/20111224; cf, Park and Riyaz 2010).

started because of the erosion problem⁴⁵. That happens because of the changes occurring to the reefs. I am certain that is the cause.” (Relocated islander from Hathifushi Island; Q6/Exp/Migr/Dest/Hanimaadhoo/20111226)

45 While storm surges are not immediately caused by erosion, impacts are typically made worse in environments where erosion has decimated coastal defences.

While such anecdotal evidence is naturally subjective and has the potential to be short-term, imprecise and/or incomplete, it nevertheless seems broadly conform with synthesis predictions made by the Intergovernmental Panel on Climate Change (IPCC) which suggest that “[s]ea-level rise is expected to exacerbate ... erosion and other coastal hazards, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities (very high confidence)” (Mimura et al 2007, p. 689; also IPCC 2007, p. 52). The Panel also points out that “[t]he effect will be exacerbated by increasing human-induced pressures on coastal areas (very high confidence)” (IPCC 2007, p. 48).

According to the Ministry of Environment and Energy, “[o]ne of the most serious environmental issues the Maldives islands face is beach erosion. The sand at the beach and the shore line are being washed off at a greater rate than it is accreted on many islands” (SOEM 2011, p. 27). According to the Ministry, “45 per cent of the resorts reports beach erosion” (p. 66). Moreover, “[t]he tsunami appeared to have worsened chronic shoreline erosion problems in many islands” (SOEM 2011, p. 177). In 2009 41 islands “reported severe beach erosion” (SOEM 2011, p. 61), among them Dhuvaaafaru, a previously uninhabited island which was developed according to the Safer Island Concept to accommodate 4,000 displaced tsunami victims of Kandholhudhoo Island (TIA 2005, p 29; Riyaz and Park 2010). In one week in May 2009 west monsoon surges eroded between 15 feet (Riyaz and Park 2010, p. 137) and 20 feet of land (pers. comm. with Dhuvaaafaru islanders living adjacent to the eroding coast on 29 May 2009; Figures 6.17 to 6.19).

While for now the erosion in Dhuvaaafaru Island appears to have been contained by government constructed hard engineering bulwarks (Q3/Exp/20111224), future climate change will likely amplify erosion related difficulties in the Maldives. In an expert interview Dr. Mohamed Aslam, Minister of Housing and Environment, explained how climate change impacts gradually undermine the islands’ natural morphological resilience:

“Some of these islands we see, they keep shifting within the lagoon. They keep changing, migrating within the system. You can’t migrate your house with the island migrating. [...] We see some islands have eroded quite substantially, but at the same time we’ve also seen more ... shifting of islands. I know some islands that have shifted. I’ve done some work myself. I used to be a PhD student [University of Auckland] before I became a politician. I did some research, this particular island, we have aerial photos from 1969. And this is more recent, in late 2000. The entire island, without it changing its area, has shifted 100m within that 35-year window... The island was somewhere around here around 1969. The entire island has shifted. So it’s not sinking, but it’s migrating. Imagine if somebody had a house here! You can’t move your house with that. [Climate change induced sea level rises will provide] a greater window through which the energy can penetrate into the lagoon, which changes the hydrodynamics of the lagoon, which then shifts the equilibrium position for the island to be more stable – that

Figure 6.20: Schematic representation of island subsistence (normal sea level)

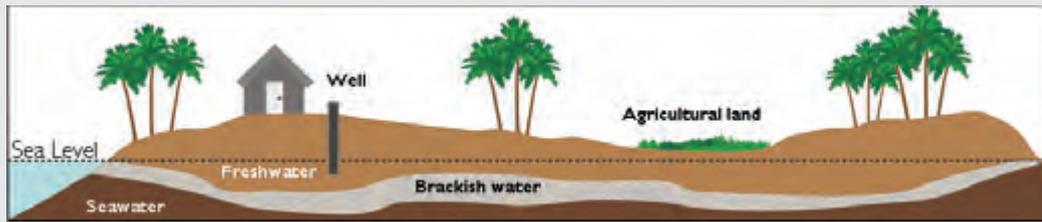
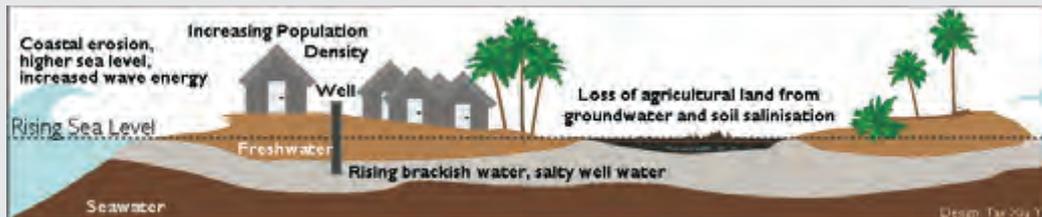


Figure 6.21: Schematic representation of progressive island submergence (rising sea level)



Source: Luetz 2008, p. 23; adapted from Aung et al 1998, p. 97

causes the shifting. The island tries to find its [equilibrium]. [...] The predictions are that [under climate change] this is going to intensify, ... so we need to find among these islands which are the most stable ones.” (Dr. Mohamed Aslam, Minister of Housing and Environment; Q29/Exp/Malé/20120102; unabridged interview transcript available in Appendix G.5)

Research jointly published by Aslam and referenced by the IPCC in AR4 indicates that “low-lying reef islands are physically robust” (Kench et al 2006, p. 177) but that their resilience appears to diminish considerably after they are subjected to “substantial human modification” (Mimura et al 2007 p. 698; attributed to Kench et al 2006). This effect could have a growing impact in the Maldives in the future as expansive urbanisation, land reclamation and hard engineering adaptation solutions are increasingly undermining many islands’ natural morphological resilience.

Moreover, given that low-lying islands have a very narrow freshwater lens, also referred to as the Ghyben-Hertzberg lens, which is easily contaminated by rising sea levels and storm surges (SOEM 2011, pp. 67, 74, 84, 176; Barnett and Campbell 2010 pp. 13, 172; Lubna 2012; Figures 6.20 and 6.21), several respondents also mentioned the availability of drinking water on islands as a cause for preoccupation. This concern also appears to conform with synthesis projections made by the Intergovernmental Panel on Climate Change (IPCC) which suggest that “[t]here is strong evidence that under most climate change scenarios, water resources in small islands are likely to be seriously compromised (very high confidence)” (Mimura et al 2007, p. 689). It is difficult to know whether a recent water crisis affecting 60 islands is a foreboding sign of a looming trend (Lubna 2012). One respondent suggested that artificially designed *raised* islands would provide a “thicker” freshwater lens and therefore a more long-lived supply of natural

Figure 6.22: The most severe storm surges occur as a result of tropical cyclones – they are particularly severe when they occur during the time of a high tide.



Source: Luetz 2008, p. 65; based on NOAA 2012

freshwater reserves (Q31/Exp/Dest/Hulhumalé/20120102). The viability of artificially designed raised islands will be explored towards further down.

Climate change induced hydrological changes and extreme weather events spawning stronger storms and higher surge heights were mentioned as other causes for concern. The example of the Island of Hathifushi which was abandoned by its resident community of 295 islanders on 5 July 2007 following storm surges in June 2007 dramatically illustrates the risk storm surges can pose to islands. According to anecdotal evidence by Hathifushi islanders (Figure 6.15), even though the 2004 tsunami saw 90% of the island area covered (Q6/Exp/Migr/Dest/Hanimaadhoo/20111226) to a height of 30-50cm with ocean water (Q24/Migr/Orig/Hathifushi/20111231), the islanders regarded the storm surges in 2007 as the more frightening and economically ruinous disaster event since they occurred at night, lasted much longer (two days), and covered the entire island with water reaching up to a height of 1m (Q24/Migr/Orig/Hathifushi/20111231). According to one respondent from Hathifushi the island is naturally low-lying: during a regular high tide only “six inches [15cm] of land is above the water” (Q6/Exp/Migr/Dest/Hanimaadhoo/20111226).

When a storm surge hits at the time of a low tide, the consequences are less severe. Conversely, when a storm surge occurs at the time of a high tide the effects can be devastating. Moreover, as sea levels rise over time, wave action will be superimposed on increasingly higher sea levels, thus implying that storm surge heights and consequent risk to population centres will increase in the future (Figure 6.22).

There is agreement among researchers that climate change will exacerbate storm surge risk: “by far the most certain aspect of climate change that will influence surge characteristics is global-mean sea-level rise. [...] The overall conclusion is that the surge hazard will evolve significantly throughout the 21st century” (Nicholls 2006, pp. 89-90; linked to Church et al 2001). The German Advisory Council on Global Change notes: “In most cases the most destructive results of sea level rise will [be] the increasing occur-

Figure 6.23: Storm tide estimates for medium and high sea level rise scenarios

Present Day				Storm Tides for Sea Level Rise (SLR) Scenarios (2080-2100)	
Zone	Storm Surge Height (m)	Average Tide Height (m)	Storm Tide Height (m)	Medium SLR (0.48m)	High SLR (0.88m)
Southern Atolls	–	0.93	NA	NA	NA
Central-west Islands	0.45	0.93	1.38	1.86	2.26
Central-east Islands	0.6	0.93	1.53	2.01	2.41
Northwest Islands	0.99	0.98	1.97	2.45	2.85
Northeast Islands	1.32	0.98	2.3	2.78	3.18

Sources: attributed to Shaig 2006, and UNDP 2006, Developing a Disaster Risk Profile for Maldives. Malé, United Nations Development Programme Maldives I; cited in MEEW NAPA (2007 p. 16)

rences of storm surges” (WBGU 2006, p. 41). The *Maldives National Adaptation Program of Action (NAPA)* report contains a table with average tide height, storm surge height, combined water height, and two possible sea level rise scenarios arranged in columns (Figure 6.23). The figures reflect average high tides on the order of 1m, and storm surge heights ranging from 0.45m to 1.32m. In summary, depending on atoll region and sea level rise scenario realised the combined cumulative storm surge heights lie in the range of 1.86m to 3.18m (MEEW NAPA 2007 p. 16).

All things considered it seems quite clear that natural pressures common in small island environments are being compounded by climate change (Barnett and Campbell 2010). The NAPA report advances the following analysis and recommendation: “[t]he scarcity of land in the Maldives, the smallness of the islands and extreme low elevation makes retreat inland or to higher grounds impossible. [...] Unless expensive coastal protection measures are undertaken the human settlements face the threat of inundation” (MEEW NAPA 2007, p.22).

All of the above begs one question: for what sort of contingency should risk planners prepare? “While the risk of more rapid ice sheet response appears to be growing, there remains an open question as to whether risk planning should be oriented assuming 1 meter rise by 2100 or a substantially larger number, such as, 2 meters” (World Bank 2012, p. 61). And what of scenarios that envisage a dynamic breaking-up of ice sheets in Greenland and West Antarctica not fully explored (because not fully understood) by the Intergovernmental Panel on Climate Change in AR4 with consequent rises in sea level on the multi-metre scale? (IPCC 2007, pp. 7-8, 45).

Figure 6.24: An average Maldivian island protrudes less than one metre above sea level.

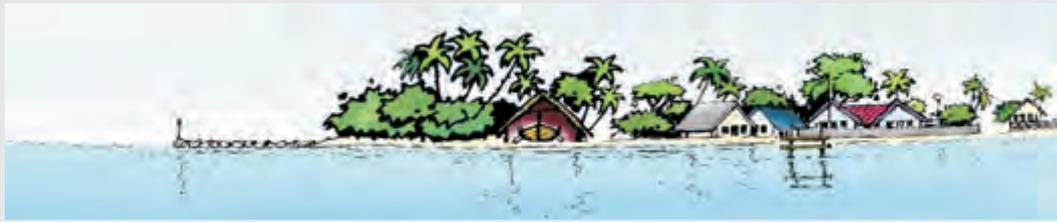


Figure 6.25: Contingency Adapted Raised Island with three to five metre elevation.



Illustrations: © Bluepeace Maldives

This question “how high is high enough?” has been explored by Ali Rilwan, co-founder of the Maldives environmental NGO Bluepeace. His idea of creating about seven Contingency Adapted Raised Islands (Figures 6.24 and 6.25) across the archipelago appears to be broadly based on the artificially created Island of Hulhumalé (Lang 2009a, Vince 2009a). Designed and developed on approximately 2km² of reclaimed land to a height of 2m above sea level, the designer island was primarily created as an “overflow” island for the congested nearby capital Malé. Apart from having a very similar size to Malé, the name Hulhumalé also appears to be an extension of Malé, with “*Hulhu*-malé” emerging as a “*new Malé*” (Henley 2008, Shaig 2006). Reclamation and dredging “started in 1997 and was completed in 2003” (MHUD 2008, p. 10). “The first batch of 250 housing units in Hulhumalé was allocated in 2004” (MPND 2007, p. 148). While Hulhumalé is not the only island reclamation project – “about 9-11 sq km of land has been reclaimed in the Maldives” (Shaig 2006, p. 6) – it is by far the country’s biggest (MEEW NAPA 2007 p. 22). According to the Housing Development Corporation,

“Hulhumalé is the most ambitious land reclamation and urban development project undertaken by the Government of Maldives to date. [...] It is to serve as an effective solution to the growing problem of congestion within the capital region... Reclamation of the 188 hectares of land that comprises Hulhumalé commenced in 1997 and was completed in 2002. [...] By the target completion date for the development, the year 2020, Hulhumalé will be transformed into a world class city where 60,000 people will live, work and raise their families.” (HDC, n.d.)

According to Rilwan and Bluepeace, artificially designed islands patterned after the Hulhumalé blueprint and raised even *higher* to three or five metres above sea level could one day accommodate the country’s entire population: “[o]ver the longer term, in order

to accommodate the climate IDPs (internally displaced persons), at least seven adapted contingency islands need to be developed in seven different regions across the archipelago of the Maldives” (Bluepeace 2008). In an expert interview Ali Rilwan conceded that implementing the idea of Contingency Adapted Raised Islands (Figure 6.25) would certainly “cost millions” but reasserted that the concept itself was technologically feasible, and importantly, that it would guarantee that massive-scale emigration from the archipelago would not remain the only policy option in the future (Q2/Exp/Malé/20111222).

Despite land reclamation costs for Hulhumalé on the order of US\$60 million raising doubts about the larger-scale affordability of such designer islands (Q30/Exp/Malé/20120102), consolidating the archipelago’s population on fewer and fewer future-proof islands nevertheless appears compelling vis-à-vis the prohibitive alternative of trying to adapt or reinforce *all* islands. During an expert interview Dr. Mohamed Aslam, Minister of Housing and Environment, elaborated on the significant financial cost involved in protecting islands through hard engineering measures:

“You can raise the islands, you can put forts around the islands, you can do all sorts of engineering pieces of work, but they’re hugely expensive. Now we have 1,200 islands, and the total area is 300 sq km. The length of the shorelines all summed up together is 644[km]. And if you are to protect every island, every bit of shoreline, it costs about \$4,000 per linear metre of shoreline. So 644 km will come to something like four billion dollars. And we’re talking about a population of 315,000 people. Divide four billion dollars by 315,000 people and you can imagine how much *per capita* cost we have for this. And for an economy which has just an annual income of around seven hundred million dollars, it’s simply not possible.” (Dr. Mohamed Aslam, Minister of Housing and Environment; Q29/Exp/Malé/20120102)

All things considered this research appears to indicate that the Maldives’ high human mobility and population consolidation trends seem likely to continue well into the future, implying that the country’s population may likely continue to consolidate and regroup on fewer and fewer inhabited islands, raised and reinforced to higher and higher heights.

To conclude Section 6.5, the cumulative effect of climate change related pressures now arrayed against the Maldives seems to be both formidable and growing, and the possible prospect of large-scale emigration from the archipelago does not appear to be overstated. Notwithstanding, the country has the advantage of an impressive track record of government sponsored intra- and inter-atoll human migration working in its favour. This context represents an optimal microcosm for the study of emergent lessons. Moreover, the strong desire expressed by the population to benefit more from better education opportunities also seems to be a critical asset and precondition both for the larger-scale

implementation of “hard system” engineering solutions, and for the mainstreaming of “soft system” adaptation programmes designed to enhance human social resilience.

As highlighted by both the Bolivia and Bangladesh case studies, upscaling education once again emerges as a promising “no regrets” policy prerogative that appears to make sense irrespective of which climate change scenario is ultimately realised, and would even seem to make sense in the complete absence of climate change. Upscaling education would enhance both the prospects of planned emigration by making Maldivians “desirable as immigrants to other countries” (Belt 2011, p. 81), and would also enhance prospects of planned *in situ* adaptation by contributing essential domestic hard- and soft system expertise.

Unless the country lapses back into a state of protracted dictatorship (Schmidl 2009, Lang 2012, Zunes 2012, Democracy Now 2012, BBC News 2012e, 2012f, 2012g) or has its social fibre gradually eroded by persistent drug abuse and/or extensive unemployment (GOV MAL 2009), the archipelago’s ambitious, mobile and highly adaptable population (MPND 2007, p. 22) comprising 56% “children and youth” (SOEM 2011, p. 27) seems ideally predisposed to higher levels of educational attainment, and therefore the capacity to develop the necessary tools and expertise to manage both present and future problems as and when they emerge, both *in situ* and *ex situ*. The important point to note is that expansive education is a desire that respondents have already unequivocally expressed.

Having discussed issues of education, demographic consolidation and climate change, the next section comprises a synthesis of the key discussion.

6.6 Synthesis of the Maldives case study

The significant level of government coordinated migration makes the Maldives a useful case study location for research on environment and non-environment related push and pull factors which influence human migration. While island abandonment is neither new nor unique to the Maldives (eg, Gibbons and Nicholls 2006), the element of government planning provides particularly fertile ground for research on macro-managed migration success factors. It is the view of this researcher that emergent insights can inform both present and future management of climate change related migrations and may enable policy makers to assume a more forward thinking policy posture in order to make adequate and appropriate preparations before these are needed (UNDP 2007, p. 198; see also UNISDR-UNDP, 2012). This section will explore pertinent issues.

Numerous recent island community relocations lend themselves as salient case studies for the research of macro-managed migration, eg, Hondaidhoo to Hanimaadhoo (2008); Berinmadhoo to Huvarafushi (2006); Hathifushi to Hanimaadhoo (2007); Faridhoo,

Maavaidhoo, Kunburudhoo to Nolvivaranfaru (2011); Kandolhoodhoo to Dhuvaafaru (2008), etc. These migration microcosms yield valuable lessons which may also be applicable in other forced or voluntary present or future migration contexts, including climate induced migration scenarios. A number of synthesised key findings from this research have been consolidated below.

(1) Population consolidation and internal migration are likely to continue

For over two decades population consolidation has been actively encouraged, coordinated and sponsored by Maldivian governments (Mohamed 2000, MPND 2006, 2007). This has resulted in significant levels of intra- and inter-atoll migration, prompting thousands of islanders to relocate to other natural and artificially created (“re-claimed”) islands throughout the archipelago. There are strong indications that both the 2004 Indian Ocean Tsunami and the threat of future climate change induced environmental changes have been catalysts for the government to push harder for population consolidation measures to be implemented more rapidly. This research suggests that more inaccessible islands with low populations may likely be abandoned in the future, with the overall number of inhabited islands in the Maldives declining further. Already the number of inhabited islands appears to be in decline, having fallen from 200 (Godfrey 2007, pp. 10, 62) to 194 (SOEM 2011, p. 184) or even 193 islands (SOEM 2011 p. 27). With at least five additional islands (ie, Hathifushi, Berinmadhoo, Faridhoo, Kunburudhoo, and Maavaidhoo) abandoned since the publication of the aforementioned literature, it would seem that the new “official inhabited island” count is already somewhere in the 180s. This research indicates that the Maldives’ high human mobility and population consolidation trends seem likely to continue well into the future, implying that the country’s population may likely continue to consolidate and regroup on fewer and fewer inhabited islands, raised and reinforced by innovative technology to higher and higher elevations.

Recently the ambition to maintain fewer inhabited islands was expressly stated by a senior policy maker who declared his intention to see the number of inhabited islands “reduced by half” (Bosley 2012) or possibly even decreased to “25 to 30 islands” (ibid). This demographic consolidation response may be understandable in the context of the significant vulnerability of many islands to sea level rise and other climate change problems (MPND 2007, pp. 24-29; SOEM 2011). The economic rationale for spatially reducing human and asset exposure to ocean hazards through demographic consolidation was dramatically demonstrated by the 2004 Boxing Day Tsunami: within the short space of several waves the tsunami had not only killed more than 100 Maldivians and tourists (with 25 still missing, assumed dead) but had also inflicted macro-economic devastation on the order of 62% of the archipelago’s GDP (WB ADB UN 2005, pp. 3, 22). Moreover, it is

the view of several key informants that population consolidation is necessary in light of the growing need to implement expensive and expansive technological “hard” reinforcements that can only be afforded at a smaller scale and cannot be rolled out across the entire archipelago⁴⁶ (Section 6.5). Hence the high cost of engineering solutions may be seen as yet another reason why ongoing population consolidation trends are likely to continue well into the future.

At present three migration scenarios can be appreciated across the Maldives. First, inhabited islands are completely abandoned with the migrating islander populations integrating into host communities on other inhabited islands (government sponsored migration by assimilation). Second, inhabited islands are completely abandoned, with the migrating islander populations collectively relocating to other heretofore uninhabited islands which have been specifically prepared and developed by the government for the purpose of settlement (government sponsored migration by non-assimilation). Third, individual islanders move (temporarily or permanently) to population centres in other islands for reasons of intermarriage or to avail themselves of job opportunities or services not available to them in their islands of origin (non-government sponsored assimilation migration). For the purposes of raising options for more equitable migration outcomes all three scenarios are in need of further research.

Over recent years a number of inhabited islands have been completely abandoned (eg, Hatifushi, Faridhoo, Hondaithoo, Berinmadhoo, Maavaidhoo, Kunburudhoo, Kandolhoodhoo) with the islanders migrating to other already inhabited islands (eg, Hanimaadhoo, Nolvivaranfaru, Huvarafushi) or uninhabited islands (eg, Dhuvafaru). This fieldwork in the Haa Dhaalu Atoll brought islander concerns and aspirations to light which underpin such inter-island/inter-atoll migrations. According to the majority of migrants queried it is not “overpopulation/overcrowding” that is primarily driving migrations but rather inaccessibility, remoteness, inadequate education and health care, and other service supply shortfalls that may be linked to “low populations”.

A number of host communities (eg, Hanimaadhoo, Nolvivaranfaru) have undergone unprecedented social transformation brought on by the sudden arrival, settlement and integration of large numbers of migrants from other abandoned islands. The arrival of 237 islanders from abandoned Faridhoo, 355 islanders from abandoned Kunburudhoo, and 557 islanders from abandoned Maavaidhoo more than tripled the pre-migration Nolvivaranfaru host community population of 587 islanders in the space of only four days (Section 6.4). As would be expected, speed and scope of resultant changes have cre-

46 Even focusing infrastructural reinforcements only on the country’s 200 inhabited islands was still perceived as financially inconceivable (Q2/Exp/Malé/20111222).

ated social challenges which have contributed to frictions and tensions between host and migrant communities. Some issues raised (eg, security concerns/thefts, scarce employment opportunities, drug abuse, and an attempted rape⁴⁷ remained sensitive conversation topics during the time of this research visit (Q20/Host/Dest/Nolhivaranfaru/20111229). Administrators at the Nolhivaranfaru Council Office also conceded that there had been “no programmes conducted to ensure social cohesion” (Q15+16/Exp/Nolhivaranfaru/20111229) in the wake of the conjoining of the four island communities and that “more efforts [were] needed to ensure integration” (ibid).

Notwithstanding admission of these and other problems which, incidentally, appear reminiscent of urbanising environments the world over, the overall in-migration experience was overwhelmingly appraised as positive by both migrants and hosts.

In summary, population consolidation in the Maldives may perhaps be likened to the process of rural-urban migration seen elsewhere in the world: more and more sparsely settled islands/regions are being abandoned for fewer and fewer more densely settled (“urbanised”) ones. This predominant trend can be expected to continue as more and more people reach for goods, services, and opportunities not available to them in remote/inaccessible island locations where it is “difficult to import essential commodities” (Q5/Migr/Dest/Hanimaadhoo/20111225). Moreover, recognising that a significant amount of migration is already underway for reasons other than climate change may help to reinterpret, reconceptualise and realign “climate migration” within the psyche of collective perception (Diamond 2005, pp. 435-436) as natural, normal and positive instead of extraordinary, foreign and frightening (Bettini 2012).

(2) Migration is experienced as positive adaptation to change

There is strong evidence that the experience of government coordinated migration is largely perceived as positive both in terms of processes and outcomes. This view persists both among migrating islanders and welcoming host communities, and was similarly and variously affirmed throughout fieldwork by a majority of migrants, hosts and experts. The overall positive appraisal of migration may also be deduced from the following sample key commentary by a former island chief who was asked to elaborate on his migration from the abandoned Island of Berinmadhoo to Huvarafushi. He explained the

47 Several respondents viewed the attempted rape of a migrant girl from Maavaidhoo as the most alarming incident to affect Nolhivaranfaru Island since the four small island community nuclei had been conjoined and integrated (Q17/Migr/Dest/Nolhivaranfaru/20111229). According to one migrant respondent from Maavaidhoo interviewed in Nolhivaranfaru “this [had] never happend in Maavaidhoo” (ibid).



Figure 6.26: During a visit to his new home in Huvarafushi, Qasim Abdul Rahman, former Island Chief and migrant from abandoned Berinmadhoo Island, elaborates on the overall positive experience of migration. (Q25/Exp/Migr/Dest/Huvarafushi/20111231)

concise statistics (his quote below) with a smile: “as a former island chief it is my job to know these details” (Q25/Exp/Migr/Dest/Huvarafushi/20111231). He said:

“The reasons why we had to move from Berinmadhoo to Huvarafushi were slow rate of population growth there, beach erosion, lack of adequate education, lack of adequate health facilities and several other reasons. At the time when people moved to Huvarafushi there were 38 women, 15 men and 20 students living in Berinmadhoo. However, the total [registered] population was 175. There were 30 houses. So we find life here in Huvarafushi better compared to life in Berinmadhoo... in all aspects, economically, socially, we have access to better facilities and resources. My birthplace and my original island was Berinmadhoo. However, since moving to Huvarafushi on 1 March 2006 we have not experienced any unpleasant thing or misery in Huvarafushi. I would say life is better in all aspects. If the population is higher people will be more satisfied than living in an island with a low population. People will be more satisfied when they move to larger islands. I would say people [from Huvarafushi] are very friendly. If they have any event in Huvarafushi they would not conduct it without informing us. There would be big differences between islands with small population and islands with high population. Big differences. So we do not feel any sadness over having to move from our island on our own will.” (Qasim Abdul Rahman, former Island Chief and migrant from abandoned Berinmadhoo Island; Q25/Exp/Migr/Dest/Huvarafushi/20111231; Dhivehi citation available in Appendix G.6)

(3) Responding to aspirational ambitions can influence migration outcomes

There is overwhelming evidence that the three key aspirations impacting on migration in the Maldives are education, health care and employment. All other possible aspirations were ascribed a subordinate priority by Maldivian respondents queried. This finding confirms similar results previously reported in the literature: “This [development in Malé] triggered migration from islands towards Malé for services, *mainly education, health, and employment*” (GOV-MAL 2009, p. 64; emphasis added). By keeping these priorities in view while seeking to meet human felt needs it may be possible to mobilise migration in such a

way that social services are more evenly distributed and/or more equitably enjoyed. The following commentary by a government administrator exemplifies how catering to aspirational ambitions may be employed as a strategy to guide migration outcomes at the macro policy maker level:

“If you look at Malé you will see that almost one-third of the population has come and lived in Malé over the past 20 years or so. [...] The key reasons why people migrate to Malé [are] *health, and education, and also employment... these are the three main reasons why people migrate to Malé. They need better health. They need better education. And also they need employment, jobs.* And if you look at ... all the tourism related jobs, these are all right now in close proximity to Malé in the nearby atolls, which means that probably 60 to 70% of the resorts are in close proximity of Malé. And to get these jobs people from the remote islands they migrate to Malé. And one of the problems associated with this is they leave their families and then they come and work in the resorts for a very long period of time. And this has caused a lot of social problems because they are away from their families. To overcome this, one of the policies that the government pursued is the identification of resorts closer to the communities, rather than further away from the communities. The initial thinking of tourism product when it came to Maldives was that the resort has to be as remote and as far away from the people so that you think that it's a resort. That concept has now given away, and resorts are now being identified closer to the communities so that people who work in the resorts they can commute back to their islands once they finish the work... So if you look at Malé you see that we have a lot of social problems, because too many people have ... migrated to Malé.” (Q30/Exp/Malé/20120102; emphasis added)

Throughout fieldwork respondents admitted that they had “expected more jobs” (Q15/Exp/Nolhivaranfaru/20111229) to be created by the migration and consolidation processes and had become disappointed when “better income opportunities did not materialise” (Q16/Exp/Nolhivaranfaru/20111229). Respondents also recurrently recommended that more job opportunities should be created “*before* people are moved” (Q21/Exp/Nolhivaranfaru/20111230), and that the development of new resorts, for example, should become less reliant on foreign immigrant workers⁴⁸ but instead be harmonised with the supply of *local* labour in mind. (Figure 6.27 depicts a typical Maldivian resort island.)

In short, by proactively responding to aspirational ambitions (ie, health care, education, and employment) policy makers can create conditions which are both conducive to macro-demographic decentralisation and concurrently encourage more equitable migration outcomes. Moreover, there is overwhelming evidence that many islanders desire a strong government coordination and leadership role in achieving successful migration

48 According to Ali Rilwan of Maldives environmental NGO Bluepeace there are approximately 100,000 expatriates living and working in Maldives (Q2/Exp/Malé/20111222).



Figure 6.27: Popular Maldivian resort water bungalows. The country's approximately 100 resort islands are not classified as or included in the count of the country's roughly 200 "inhabited islands". During fieldwork random telephone enquiries at resort booking centres revealed accommodation prices between US\$300 to US\$3,000 per night. Disclaimer: Given the funding constraints of this fieldwork no resort islands were visited and/or corresponding comforts enjoyed. (Photo: Salawin Chanthapan / iStockphoto).

outcomes. With the role of civil society in the Maldives still weakened, including by years of dictatorship and forms of extremism (Naish 2013, AVAAZ 2013, Robinson 2013, Minivan News 2013, Schmidl 2009, Lang 2012, Zunes 2012, Democracy Now 2012, BBC News 2012e, 2012f, 2012g), it seems that many islanders are largely (and at times passively) looking to the government to coordinate their resettlement. At the same time there is strong evidence that community consultation is frequently weak (or missing) and that several solutions already implemented (eg, housing designs built in Dhuvaafaru and Nolvivanfaru Islands) are not meeting migrant islander needs to the extent feasible and/or desired (Q19/Migr/Dest/Nolvivanfaru/20111229; Riyaz and Park 2010).

(4) The special role and promise of expansive education

There is overwhelming evidence that "better education" may be the archipelago's aspirational core and kingpin holding the strongest promise to enable more positive macro-managed migration outcomes. At present, the high level of prioritisation respondents ascribed to education seems second to no other aspiration. The very high esteem in which education is held was made recurrently apparent not only in quantitative results which highlighted "insufficient educational facilities" as the most important "push driver" (Figure 6.11), and "better / higher education" as the most important aspirational "pull factor" (Figures 6.12 and 6.13), but was also underscored in numerous key commentaries which constructed education as a highly promising long-term strategy by means of which the nation's overall resilience could be significantly bolstered (Section 6.5 and Figure 6.28).

Naturally, education raises options, and inversely, lack of education limits them. Hence the strong desire expressed by large parts of the population to benefit more from better education opportunities can be seen as a core component and precondition for enhancing human resilience: it holds the dual promise of strengthening both "hard system" engineering solutions and "soft system" social adaptation programmes. Evidently, ex-



Figure 6.28: Afeefuddin School (grades 1-7, pictured) and Jalaaludden School (grades 8-12) on the Island of Kulhudhuffushi (Haa Dhaaluu Atoll) are attracting significant levels of in-migration to the country's fourth-most populous island with more than 7,000 inhabitants. Deputy Principal of Jalaaludden School, Ali Ismail, indicated that "education is the main reason" for migration, and that often entire families are moving together until children have completed their education (Q8/Exp/Kulhudhuffushi/20111227).

panding the domestic knowledge base and building up in-country expertise will enhance hardware related adaptation designs; and educating people to understand climatic, environmental and social changes will strengthen the software dimension. Upscaling education may therefore be understood and prioritised as "no regrets" good development practice which will pay dividends irrespective of which climate change problems will ultimately present themselves (Starke and Mastny 2010, pp. 55-82). Moreover, education also represents sound preparedness practice in general and will invariably improve the well-being, job prospects and overall resilience of individuals and communities. Enhanced options for international migration may also become more viable to a highly educated populace.

(5) Environmental change makes government planning a critical success factor

It is an unequivocal finding of this research that planned migration (eg, Nolhivaranfaru) is experienced as vastly more positive than *ad hoc* migration (eg, Hathifushi). While the collective relocation of three shifting island communities Faridhoo, Kunburudhoo, and Maavaidhoo to Nolhivaranfaru over the course of three days in January 2011 had been carefully planned at the government level for about six years (MFT 2008; Q18/Migr/Dest/Nolhivaranfaru/20111229), the environmentally induced *ad hoc* evacuation of Hathifushi islanders occurred abruptly on 5 July 2007, two weeks after storm surges flooded the entire island (Q24/Migr/Orig/Hathifushi/20111231).

In direct comparison the Nolhivaranfaru migrations may be seen as carefully coordinated and government planned, whereas the Hathifushi relocations seem to be essentially impromptu and (at best) government condoned. A number of important planning lessons emerged from these dissimilar experiences which will be explored in this subsection.



Figure 6.29: The Nolvhivaranfaru host community welcomes arriving migrants from Maavaidhoo on the day of their announced arrival in January 2011.

Photo quoted from Haveeru Daily, 2011 | <http://www.haveeru.com.mv/english/details/33879> (last accessed 10 Oct 2013)

Despite the fact that migration to Nolvhivaranfaru was not experienced as altogether perfect,⁴⁹ arriving migrants had nonetheless all moved into brand new government funded houses which had been specifically built and prepared for the migrant community, and which heads of families received on a chance basis when two students from Nolvhivaranfaru “drew lots to determine who would get which house” (Q18a/Migr/Dest/Nolvhivaranfaru/20111229) while around “500 people stood by and watched near the island’s central tree” (Q18b/Migr/Dest/Nolvhivaranfaru/20111229). This allocation method was perceived as a “fair and good process” (ibid). Moreover, the three relocating island communities which arrived successively in Nolvhivaranfaru over the course of three days (one island per day) were expectantly welcomed on the beach by their new hosts who offered them an “island community welcome” (Q21/Exp/Dest/Nolvhivaranfaru/20111230) which entailed “welcome drinks, food parcels, waiting ambulances for the sick” (ibid), as well as subsequent visits to the arrivals’ new houses “to see if anybody had missed out” (ibid). The event was covered in the media and documented by The President’s Office (TPO 2011, Haveeru Daily 2011, SAMN 2011). One eyewitness from among the host community described the mood as follows: “everyone [was] excited [and] awake at night, ... whenever the [Coast Guard] launch departed, MNDF⁵⁰ called for community welcoming [to resume]” (Q21/Exp/Dest/Nolvhivaranfaru/20111230; Figure 6.29).

By stark contrast, more than four-and-a-half years after the *ad hoc* migration from Hathifushi was carried out the majority of relocated islanders are still in limbo and have no reliable information about when their government promised houses in Hanimaadhoo

49 Some migrant respondents from Maavaidhoo and Kunburudhoo regretted that the government had not made good on its promise to compensate them for fruit-bearing trees that they had abandoned in their islands of origin (Q17/Q18/Q19/Migr/Dest/Nolvhivaranfaru/20111229). Moreover, with the in-migrating islanders all receiving brand new government funded houses there was a shared sentiment among parts of the host community that the original “Nolvhivaranfaru islanders were missing out” (Q15+16/Exp/Nolvhivaranfaru/20111229).

50 Maldives National Defence Force (MNDF).



Figure 6.30: Hathifushi Island was swiftly evacuated on 5 July 2007, two weeks after storm surges inundated the entire island. According to a respondent from Hathifushi the island is naturally very low-lying: during a regular high tide only “six inches [15cm] of land is above the water.” (Q6/Exp/Migr/Dest/Hanimaadhoo/20111226). Photo: Saffah Farooq, 31 Dec 2011).



Figure 6.32: Its shape, small size (832 x 833 feet; Q6/Exp/Migr/Dest/Hanimaadhoo/20111225) and location in the Maldives' northernmost Ihavdhippolhu Atoll made Hathifushi and its small population vulnerable to flooding disasters. Following storm surges in June 2007 the entire community was evacuated on 5 July 2007, leaving the island henceforth abandoned.

(Image: <http://goo.gl/maps/A3YzH>)

will be ready. Meanwhile the majority of Hathifushi islanders are continuing to live under the same roof of their literal “host families” in Hanimaadhoo: individual Hanimaadhoo islanders who heeded a call by the Island Chief volunteered to offer temporary accommodation to Hathifushi islanders in exchange for modest government subsidised monthly rental payments of 500 Rufiyaa⁵¹ per accommodated person per month. This impromptu “host family” arrangement has been in place for more than four years and was still operational at the time of the research visit to Hanimaadhoo (Q9+10/Migr+Host/Dest/Hanimaadhoo/20111227).

Importantly, although the community of Hathifushi islanders appears to have requested relocation as early as in the 1960s, and as late as in 2004, it was not moved by the government until *after* the devastating storm surges triggered a swift and final evacuation. The following key commentary by a Hathifushi forced migrant elaborates the longstanding desire of islanders to relocate:

51 Approximately US\$ 32 (ie, on the day the interview took place; Section 1.7).

“We were having thoughts of moving to another island since 1963 or 1968. Our forefathers wanted to move but could not achieve that but we have now been able to move. Similar to many other islands of Maldives, we were experiencing erosion of the island and when the tsunami of 2004 came, water swept the whole island and flooded 90% of the island. Several Maldivians suffered from the tsunami. We faced several difficulties and we discussed very sincerely with the government to prioritise the needs of our people. But a decision had not been made before storm surges swept the island around June 2007. The whole island was flooded on a worse scale than the tsunami. The government then decided to move us ... on 5 July 2007. [...] The entire population was moved to ... houses of Hanimaadhoo people. We started living in houses of Hanimaadhoo people, and we are still living in their houses [...] We don't know about the status of the housing project. The work is being carried out on this island to build housing units. We have no idea if those housing units [that are presently under construction] are for the people who moved from Hathifushi or not. Neither the Council Office nor do we have any information about that so we can't comment on that.” (Q6/Exp/Migr/Dest/Hanimaadhoo/20111225)

According to a Hathifushi evacuee who accompanied this researcher to his abandoned island on a one-day visit (Figures 6.30 to 6.32), lack of pre-planning foreclosed more benign migration outcomes and resulted in needless household level economic losses:

“We suffered huge losses. This is my own house. Items from our ancestral home, from my mother's house, we had to leave all items from all houses ... We did not take anything with us ... There was no sufficient time ... Even crockery and plates, all household items must still be here. I don't even know where they are now ... There must be longline buoys worth 25,000 Rufiyaa⁵² here. Even if I took them, where could I keep them [in Hanimaadhoo]? That's why I could not take them with me. We were promised permanent shelter ... within 18 months ... but haven't received any of that for four years, and the fifth year is about to begin ... the difficulties of living like this! There is no guarantee about those houses [being built for us] ... What happens when [each government] changes in every five years, when each government is ready to implement its policies, the five-year term is over and another party comes to the government. There is not sufficient time to implement large projects like this. We were told that we will be provided [with new houses] before the government changed. This is a sad thing for us. I will try to move to a new house, even for rent, this time. How can we live in this condition! But ... it is not fair! The reality is nobody would claim that this island is suitable for living. We were living in such a small island, with no facilities, and this is the tip of the Maldives. No facilities at all. This is the extreme northern tip of the Maldives.” (Q24b/Migr/Orig/Hathifushi/20111231)

52 Approximately US\$ 1,600 (ie, on the day the interview took place; Section 1.7).



Figure 6.31: Hatifushi evacuee Abdul Rasheed Hassan points out the height of the storm surges in front of his abandoned house on the evacuated Island of Hathifushi during a one-day visit on 31 December 2011. He said: “the water was up to this level ... So all the [plants] here died ... many things here were destroyed ... Four years have passed without us getting any home [in Hanimaadhoo]. All these items have been wasted. All this stuff getting wasted!” (Q24b/Migr/Orig/Hathifushi/20111231)

For the purposes of this case study the two aforementioned migration experiences (Nolhivaranfaru and Hathifushi) appear to highlight two very important points (Section 6.4). First, natural disasters and environmental change – of which climate change is a part and to which it contributes – can combine with other problems to swiftly overwhelm a community’s collective coping capacity. The resultant situation may be experienced as so frightful and exasperating as to trigger unplanned *ad hoc* migration responses which are lacking in critical preparation, coordination, and funding support. Second, policy maker foresight and anticipatory preparedness can promote proactive migration in such a way that critical preparations can enable a more benign migration experience where the element of force is more muted. The important point is that critical preparations are made *before* these are needed (Chapter 7).

In an expert interview conducted at Earth Observatory Singapore (EOS), Dr Adam Switzer explained how a number of climate change related problems had likely combined together to trigger the flooding event which ultimately overwhelmed the coping capacity of the Hathifushi islanders (Q32/Exp/Singapore@EOS/20120106):

“The two ... images tell the story [cf, Figures 6.33 and 6.34]. The first is a compilation of data from tide gauges and satellite sea level data that pretty clearly shows that mid 2007 was a peak in sea level over the last 30 years for that region [Figure 6.33]. The second thing I think was a major contributor, and I say this as it’s the only storm in the region at that time, is Cyclone Gonu in June 2007. This typhoon was devastating to Oman but it also generated large swells from the west that would have hit the northern Maldives. The image ... is from Buoyweather from midnight on the 18th of June 2007

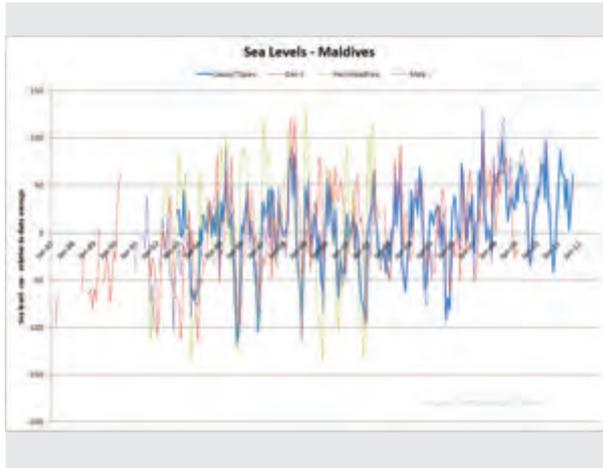


Figure 6.33: Compiled sea level data from tide gauges and satellite measurements reveals that during the middle of 2007 there was a 25-year peak in sea level. Source cited by Adam Switzer during Q32/Exp/Singapore@EOS/20120106). Source available: http://www.climatedata.info/Impacts/Impacts/Impacts/maldives_sealevels_files/BlGw02-sea-level-change-maldives.gif

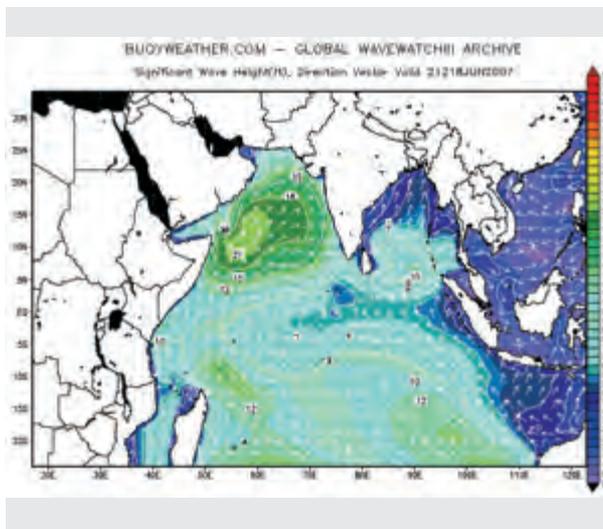


Figure 6.34: Image from Buoyweather (18 June 2007 @ midnight) shows open ocean wave heights of at least 12 feet. Cyclone Gonu was devastating to Oman but also generated swells affecting the northern Maldives. (Source: Buoyweather; cited and provided by Adam Switzer during Q32/Exp/Singapore@EOS/20120106).

and shows open ocean wave heights of at least 12 feet [Figure 6.34]. I think the combination of a multi-decadal regional sea level high, possible spring tides ... and an unusual storm in the northwest Indian Ocean combined to generate the event that finally crippled the island.” (Q32/Exp/Singapore@EOS/20120106)

While a number of factors had long prompted the island community to seek government sponsored relocation (the causes), it was the storm surges (the triggers) that finally compounded the vulnerabilities and became the tipping element that pushed the whole community “over the edge”, resulting in a rapid *ad hoc* migration response. Therefore, progressive climate change and creeping environmental change appear to make proactive migration planning an increasingly important success factor.

A further lesson that has emerged from this study is that long-term migration planning needs to be unencumbered by electoral cycles and/or partisan politics. Incidentally, less than 5 weeks after the end of this fieldwork the government in Maldives changed again (CNA 2012b, BBC 2012e, 2012f, 2012g), triggering the dissolution and reconfiguration of the Ministry of Housing and Environment, along with a raft of other changes. Presidential elections in September 2013 could cause further delays in catering to the

needs of the evacuated Hathifushi island community,⁵³ thereby underscoring the danger that in the absence of long-term strategic migration planning, *ad hoc* migrants can easily fall through the cracks of day-to-day policy maker business, or even become pawns in the hands of politicians (Q24b/Migr/Orig/Hathifushi/20111231; Q9+10/Migr+Host/Dest/Hanimaadhoo/20111227).

Hence the question arises whether President Mohamed Nasheed's announcement of a sovereign wealth fund to purchase land elsewhere as a contingency for the event that rising sea levels would render the Maldives uninhabitable (Section 6.2) may be seen as a new and strategic focus on large-scale planned emigration (Vince 2009a, pp. 37-39; cf Schmidl 2009; UNDP 2009 p. 45, attributed to Revkin 2008; BBC 2008a, Henley 2008, Ramesh 2008, Lang 2009a, 2009b). No independent confirmation of the creation of such an "insurance mechanism" could be obtained by this author during fieldwork. A few respondents expressed the belief that President Nasheed's announcement may have been more of a "publicity stunt" than a formal declaration of official government migration policy (Q3/Exp/Hanimaadhoo/20111224; Q31/Exp/Hulhumalé/20120102).

To synthesise, in light of the country's significant capability of atoll, marine and coastal zone adaptation, at present forced mass emigration from the archipelago seems rather unlikely even *if* a majority of land were to disappear or degrade in the future through storm surges, sea level rises, erosion and other impacts that may be linked to global climate change. The urban development of Hulhumalé Island for tens of thousands of islanders seems to demonstrate that the nation has the capability and the resources to reclaim, raise and reinforce islands on a grand scale (Shaig 2006, MHUD 2008, Lang 2009a, Vince 2009a, MPND 2007, MEEW NAPA 2007, p. 22; Bluepeace 2008, HDC, n.d.; Q2/Exp/Malé/20111222). The massive dredged lagoon is the Maldives' biggest land reclamation and housing project (Figures 6.35 and 6.36). At the time of the research visit Hulhumalé was already inhabited by more than 10,000 islanders, mostly settlers from neighbouring Malé Island. Raised to and reinforced at 2m above sea level this artificially created island was designed and developed to accommodate 60,000 islanders by 2020 (HDC, n.d.).

In short, in the minds of most Maldivians, for now mass emigration from the archipelago does not seem to constitute an immediate threat. At the same time it is the view of some respondents that most islands are likely to undergo unprecedented topographical and geomorphological transformation this century (Q29/Exp/Malé/20120102), and that "most islands will disappear" by 2100 (Q2/Exp/Malé/20111222). This possibility appears to make the piloting of viable adaptation measures indispensable.

53 Unidentified Maldivian respondent, pers. comm. by e-mail 18 December 2012.



Figure 6.35: The reclaimed and raised island of Hulhumalé has been built and reinforced at 2m above sea level. (Photo: Johannes Luetz; 1 Jan. 2012)



Figure 6.36: Beachfront properties on the artificial Island of Hulhumalé. This computer designed island with a size of approximately 2 sq km is intended to accommodate about 60,000 inhabitants by 2020 (HDC, n.d.). (Photo: Johannes Luetz; 1 Jan. 2012)

In this context Hulhumalé may perhaps already be regarded as a pilot project by means of which to assess the viability of computer designed and artificially created “Contingency Adapted Raised Islands” which may offer both long-term protection from climate change related sea level rises, and act as an *in situ* insurance policy against future forced human emigration scenarios (Figures 6.24 and 6.25). However, at a cost of multiple millions of dollars the affordability and replicability of such artificially reclaimed and raised island projects has been called into question (Q30+31/Exp/Hulhumalé/20120102). Moreover, a duplication or multiplication of the Hulhumalé blueprint may be financially prohibitive in the absence of international climate change adaptation or compensation financing – a funding stream which seems notoriously unreliable, if recent UN climate summits are to be seen as a reliable guide (Harrabin 2012a, 2012b). Finally, the longer-term affordability of massive-scale engineering bulwarks would seem very much dependent on enduring foreign exchange earnings from tourism and fisheries – a funding source which could dry up if climate change impacts should cause the country’s coral reef or fish stocks to erode or collapse (SOEM 2011).

In an expert interview conducted for this case study Dr. Mohamed Aslam, Minister of Housing and Environment, conceded that climate change impacts could ultimately

overwhelm the Maldives' natural morphological resilience. However, he cautioned that forced emigration was not a solution and did not reflect official government policy:

“Ultimately, the system can't keep up! I try to draw the analogy with the smoker. You continue to smoke, your system adjusts to it, so you don't feel anything, – this is a natural system so it makes slight adjustments with the harm you do, so you don't feel it. Ultimately, it comes to a tipping point where it breaks down and you go into a terminal illness like cancer or whatever it is, or your lungs just collapse. – The same thing will happen. But we haven't reached the tipping point yet. I think it's very difficult for anyone to say [when the tipping point is reached]. I don't think it's an absolute mark where you say, 'this is the point'. We believe 1.5°C is that point, the others say it's 2°C, when it goes to definitely 4°C then definitely ... you've gone way beyond the tipping point then. [Q: A few years ago President Nasheed announced a sovereign wealth fund to purchase land elsewhere...] The point President Nasheed was making is that we shouldn't be naïve to think that ... the doomsday scenario is not there. We should prepare ourselves for the worst situation. If it comes to that we should be prepared for that. But it doesn't mean that we are digging our graves. [Q: Are there any negotiations underway with any other country to purchase land?] No, no, we're not pushing too much on that subject because people might start thinking that the Maldives have given up the hope of living. [...] No, no, forced migration is not a solution, no! It's not a solution!” (Dr. Mohamed Aslam, Minister of Housing and Environment; Q29/Exp/Malé/20120102; unabridged interview transcript available in Appendix G.5)

(6) Waste and environmental management

It would be inappropriate to explore “hard” engineering solutions without drawing attention to environmental knock-on effects. Referring to lagoon dredging and island reclamation projects (eg, Hulhumalé, Gulhifalhu) a number of respondents highlighted serious environmental damages which hard engineering measures inflict through encroachment, habitat destruction, biodiversity decimation and species extinction (Q3/Exp/Hanimaadhoo/20111224). Respondents also cautioned that land reclamation and artificial harbours impact on sedimentation processes which can lead to “increased erosion” (Q4/Migr/Dest/Hanimaadhoo/20111225) in adjacent areas or islands, or cause “sand [and] debris to float and settle in reef areas” with consequent “adverse effects in dive sites” (Q3/Exp/Hanimaadhoo/20121228; Q14/Exp/Hanimaadhoo/20111228). Respondents also advocated that “mangroves should be protected” (Q3/Exp/Kulhudhuffushi/20111227), that sand should be mined “from the bottom of the sea [rather] than from the lagoon” (Q31/Exp/Hulhumalé/20120102), and that “marshlands should be preserved” instead of being filled in to make room for expansive land reclamation (Q3/Exp/Kulhudhuffushi/20111227). Respondents emphasised these measures as important both to maintain the Maldives' natural richness in bird and fish species and to ensure that human exposure to ocean hazards does not increase further (Q3/Exp/Hani-



Figure 6.37: Washed up plastic waste on the Island of Hanimaadhoo. (Photo: Johannes Luetz; 1 Jan. 2012)

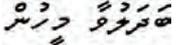


Figure 6.38: Washed up plastic waste on the Island of Hanimaadhoo. (Photo: Johannes Luetz; 1 Jan. 2012)

maadhoo/20111224). Given that the natural resilience of low-lying reef islands diminishes considerably after subjection to human modification (hard adaptation) makes the conservation of mangroves and environmental shelterbelts (soft adaptation) all the more important (Mimura et al 2007 p. 698; Kench et al 2006, p. 177; Luetz 2008, pp. 60-65).

There is overwhelming evidence of inadequate waste management across the Maldivian islands with even basic awareness of waste disposal apparently lacking across sections of society (Q8/Exp/Kulhudhuffushi/20111227; Q31/Exp/Hulhumalé/20120102). Throughout fieldwork solid non-biodegradable waste was frequently seen being thrown out of ferries, cars, speedboats, and strewn across beaches or bobbing up and down as carried along by waves or currents (Figures 6.37 and 6.38). One environmentalist said: “waste management is the number one environmental issue [in the Maldives]” (Q2/Exp/Malé/20111222). If the Maldives’ natural beauty is to be preserved for future generations, better waste management practices will need to be widely adopted across the archipelago (SOEM 2011, pp. 92-104; Haviland 2011). This seems particularly urgent in light of current “urbanisation” trends and in view of the fact that worldwide floating plastic waste has been identified as a major environmental concern (van Sebille et al 2012, Goldstein et al 2012, Amos 2012a, Summers 2012).

(7) *Nomenclature*

It is a finding of this research that the problem of “preferred nomenclature” – while hotly debated among academics – appears to be a non-problem in the minds of migrants in the Maldives. Throughout interviews it seemed that the tested characterisations (ie, migrant, evacuee, refugee, exile, victim, settler, displaced/dislocated person) were similarly regarded as “good” (Q3/Exp/Hanimaadhoo/20121224), and that even alternative Dhivehi terminology ( “Hijura Kura Meehun”⁵⁴ = people who migrate;  “Badhalu Vaa Meehun”⁵⁵ = people who move) was not perceived as preferable in terms of any changes in semantic nuances (ibid). It may be hypothesised that this apparent and seemingly unanimous disinterest could be linked to the overall sense that present-day migration in the Maldives is overwhelmingly “more pull than push” (Q4/Migr/Dest/Hanimaadhoo/20111225; Q29/Exp/Malé/20120102), a finding which is in stark contrast to Bangladesh where the element of “force” in migration was far more identifiable and where human movement was recurrently perceived as induced by “more push than pull” (Q22-25/Exp/Dhaka/20111204-20111205).

(8) *Research limitations and future research*

The research findings of the Maldives fieldwork are subject to at least three limitations. First, with no Dhivehi speaking proficiency on the part of this researcher and 82% of interviews requiring a Dhivehi interpreter it is conceivable that some information could have been “lost in translation” or lack thereof. Second, given the researcher’s association with an Australian university – although this did not feature explicitly in interviews – it is conceivable that the responses of some respondents (especially with regard to “preferred migration locations”) may have been coloured by a possible hope to gain certain benefits or influence ongoing research commitments. While the researcher appraises the influence of this association on overall research outcomes as rather low, the possibility cannot be excluded. Third, research findings are based in part on a comparatively small sample and should be confirmed through other independent research.

As mentioned, extensive planned inter-atoll and inter-island migrations make the Maldives a fertile location for migration research. Two areas for further research appear to be particularly promising: (1) comparative analyses involving multiple study sites; (2) longitudinal studies of social success factors in migration over time (eg, Black et al 2011a).

54 Phonetic approximation.

55 ibid.

(9) *Sharing expertise, lessons learned and best practices*

Given the Maldives' significant know-how in coastal management and its financial resource base from tourism and fisheries, it is the view of this researcher that the Indian Ocean archipelago may consider playing a more proactive leadership role in assisting other less resourced small island developing states (SIDS), especially in the Pacific, adapt to climate change impacts this century – of which sea level rise may be among the more benign (Sections 6.2 and 6.5).

6.7 Conclusions and tentative policy recommendations

The significant level of demographic consolidation in the Maldives makes the archipelago a useful microcosm for the study of migration relevant success factors. Emergent lessons can inform forward thinking policy development processes well *before* these are needed. This appears prudent in view of the finding that present migration and demographic consolidation trends seem likely to continue well into the future, implying that the country's population can be expected to continue consolidating and regrouping on fewer and fewer inhabited islands, potentially reclaimed, raised and reinforced to higher and higher heights. Over the coming decades climate change can be expected to catalyse this trend.

As reflected in the Bolivia (Chapter 4) and Bangladesh (Chapter 5) cases the reasons for migration are numerous, interdependent and complex. In the view of this researcher it is not possible to disaggregate the intertwined mix of factors why people decide to move. A monocausal attribution of reasons why people in the Maldives migrate therefore appears methodologically unsound, given that reasons for migration are inclusive, not exclusive (Betts 2010, p. 378; MPND 2006, pp. 56-57; Andersen 2002, p. 8).

Throughout this fieldwork the reasons why people move were shown to be as varied and diverse as the circumstances of the individual respondents involved. While for the most part climate change did not seem to constitute a major migration inducing factor, the swift and unplanned evacuation of the entire Hathifushi islander community following storm surges in June 2007 remains a stark reminder that climate change tends to compound existing vulnerabilities and may become a sudden “trigger” or tipping point with the potential to push whole communities “over the edge”, resulting in rapid and uncontrolled migration responses.

There seem to be at least four elements which make planned migrations successful in the Maldives: (1) the islanders want to move; (2) there seems to be significant consultation and communication between the government and the affected islanders, including “host” and “guest” communities; (3) relocation processes involve anticipatory planning

and relatively long lead times; eg, it took the government six years to implement the migrations of the islander communities Faridhoo, Maavaidhoo and Kunburudhoo to Nolvharanfaru; (4) there are generous benefits and compensations for migrating islanders; eg, each migrating family typically receives a free government funded house in the place of destination (Q15 + 16/Exp/Migr/Dest/Nolvharanfaru/20111229; Q18/Migr/Dest/Nolvharanfaru/20111229, MFT 2008).

Field research conducted in the Maldives highlights a number of conclusions and tentative policy recommendations which are presented in this section. As noted in Chapter 3, migration is viewed through the humanitarian lens of preparedness which by definition is anticipatory in nature, seeking to make adequate preparations *before* these are needed (UNDP 2007, p. 198; UNISDR-UNDP, 2012). While in terms of messaging this conclusion section could focus on any number of issues that would be worth addressing to ameliorate forced or voluntary, present or future migration outcomes in Maldives, no other issues seem to hold as much preparedness promise as the areas of (1) equitable service provision; (2) expansive education, (3) social integration initiatives; and (4) proactive government planning. Hence the following four recommendations and policy priorities are advised.

First, meet popular aspirational ambitions to support decentralisation and equitable demographic development: There is overwhelming evidence that health care, education and employment are the three key aspirations which are most impacting on migration in the Maldives. All other possible aspirations were ascribed a subordinate priority by Maldivian respondents queried. Recognising that the pursuit of health care, education and employment is driving populations to migrate to wherever these essentials are reliably attainable appears to emerge as a compelling opportunity for policy makers seeking to mobilise macro-managed migration which is in harmony with decentralised demographic development objectives. In the simplest of terms, if in response to unabated in-migration to Malé these services are significantly scaled up *in Malé itself*, more would-be migrants will likely be pulled into the magnetic suction of the country's already congested capital. Incidentally, this process may have already been triggered by the creation of the artificial Island of Hulhumalé in close proximity to Malé which is already attracting in-migration not just from Malé, but also from the provinces, including Hathifushi Island (Q24/Migr/Orig/Hathifushi/20111231). Inversely, if essential services are scaled up *in the regional provinces*, further population pressure may be deflected from the compacting conglomerate Malé which may already rank as "the densest city in the world" (MHUD 2008, p. 14; cf also GOV MAL 2009, p. 19).

In short, *catering to popular aspirations in the provinces* may shift and rebalance the country's lopsided centre of gravity, and thereby become a compelling opportunity for policy makers to guide an equitable macro-demographic process of decentralised development.

Second, promote expansive education: There is overwhelming evidence that “better education” is among the most highly esteemed pursuits in the archipelago. Throughout fieldwork the high level of prioritisation respondents ascribed to education seemed second to no other aspiration. This finding emerged not only from quantitative results which highlighted “insufficient educational facilities” as the most important “push driver” (Figure 6.11), and “better/higher education” as the most important aspirational “pull factor” (Figures 6.12 and 6.13), but was also underscored in numerous key commentaries which emphasised education as a highly promising long-term strategy by means of which the nation’s overall resilience could be significantly bolstered. In the simplest of terms, people appear to migrate to wherever high quality education is readily attainable and affordable. Incidentally, this finding confirms similar results previously produced by Tsunami Impact Assessment (TIA) and Vulnerability and Poverty Assessment (VPA) surveys (MPND 2007, p. 22; TIA 2005, p. 96).

Naturally, education raises options, and inversely, lack of education limits them. Upscaling education may therefore be understood and prioritised as “no regrets” good development practice which will pay dividends irrespective of which climate change scenarios are ultimately realised, and would even appear to make sense in the complete absence of climate change. Upscaling education would invariably enhance prospects of planned emigration by making would-be emigrants from South Asia “desirable as immigrants to other countries” (Belt 2011, p. 81). This proposition can be seen as prudent preparedness practice given that a number of respondents think “there will be some international migration in the future” (Q3/Exp/Hanimaadhoo/20111224). Concurrently and importantly, upscaling education would also contribute expansive domestic hard and soft system expertise needed for the ongoing implementation of *in situ* adaptation measures (eg, Contingency Adapted Raised Islands). Hence education appears to make sense with regard to both *ex situ* and *in situ* adaptations to climate change. Finally, a number of social problems like loitering, thefts and drug abuse were also attributed to “lack of education among youth” (Q21/Exp/Nolhivaranfaru/20111230; cf GOV MAL 2009).

In short, upscaling education holds significant policy maker promise and is recommended as the kingpin for more positive macro-managed migration outcomes. The important point to note is that expansive education is a wish that respondents have already unequivocally expressed. Hence implementation could be expected to have broad societal support, and importantly, implementation could begin tomorrow.

Third, implement social integration initiatives to enhance cohesion among consolidating island communities: Despite a strong overall sense that government coordinated migrations are overwhelmingly perceived as more positive than negative, there was a sentiment shared among some respondents that social programmes should also be conducted among migrating or conjoining islander communities “to ensure social cohesion, [and] integration”

(Q15+16/Exp/Nolhivaranfaru/20111229). One policy maker conceded that with respect to migration management “there are many social issues involved” (Q29/Exp/Malé/20120102):

“People are not like trees which you can pluck and replant somewhere else. They have attachments to these islands, they have a sense of belonging to these islands, they have a history, childhood memories, all of these things are there. So once they move, they start realising what they’re missing.” (Dr. Mohamed Aslam, Minister of Housing and Environment; Q29/Exp/Malé/20120102; Appendix G.5)

However, migrants are not the only ones facing adjustment issues. Non-migrating host communities are facing their own challenges, albeit different ones. On Nolhivaranfaru Island, where three migrating islander communities from three different islands were integrated into the host community (January 2011), free government houses for the arriving migrants may have sparked a measure of jealousy among hosts:

“I think there is some jealousy ... let’s say for 30 to 40 years ... the locals [in Nolhivaranfaru] are struggling to build their own property, [but] these three islands they don’t have to work for their own property, they don’t have to build a house, they are just living there ... and they receive everything overnight.” (Q14/Host/Dest/Hanimaadhoo/20111228)

To overcome these and other social integration challenges respondents suggested initiatives like playing sports, holding football tournaments, “planning a new year’s trip to [former island home] Faridhoo, ... or inviting people to Eid” (Q21/Exp/Nolhivaranfaru/20111230). Moreover, after the island community of Hondaithoo had been collectively moved to Hanimaadhoo on 27 November 1998, one respondent shared that, with the exception of one marriage, “all the other marriages [among conjoining communities] ... were cross-marriages, to some extent deliberately, to help with the integration” (Q7/Migr/Dest/Hanimaadhoo/20111226). Finally, by increasing government funded inter-atoll and intra-atoll transport links,⁵⁶ in addition to existing ferry services to the capital Malé, connectivity and mobility could foster more social cohesion because in a geography like Maldives one “cannot pull the islands together” (Q29/Exp/Malé/20120102).

In short, post-migration community integration may stand to benefit significantly from the support of social (“soft”) programmes, sports/youth activities, more community

56 “We’ve had for a very long time transport between islands and the capital Malé, but we’ve not had transport inter-atoll and intra-atoll, ... so therefore people would have to wait on their island for somebody to come on a casual visit and then go – if the destination of this vessel is where they want to go... Or they would have to hire a boat which becomes very expensive ... So since 2008 we’ve started a nationwide transport ferry system. Every atoll has now the ferry system up and running.” (Q29/Exp/Malé/20120102; Appendix G.5)

consultation (migrants and hosts), as well as pre-migration awareness programmes and post-migration follow-up counselling. Pre-planned job creation should also be integrated into the migration design. In this regard it is important that appropriate strategies give due regard to the development potential of nearby resort islands and are reliant on the availability of local labour rather than expatriate expertise. Finally, the expedited implementation of intra-atoll and inter-atoll mobility and interconnectivity is also advised.

Fourth and finally, proactively plan macro-managed migrations where there is reasonable doubt that island communities can persist in perpetuity: It is an unequivocal finding of this research that planned migration (eg, Nohivaranfaru) is experienced as inherently more positive than *ad hoc* migration (eg, Hathifushi). The stark contrast between the two migration experiences as interpreted by the affected communities (Sections 6.4 and 6.6) signals both the critical importance of preparedness in migration as well as the possibility that the relevance of climate change as core contributing agent in migration could already be mounting. Importantly, the prospect that storm surge risk will evolve significantly over the course of this century (Section 6.5) suggests that the archipelago may become more and more susceptible to flooding events in the future. To incorporate this proposition into island vulnerability assessments would appear to reflect prudent preparedness practice. The two aforementioned migration experiences also highlight two critical points. First, natural disasters and environmental change – of which climate change is a part and to which it contributes – can combine with other problems to swiftly overwhelm a community’s collective coping capacity. The resultant situation may be experienced as so frightful and exasperating as to trigger unplanned *ad hoc* migration responses which are lacking in critical preparation, coordination, and funding support. Second, policy maker foresight and anticipatory preparedness can prompt and support proactive migration in such a way that critical preparations can enable a more benign migration experience where the element of force is more muted. The important point is that critical preparations be made *before* being needed.

In short, forced migration may result where voluntary migration is delayed. Progressive climate change and creeping environmental degradation appear to make forward-thinking government migration planning an increasingly important success factor. As noted in Sections 1.3 and 6.5, climate system inertia implies that based on past emissions of greenhouse gases humanity is already committed to a minimum of 1.3°C global warming (WBGU 2009a, 2009b, Hansen 2008, 2009; Woo et al 2011; UNDP 2007, p. 4). According to a recent report prepared for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics, “[n]ew estimates for crossing a threshold for irreversible decay of the Greenland ice sheet (which holds ice equivalent to 6 to 7m of sea level) indicate this could occur when the global average temperature increase

exceed roughly 1.5°C above preindustrial” (World Bank 2012, p. 61; attributed to Robinson et al 2012). In this context the case for learning relevant lessons for “climate migration” from the country’s contemporary context of “urbanisation migration” appears to be quite straightforward. Given that the planet is presently on a 4°C global warming trajectory only reinforces the importance of learning the lessons *before* need arises and options are foreclosed (WBGU 2009a; <http://www.fourdegrees2011.com.au> ; World Bank 2012; cf Schellnhuber 2008; Vince 2009, 2009a; New et al 2011, Stewart and Elliot 2013, Nicholls et al 2011, Hamilton 2010, pp. 190-208).

Given the long lead time to implement and mainstream the above mentioned preparedness priorities it appears essential that the development of appropriate policy instruments is not needlessly delayed. To distil it further, and to conclude, the following preparedness priorities and policy recommendations are advised:

- (1) Meet popular aspirational ambitions in regional hubs *before* options for equitable and decentralised demographic development are foreclosed by unabating in-migration to Malé.
- (2) Promote expansive education, free and compulsory for all, *before* the ambitions for self-actualisation of a whole generation are eclipsed (along with promising consequent options for *in situ* and *ex situ* adaptation to climate change).
- (3) Mainstream social awareness and community integration initiatives into migration designs *before* unnecessary social problems evolve which require *ad hoc* responses or retrospective remediation. Where possible, create jobs *before* these are needed.
- (4) Plan macro-managed migrations wherever there is reasonable doubt that island communities can persist in perpetuity, and importantly, *before* environmental or climatic changes overwhelm communal coping capacities, trigger *ad hoc* evacuations, foreclose benign migration scenarios, and/or create unnecessary duress for migrants and/or hosts.

Chapter 7: Discussion, Synthesis and Conclusion

7.1 Chapter overview

This chapter is subdivided into seven sections. Section 7.2 discusses commonalities, differences and cross-cutting issues. Sections 7.3 covers “surprise matters” as a promising preparedness opportunity similarly relevant in all field research locations. Section 7.4 provides a short review of dissertation chapters and sections. Section 7.5 offers a synthesis of main research findings. Section 7.6 advances conclusions, analyses possible policy implications, and sketches the dissertation’s primary contribution to scholarship, including an appraisal of research limitations and opportunities for further research. Section 7.7 concludes with a shortlist of policy recommendations.

7.2 Commonalities, differences and cross-cutting issues

As explained in Section 3.4, climate change is a global problem, but it is experienced at the local level. In many countries of the world its impacts are already being suffered. However, global statistics have a tendency to be meaningless in the context of local environments where impacts and vulnerabilities can diverge significantly from global trends (eg, significant local level deviations from global average temperature increases). In the context of this thesis, relevant climate change and migration issues were discussed at length *within* the case study chapters themselves and will not be recapitulated in detail in this section. Because contextuality is an important dimension which requires adaptive governance and policy options which are fine-grained and take stock of prevailing specificities and cultural contexts encountered in *local* environments (Brunner and Lynch 2010), pertinent issues were canvassed and elucidated in detail *in* the relevant case study chapters (Chapters 4 to 6). This approach seemed logical in view of distinctly dissimilar demographical data between case study locations and also explains why case study chapters contain comparatively longer deliberations regarding the contextually unique climate change and migration situations in each of the three countries, including different and unique shortlists of pertinent policy recommendations (Sections 4.7, 5.7 and 6.7). These will not be reviewed in Chapter 7 except to the extent that they are *universally* relevant and not contextually constrained.

As alluded to in Section 7.1, this section will look at all case studies concurrently, assessing selected similarities and dissimilarities, and identifying cross-cutting issues of importance. After discussing environment related push factors (ERPF) and non-environment related push factors (NRPF) in juxtaposition, this section will note issues of multi-causality (and “disaggregability”) regarding factors associated with human migration.

Thereafter it will take a fresh look at migrant aspirations or pull factors and introduce two figures which reflect collated data incorporating responses from all three case study locations. Section 7.2 will then conclude with a short discussion of the implied meaning of these aspirations for policy development.

(1) Push factors and multicausality

In accordance with the research focus on “preparedness” and micro-level grassroots field-work described in Sections 2.7 and 3.3 to 3.5, case studies were conducted in three different countries and climatic contexts highlighted as “hot spots” for climate migration, namely Bolivia (Chapter 4), Bangladesh (Chapter 5), and Maldives (Chapter 6). As made clear in Section 3.4, these countries were carefully selected to ensure the inclusion of broadly dissimilar climate change issues and resultant migration responses, incorporating

- mountainous and/or agricultural communities susceptible to drought / water stress / water insecurity, aridification, desertification, deforestation, land degradation, including declines in the availability of Andean glacial meltwater (Figures 3.1 and 3.2);
- densely settled megadelta cities and communities susceptible to cyclonic storms and storm surges, massive scale flooding events, and processes of erosion, salt water intrusion, land subsidence and sea level rises (Figures 3.1 and 3.3);
- small island communities susceptible to sea level rises, coastal erosion, storm surges, freshwater depletion, sea surface temperature increases and consequent coral bleaching / reef system degradation (Figures 3.4 and 3.5).

Given that case study sites were intentionally selected to be dissimilar in terms of climatic conditions and sociocultural contexts it appears hardly surprising that across case studies climate change related push factors were as dissimilar as the prevailing environmental, climatic and cultural conditions encountered in each particular country context.

As expected, in Bolivia (Chapter 4) the predominant environment related push factors (ERPF) were overwhelmingly associated with problems arising from the limited availability of water, including (in order of attributed importance) “slow-onset disasters (eg droughts)”, “dwindling agricultural yields”, “insufficient drinking water”, and “poor/degraded soil” (Figure 4.13).

As also might be expected, in Bangladesh (Chapter 5) the predominant ERPF were overwhelmingly associated with problems connected to the country’s geography and

natural disaster context, including (in order of attributed importance) “erosion/land loss”, “rises in sea level”, and “sudden natural disasters (eg windstorms)” (Figure 5.15).

Finally, and as imagined, in Maldives (Chapter 6) the predominant ERPF were overwhelmingly associated with problems that may be anticipated in small island contexts, including (in order of attributed importance) “erosion/land loss”, “sudden natural disasters (eg, windstorms)”, “rises in sea level” and “dwindling agricultural yields” (Figure 6.10).

Although some of these findings are based on comparatively small sample sizes the findings nevertheless appear rather unsurprising, and it seems doubtful that an entirely different picture would have emerged from larger data samples – especially in light of the geographic features and vulnerabilities associated with the relevant case study sites (Section 3.4).

The picture is slightly more nuanced and somewhat less predictable in terms of non-environment related push factors (NRPF).

In Bolivia (Chapter 4) the predominant NRPF were overwhelmingly associated with dwindling livelihood options in areas characterised by high levels of out-migration, including (in order of attributed importance) “unemployment”, “better opportunities elsewhere”, “population growth/overcrowding”, and “following another family member” (Figure 4.14). While “insufficient educational facilities” and “insufficient health care facilities” were also mentioned as relevant issues, these push factors did not seem to be primary causes of migration.

In Bangladesh (Chapter 5) the predominant NRPF were similarly associated with dwindling livelihood options in areas characterised by high levels of out-migration, including (in order of attributed importance) “unemployment”, “better opportunities elsewhere”, “following another family member”, and “population growth/overcrowding” (Figure 5.16). As indicated in Section 5.4, although poverty was not mentioned in the questionnaire as a possible cause of migration (Appendix D.2) and also did not feature explicitly as a push factor in other case studies (Chapters 4 and 6), there was an overwhelming desire on the part of Bangladeshi respondents to see their challenges appreciated within their ever present context of “poverty”, wherefore this factor was subsequently integrated into Figure 5.16.

In Maldives (Chapter 6) the predominant NRPF were slightly different and yet broadly similar, including (in order of attributed importance) “insufficient educational facilities”, “better opportunities elsewhere”, “insufficient health care facilities”, and “unemployment” (Figure 6.11).

The similarities between the most important non-environment related push factors in Bolivia and Bangladesh may be related to human movement characterised by similarly high levels of migrant desperation, also described in the literature as “survival migration” (Betts 2010), or by a development expert in Dhaka as “more push than pull” migration (Q22-25/Exp/Dhaka/20111204-20111205).

Although in terms of Human Development Index (HDI) ranking Bolivia appears to hold more in common with the Maldives¹, it needs to be emphasised that in terms of abject poverty and desperation, respondents in Bolivia had far more in common with those in Bangladesh. Hence it could be surmised that push factors such as “insufficient educational facilities” or “insufficient health care facilities” are factors of growing relevance to human migration only *after* physical survival ceases to be of primary preoccupation. As one development expert in Dhaka affirmed,

“The two priorities [for migrants] are education and livelihoods. But livelihoods is more important than education for the destitute person because it feeds them today. Education is about tomorrow. And they don’t have the option of thinking about tomorrow. And it’s back to the old poverty trap again. This is where policy makers and NGOs need to push harder on the things that provide for today but not ignoring the future.”
(Q22/Exp/Dhaka/20121204)

As noted in Section 5.6, livelihoods are of pre-eminent importance for equitable migration, a finding that was similarly highlighted in all three case study locations.

In all three countries there were several interviewees who indicated that they had “lost everything” due to prolonged drought, river erosion/coastal erosion, cyclonic devastation, or island overtopping, and found themselves without land and/or means to rebuild their lives. Patience and tolerance levels naturally vary from respondent to respondent with some of those interviewed trying longer and harder to stay in the degraded, destroyed, salinated, eroding or aridifying regions before ultimately concluding that to go is better than to stay. It is a clear finding of this research that there is a migration “tipping point” which is commonly shared across all strata of society (and across all case study sites) at the precise point in time when livelihoods are compromised beyond reasonable hopes of recovery. When this point is reached, people migrate. Hence livelihood security appears to emerge as the last line of defence beyond which uncontrolled migration may be unavoidable. The creation of sustainable livelihoods in predominantly rural areas is

1 Although both Bolivia and Maldives are Medium Human Development Countries with a quasi-identical HDI ranking (108 and 109 out of 187 countries), and Bangladesh is a Low Human Development Country (ranking 146 out of 187), migrating individuals and/or communities in Bolivia and Bangladesh seemed similarly poor and had far fewer options than migrants in Maldives (UNDP 2011, p. 126).

therefore thought to be an important priority for migration planning and preparedness informed climate change adaptation. In light of the growing body of evidence linking climate change to the erosion of livelihoods, the question of ensuring livelihood security is a formidable challenge indeed: “[r]ural communities, particularly those living in already environmentally fragile areas, face an immediate and ever-growing risk of increased crop failure, loss of livestock, and reduced availability of marine, aquaculture, and forest products.” (Kümmerer et al 2010, p. 142)

Moreover, numerous interviewees noted that their new urban lives are preferable to former rural subsistence on the sole grounds that income generation opportunities in urban slums are superior to those generally encountered in rural areas. This finding was similarly produced in all case study locations, although living conditions in the urban conglomerate Malé (Maldives) are vastly superior to those encountered in informal settlements in Bolivia and Bangladesh. Notwithstanding this qualified preference for an urban environment, a majority of interviewees in all locations added the caveat that they “liked” their rural areas and lives better and would return immediately if income generation was more readily available in those places. This finding calls for creative policy maker strategies that concurrently focus on facilitating more benign forms of migration *and* enable subsistence farmers to sustain viable livelihoods in their (often fragile) environments for as long as possible.

Another cross-cutting similarity that appears to be of significance is the finding that from among all possible non-environment related push factors the issues of “religious/ethnic conflict”, “political instability/civil war”, and “safety concerns/crime” were similarly rated as essentially meaningless for migration (Figures 4.14, 5.16 and 6.11). This is an interesting finding because it appears to challenge the premise in other research which is sometimes stated as a foregone conclusion, namely that large levels of migration will inevitably spawn uncontrollable and apocalypse style chaos provoked by “climate refugees” or even “Climate Barbarians” (Bettini 2012, Dupont and Pearman 2006, Stern 2007, p. 173, WBGU 2007, Australian Government 2009, Christian Aid 2007, p. 3). This is not to imply that the prospect of massive scale migration is not worrisome or in need of proactive and informed policy attention. To the contrary, this dissertation has argued from the outset that preparedness forms the premise of this study, and that the eventuality of inequitable migration processes and outcomes is a very real possibility (if not probability) that needs to be factored in as a starting point if forward-thinking policy development is to have a realistic chance of success.

A final commonality which emerged as a cross-cutting issue of importance in all three case study locations is the growing prevalence of urban vulnerabilities. While rural-urban migration often produces positive outcomes (eg: “for most people things work out when they migrate to the cities: 5% are worse off, 95% are better off”; Q28/Exp/Dest/La

Paz/El Alto/20110110), there is overwhelming evidence that many migrants move from rural vulnerability to compounded urban vulnerability with poor or absent amenities such as electricity, health care, water and waste management facilities. Prevailing conditions in many informal settlements have been labelled “subhuman”² by visitors and researchers who unanimously agreed with the sentiment expressed by one expert that “if people knew about the conditions in the slums they might not go there” (Q23/Exp/Dhaka/20111205). This view appears to be shared not only by researchers (eg, Baker 2007; Black et al 2011a), but also, and importantly, by many newly arriving slum dwellers themselves. Expressed in simple language, many newly arriving migrants seem genuinely surprised by the adverse realities of daily life encountered in informal slum settlements and struggle severely for daily survival (not to mention the prospect of a life lived in dignity). This element of “surprise” is an important impediment to preparedness because the very manifestation of “surprise” itself suggests that an adversity was unanticipated or unforeseeable and therefore could not be adequately “prepared” for. These “surprise matters” will be discussed separately in Section 7.3.

In summary, both environment related push factors and non-environment related push factors are working in concert to induce (or enhance) migration from areas that are coming under pressure from climate change impacts. The problems are intricate indeed, as the following questions suggest:

- In Bolivia, is “unemployment” (Figure 4.14) merely a non-environment related push factor or is it a direct result of environmental degradation highlighted by failing crops brought on by the number one environment related push factor “slow onset disasters (eg droughts)” (Figure 4.13)
- In Bangladesh, is “unemployment” (Figure 5.16) merely a non-environment related push factor or is it a direct result of environmental degradation highlighted by the number one environment related push factor “erosion/land loss” (Figure 5.15)
- In Maldives, are “better opportunities elsewhere” (Figure 6.11) merely non-environment related push factors or might the situation be caused (in whole or in part) by the number one and number two environment related push factors “erosion/land loss” and “sudden natural disasters (eg windstorms)” (Figure 6.10)

Given the very real possibility (if not probability) that environment related push factors are *closely related* to non-environment related push factors makes the attempted dis-

2 Defined by McKean (2005, p. 1685) as “of a lower order of being than the human [or] not worthy of a human being.”

aggregation of underlying causality a futile, if not nonsensical, undertaking. Furthermore, trying to “prove” that climate change is *the* underlying causal driver behind the environmental degradation seems even more impractical. In the simplest of terms, this research seems to indicate that environment and non-environment related push drivers *reinforce each other*, thus creating conditions conducive to even more migration pressure.

Unfortunately, the problem of disaggregation is not made easier by the introduction of migrant aspirations as another variable which is additionally intertwined within the mix of issues involved. As elaborated in Section 2.2, most migrants concurrently “run from” and “run towards”, and are simultaneously “pushed” and “pulled”. Pertinent issues are explored next.

(2) Pull factors and “disaggregability”

Interestingly, despite nuanced variations between case study locations, migrant aspirations or “pull factors” seemed more closely correlated than migration “push factors”. Of ten possible migrant aspirations, the same “top four” aspirations similarly emerged in Bolivia (Figure 4.15), Bangladesh (Figure 5.17), and Maldives (Figure 6.12). While there was some variation with respect to order or ranking, all case studies highlighted the prioritisation of the following “top four” priorities: “employment”, “better or higher education”, “better health care”, and “moving together with the family” (Figures 4.16, 5.18 and 6.13).

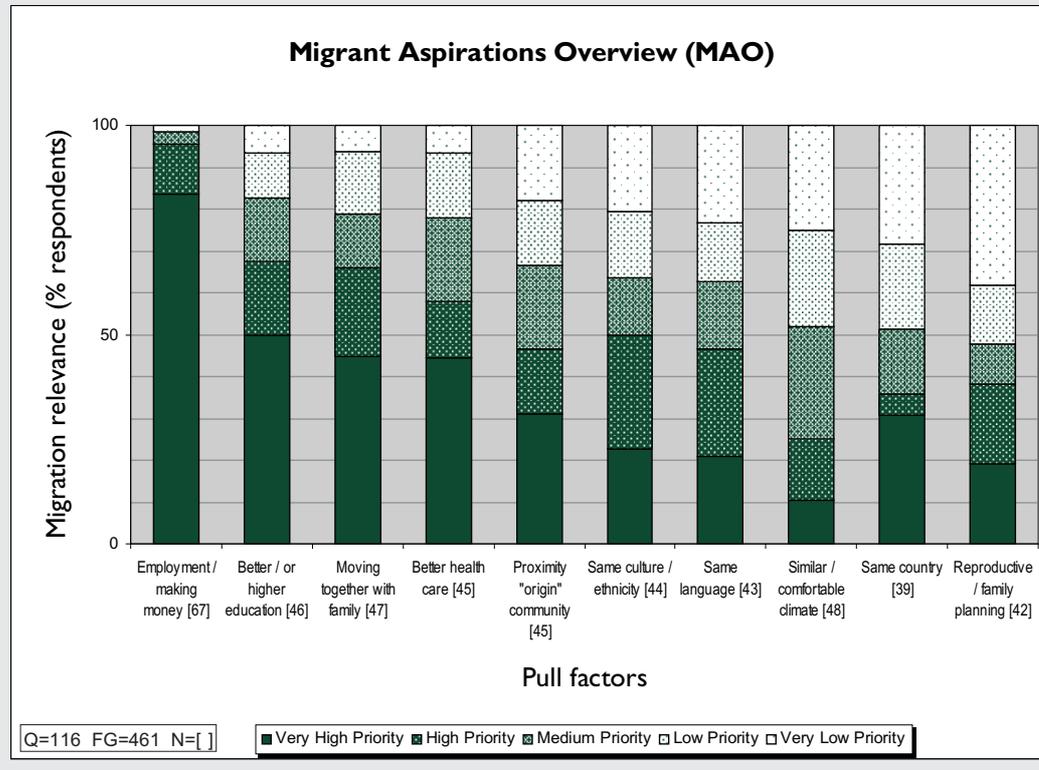
This finding may be an important starting position for policy makers seeking to identify and enable more equitable (or at least benign) forms of forced migration. At its simplest, by catering to the aspirations of migrants policy makers may influence migration processes and outcomes. Expressed in simple language, if service provision is expanded and felt needs are met in strategically selected “future-proof”³ locations, migration may be directed and/or re-directed by policy makers to meet macro-demographic planning objectives that concurrently address migrant aspirations *and* sustainability requirements.

While it would have been absurd to collate environment related push factors across case studies seeing that locations were intentionally chosen to be environmentally *dissimilar*,⁴ it did appear to make good sense to collate migrant aspirations across all case stud-

3 ie, locations that are thought unlikely to be eroded or compromised by progressive climate change or consequent environmental degradation.

4 In Bolivia there were “no rises in sea level” (Figure 4.13), in Bangladesh “insufficient drinking water” (Figure 5.15) was migration irrelevant, and in the Maldives respondents indicated there were no “slow onset disasters (eg droughts)” (Figure 6.10).

Figure 7.1: Migrant Aspirations Overview (MAO): Comparative levels of prioritisation as ascribed by respondents [brackets = sample size]



ies. The following two consolidated figures reflect the aggregated desires or aspirations of forced migrants in *all* case study locations combined. Comparative levels of prioritisation respondents ascribed to each aspiration are presented by (1) a vertical-bar graph called “Migrant Aspirations Overview (MAO)” which reflects what migrants seem to seek the most (Figure 7.1); and (2) a table called “Migrant Aspirations Aggregate Index (MAAI)” which reflects weighted averages and ranks aspirations in order of ascribed priority from most important (top) to least important (bottom) (Figure 7.2).

These two figures seem to highlight three issues of importance. First, they reconfirm the top four aspirations already discussed above, including (in order of attributed importance) “employment/making money”; “better or higher education”; “moving together with the family”; and “better health care”. Second, they seem to list issues of familiarity as of medium overall desirability, including (in order of attributed importance) “proximity to the origin community”; living in/among the “same culture/ethnicity”; living where the “same language” is spoken; remaining in the “same country”; and living within a “similar climate”. Third, “reproductive/family planning” emerged as the aspiration which the highest percentage of respondents considered as having a “very low priority”: 38.1% (Figure 7.1).

This finding may have important implications for policy makers: seeing that high levels of demographic growth were an issue of relevance across all case study sites, including

Figure 7.2: Migrant Aspirations Aggregate Index (MAAI):
 Combined data includes responses from Bolivia, Bangladesh and Maldives (N=[]) (Ranked in order of ascribed priority from most important (top) to least important (bottom))

Aspirations of forced migrant communities	Ascribed importance
Employment/making money [67]	4.76
Better or higher education [46]	3.93
Moving together <i>with</i> the family [47]	3.83
Better health care [45]	3.73
Proximity to the <i>origin</i> community [45]	3.27
Same culture/ethnicity [44]	3.16
Same language [43]	3.07
Same country [39]	2.90
Reproductive/family planning [42]	2.67
Similar climate [48]	2.63

Ascribed importance: weighted average calculated from assigned values: very high priority = 5 points; high priority = 4 points; medium priority = 3 points; low priority = 2 points; very low priority = 1 point.

the Pacific atolls of Tulun and Nissan where the pilot study was conducted (Section 3.6), and seeing that this aspiration was essentially dismissed as an issue of perceived significance by the maximum percentage of respondents who rated it as having a “very low priority” suggests that policy attention may need to be directed not merely towards what migrants “want”, but also towards what migrants may “misconceive” as having little relevance to them – if indeed the premise is accepted that high population growth is a problem at all (Ehrlich and Ehrlich 2013).

As already indicated, there were also thematic commonalities shared across case study locations which seem to hold significant policy maker promise, including “surprise matters”, a promising preparedness opportunity similarly relevant in all field research locations. This is discussed next.

7.3 “Surprise matters”: A promising preparedness opportunity

It was evident throughout field research in all case study locations that a majority of migrants appear genuinely “surprised by surprise”⁵ as unexpected realities are encountered

5 A Spanish language publication on this research with the same title in Spanish is available: Luetz, J M and Barrón W (2012) Sorprendido por la sorpresa: Investigación realizada en las comunidades guaraníes del Chaco boliviano desplazadas por la sequía. *Revista de la Fundación Global Democracia y Desarrollo (FUNGLODE)*. No 46. Páginas 46-53. (Appendix C)

in urban areas of in-migration.⁶ This “element of surprise” was especially noticeable in younger or first-time migrants. While the examples in Section 7.3 are primarily drawn from the Bolivian context, the generic issues are cross-cutting and similarly pertinent in other country contexts. As alluded to in Section 7.2, the manifestation of “surprise” in migrants is very significant from a “preparedness” point of view since the very existence of “surprise” obviously suggests *un*-preparedness. The rather stark contrast between a subsistent and self-sufficient agriculturalist lifestyle and the adverse socioeconomic realities encountered in urban environments, including cultural dissimilarities, economic exploitation, ethnic discrimination and language barriers, can combine to overwhelm the coping capacity of many young migrants who appear inadequately prepared to make a smooth and successful transition. This section will look at related challenges and opportunities.

A meeting with Don Dionisio and his wife Aurelia Camargo in the shade under a tree near their home in the Community of Ivamirapinta is representative of conversations with respondents in communities of investigation in all case study locations. Granting permission to share his name, photo and life story details, Mr Dionisio recounted in simple Spanish what his experience of seasonal rural-urban migration had taught him about the value of migrating with realistic expectations in place (Figures 7.3 and 7.4).

“My name is Dionisio Pérez Manuel, my wife is Aurelia Camargo, and presently I am an elder at the Unión Cristiana Evangélica Church here in the Community of Ivamirapinta ... When I was 15 years old I left my community to work in the *zafra*⁷ thinking that I would find it easier there financially and be able to save [money]. But I couldn’t. I worked one season and all went well... But the second year my colleagues invited me to drink. By the third season I joined them in earnest, and [soon] felt like a failure. I also couldn’t save, and the money wasn’t enough. At 20 years of age I started a family and carried on with that habit, because nobody had prepared me, nobody had educated me, nobody had advised me that it was amiss to spend my money on drink ... [Eventually] I realised that what I was doing wasn’t good and tried to change trade ... and to design [furniture]. Up to this day I support myself like this – it pulled me out of my dire straits. Now I share these experiences with the youth of this community, my people. I tell them not to go down that path, I advise them to study. There is so much to *prepare* for the future, so as not to suffer. This I explain to all the young ones, also to the adults, the mar-

6 In Bolivia areas of in-migration comprise rural areas in proximity to urban conglomerates (eg La Bégica is located only 41km from Bolivia’s largest city Santa Cruz de la Sierra).

7 The term “*zafra*” [sugarcane harvest] is used in the Bolivia case study (Chapter 4) to denote the experience of hard exploitative labour associated with sugarcane harvesting and processing. Migrating *a la zafra* indicates the intention of seasonal labour migration. A study called “Caña dulce, vida amarga” (Sweet cane, bitter life), conducted by the International Labour Organization (ILO) and the United Nations Children’s Fund (UNICEF), found overwhelming evidence linking *zafras* to blatant child rights abuse and child labour (Mosquera et al 2004).



Figure 7.3: Dionisio Pérez Manuel (right) and his wife Aurelia Camargo (middle) talking to interpreter and research assistant Wendy Barrón about unanticipated migration problems in the Community of Ivamirapinta on 17 December 2010. (Q18/Migr/Orig/Ivamirapinta/20101217; Photo: Johannes Luetz)



Figure 7.4: Dionisio Pérez Manuel and his wife Aurelia Camargo in the Unión Cristiana Evangélica Church in the Community of Ivamirapinta on 17 December 2010. (Q18/Migr/Orig/Ivamirapinta/20101217; Photo: Johannes Luetz)

ried and members who come to our church. I ask them to educate their children, showing love and affection. That's now my current job.” (Q18/Migr/Orig/Ivamirapinta/20101217; emphasis original; Spanish verbatim citation available in Appendix E.9, and in Luetz and Barrón 2012, p. 49)

Throughout field research similar commentaries highlighted how migration may undermine the sense of unity, identity and harmony developed over time, particularly in indigenous Guaraní families. The homogeneous and tight-knit cultural identity of trust and interdependence formed over generations in rural communities can be eroded by the forces of urban lifestyles characterised by anonymity, individualism, loneliness and heterogeneity. Traditional Guaraní ethnoculture, once at the core of young people's identity, is gradually exchanged for a heterogeneous youth culture of urban gadgets, mobile phones, computer games and tattoos, city “souvenirs” that migrants sometimes show off during visits to their home communities when they “talk up” the benefits of city life while concealing personal struggles. The effects of exaggerating the benefits of city life, while downplaying challenges, appears to coax ever more young people to follow a train

of inadequately prepared young migrants to hit it big in the cities. But the prevailing conditions encountered leave some of them with sexually transmitted diseases (STDs) and emotional scars (Q4/Exp/Orig/Charagua/20101209).⁸

Another key informant interviewed in communities of origin discussed important dissimilarities between rural and urban lifestyles which can lead to *ill*-prepared or even *un*-prepared migrations that may leave migrants “surprised by surprise”:

“Migration was always a custom/tradition, but the drought aggravated it. When people have nothing they leave. Many don’t return. Instead, they join the ranks of the urban poor. But often they have more dignity here [in the rural communities] than in the cities. [...] Even in poverty, here people have dignity. [...] Migration impacts young people: they go, stay for a while [in the cities], and come back, at times with bad habits (alcohol, drinking, drugs, etc) and a proud attitude: ‘I know the world, I’m better than those who stayed!’ [...] Young people want to leave, they no longer feel satisfied with the rural way of life of the older people. [However], similar to the story in the Bible [Parable of the Prodigal Son, Gospel of Luke, Chapter 15] a number of young people return to their rural communities after experiencing urban hardships while away. [...] Families should reflect with the youth, ... sharing about the reality of migrating, especially from father to son; they need to nurture trust and reflect honestly on the difficult implications of migration.” (Carlos Lazarte; Q13/Exp/Orig/El Cruce/20101215)

It seems that reducing the odds of migration “surprises” requires preparedness that is informed by realistic expectations and reliable information. In fact, access to high quality information seems to be a decisive success factor for negotiating and mastering difficult situations, a point noted in the disaster management literature: “Information is power. Access to high quality information enables [disaster] affected people to define and demand accountability, based on their own expectations and standards. It also allows them to plan...” (Telford et al 2006 p. 19, cited in Luetz 2008 p. 47). If offering access to information enhances planning reliability and recognises people’s agency, then inversely, “lack of information ... greatly limits their capacity” (Christoplos 2006 p. 10, cited in Luetz 2008 p. 47; see also Telford et al 2006 p. 19), a point underscored elsewhere in the disaster response literature: “Lack of access to information is causing discontent within communities, even spilling over into anger and resentment” (Eye on Aceh 2006 p. 39, cited in Telford et al 2006 p. 53). “In short, information is an effective weapon against helplessness because it empowers those who have access to it ... Being informed means being empowered” (Luetz 2008, p. 47).

8 Attributed to Giovana Perez (Visión Mundial Bolivia, PDA Koe Iyambae).

The following account by a migrant reflecting back on his first and only experience of labour migration shows how information is sometimes deliberately withheld for exploitative purposes:

“People who go to the *zafras* are easily exploited by independent contractors who over-promise and under-deliver. People leave and migrate with unrealistic expectations. When I was younger I also went to work in the *zafra* once. My supervisor showed me my quarters and said: ‘whenever you want to eat something, just ask and say what you want to eat.’ After the first month [of work] the man came back with a thick bundle of banknotes. He said: ‘here is your pay of 600 Bolivianos.’⁹ But before giving me my wages he yelled to the catering service: ‘how much did B. consume?’ [...] Then he told me: ‘you ate for 1,000 Bolivianos.’¹⁰ Your pay, minus meals, minus what you owe me for the journey to work here... you still owe me 600 Bolivianos. [...] What could I do? No one had told me what to expect! I wish the government would regulate [the work place]. NGOs and community based organisations should help to *prepare and inform*.” (Unidentified 38-year-old respondent; Q16/Exp/Migr/Orig/Camiri/20101216; emphasis original; cf, Simón et al 1980)

Does the city take advantage of the *campesinos*? In an expert interview Visión Mundial Bolivia Regional Manager Gualberto Carballo characterised Guaraní identity in Bolivia’s Chaco: “The Guaraní is a person who does not project himself into the future, he lives for the moment; the Guaraní shares his *chaquito* [small plot of maize farmland] and his earnings with the rest of the community and does not think about generating wealth or bequeathing an inheritance which to him are irrelevant.”¹¹ (Q19/Exp/Orig/Camiri/20101218; Spanish verbatim citation available in Luetz and Barrón 2012, p. 49)

“Many of those who come back [after the *zafra*] are more frustrated, more disillusioned. They borrowed money to travel but often return with no money or even indebted ... As a coping mechanism people go to the *zafra*, take the kids with them, but then get sucked into worse conditions. People lie to them about what their wages and provisions (eg, housing, food, etc) will be. Some migrants return in worse conditions than when they left [Navia 2010] ... *Preparación* [preparedness] means *(providing the necessary) information up-front*.” (Gualberto Carballo S., Visión Mundial Bolivia; Q19/Exp/Orig/Camiri/20101218; emphasis original)

9 Approximately US\$ 87 (ie, on the day the interview took place: 16 Dec 2010; Section 1.7).

10 Approximately US\$ 146 (ie, on the day the interview took place: 16 Dec 2010; Section 1.7).

11 Although this characterisation appears to be a somewhat idealistic picture of Guaraní sociocultural identity this research did not uncover any evidence that would contradict the statement. A verbatim Spanish language rendition of this statement is available in Luetz and Barron 2012, p. 49: “El guaraní es una persona que no se proyecta en el futuro, vive el momento; el guaraní comparte su chaquito, sus ganancias con el resto de los miembros y no piensa en generar riquezas, no le es relevante un patrimonio.”

Figure 7.5: Share (%) of urban populations: Bolivia, Bangladesh, and the Maldives for selected years

Urban Pop.	1960	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011
Bolivia	36.76	39.78	45.45	55.58	61.83	64.19	64.63	65.07	65.52	65.96	66.40	66.81
Bangladesh	5.14	7.59	14.85	19.81	23.59	25.64	26.09	26.54	26.99	27.44	27.89	28.39
Maldives	11.17	11.89	22.25	25.84	27.71	33.75	34.99	36.25	37.50	38.75	39.99	41.11

(Source: World Bank 2011a, 2011b, 2011c; World Development Indicators WDI, 2011)

In view of the fact that in all case study sites some urban dwellers prey on and take advantage of the good faith, innocence, inexperience and/or ignorance of many new arrivals it stands to reason that heightening preparedness implies raising awareness of pertinent rural-urban differences and difficulties *before* these are encountered. While this appears to make sense irrespective of climate change, it seems even more important in view of the expectation that climate change could further increase the rural-urban drift.

As noted in Section 5.2, this possibility appears particularly pertinent in Bangladesh where the extent of urbanisation is far less “mature” than in Bolivia and Maldives, and importantly, where the population size is significantly greater (Figure 7.5). Comparing Bolivia and Bangladesh makes the point clear: if urban conditions are experienced as “surprisingly adverse” in a context where 66% of 10 million people have already urbanised (ie, Bolivia), what will the future situation be after the same percentage of 150 million people have urbanised (ie, Bangladesh)? What preparations will policy makers and urban planners in Bangladesh need to make to accommodate a rise in urban population from 42.6 million (ie, 28.39%) to 100.2 million (ie, 66.81%; Figure 7.5)? Indeed, indications are that this process is underway right now, with a World Bank paper reporting that Dhaka is already the “fastest growing mega-city in the world” (Baker 2007, p. xiii), and that projections suggest that it will “grow to 20 million by 2020, making it the world’s third largest city” (Baker 2007, p. xiii).

Importantly, if urban planning is not counterbalanced by rural development it is highly likely that *even more* people will flock to the cities to meet their aspirational priorities, seeing that this research has shown that aspirational ambitions are a key driver directing migration.

As made clear in Section 5.7, climate change impacts have the tendency to compound existing vulnerabilities and can at times even be identified as the primary “triggers” or tipping elements that push people “over the edge”. In this context it clearly appears sensible to try and minimise any elements of “surprise” associated with processes of rural-urban migration.

7.4 Review of dissertation chapters and sections

Having noted commonalities, cross-cutting issues and preparedness relevant policy opportunities in Sections 7.1 to 7.3, Sections 7.4 to 7.6 will now move the analysis to a meta-level to canvass aspects of the universality of the problem of climate change related migration. This section will now offer a succinct review of dissertation chapters and sections.

As made clear in the introduction (Chapter 1), and especially in Section 1.1, this dissertation was inspired by previous community level disaster risk reduction and climate change preparedness research conducted for the international humanitarian organisation World Vision. It was essentially motivated by a desire to add a qualitative and quantitative dimension based on systematically applied methodology and empirically derived data.

As elaborated in the literature review (Chapter 2), academic scholarship in the area of this multidimensional research is plagued by numerous difficulties, including definitional diversity (Section 2.2), multicausal “disaggregability” (Section 2.3), predictive problems (Section 2.4), legal limbo (Section 2.5), and most importantly, a discourse that is dominated by “experts” and lacking in both *local-level* and *interdisciplinary research* which expressly invites the experiences, perspectives, contributions and aspirational ambitions of climate migration affected individuals and communities (Sections 2.6 and 2.7).

The conceptual framework and methodological approach (Chapter 3) was essentially constructed to address these research gaps. A review of the very earliest assessment reports published by the Intergovernmental Panel on Climate Change (IPCC) in 1990 and 1992 clearly highlighted that early scientific knowledge in this arena of multidimensional research was significant but did not translate sufficiently into corresponding preventative and/or preparatory policy action (Section 3.2). This finding actuated the inception of the study’s “preparedness paradigm” (Section 3.3), informed the choice of case study locations (Section 3.4), influenced the local level fieldwork approach and questionnaire design (Section 3.5), and propelled a pilot study which trialled the data gathering method in the context of a relocating atoll islander community (Section 3.6). Chapter 3 concluded by making reference to additional fieldwork in India (Appendix A) and the Philippines (Appendix B) which helped to inform this research but was not ultimately included in this study (Section 3.7). While the inclusion of additional case study countries and chapters did not prove feasible within the budgetary constraints¹² of time and resources available for this study, including dearth of essential translation and transcription

12 Financial support from UNSW on the order of \$4,500 to pay for essential research translation and transcription work was helpful and is gratefully acknowledged. However, the amount fell far short of covering the Philippines and India legs of the field research visits.

support, fieldwork findings from these site visits are nevertheless broadly supportive of the conclusions presented in this chapter.

The first case study was conducted in Bolivia (Chapter 4), the second in Bangladesh (Chapter 5), and the third in Maldives (Chapter 6). Despite minor structural differences between these chapters which mainly arose from contextual dissimilarities, all case study chapters were uniformly organised into the same seven sections for ease of cross-comparisons. Section one provided a succinct chapter overview. Section two discussed the climate change and human migration situation in the country concerned. Section three mentioned methodological specificities and statistics relating uniquely to that case study. Section four discussed quantitative and qualitative field research findings, including migration relevant environmental and non-environmental pressures (“push factors”), and migrant aspirations (“pull factors”). Section five critically examined core issues raised by the research in that country. Section six contained a case study synthesis and key discussion. Section seven concluded with tentative policy recommendations which pertained uniquely to that *particular* country context.

The next section will attempt to bring all case studies together in a cross-cutting synthesis of the main findings of this research.

7.5 Synthesis of the main findings of this research

This section will present a highly distilled synthesis of main research findings and policy implications, whereupon this dissertation will be concluded with closing reflections on its attempted contribution to scholarship (Section 7.6) and a shortlist of pertinent policy recommendations that seem to be universally applicable in all case study contexts (Section 7.7). As stated in Section 7.2, specific policy recommendations which apply uniquely in each case study context (Sections 4.7, 5.7, and 6.7) will not be rehearsed again except to the extent that they are *universally* relevant and not contextually constrained. This is a deliberate approach which is suited to this study’s design and emphasis (Section 1.7).

(1) Inviting the contributions of migrating populations increases their agency

This study has found that climate migrants are not just responding to a push of environmental factors but are also pulled by aspects of potential destinations. This is an important finding given that much of the scholarly literature (Chapter 2) stresses migration primarily as a response or coping mechanism. Individuals and communities affected by climate migration are greatly constrained by circumstances but they do have agency – and they do have much to teach scholarly “experts” about well-managed migration. This is crucial for any planning. Their hard-earned survival skills, migration expertise and

overall human resilience are valuable and enlightening requisites that are insufficiently reflected in academic climate migration discourse and insufficiently incorporated into the process of macro-policy development. Of course, talking to migrants is not new – the whole of migration research is based on talking to migrants and non-migrants (eg, Hugo 1996, Suhrke 1993, Bélanger and Rahman 2013, Dannecker 2013). However, more intentionally soliciting the participation and contributions of migrating individuals and communities seems to be critical for the identification and implementation of community level adaptations and migration solutions which are contextually suited to their needs and aspirations. Inviting *their expertise* rather than “solving” their problems *for them* increases people’s agency and becomes a promising starting position for collaboration (Kenny 2011, Chambers 1997, Ife 2010; Brunner and Lynch 2010, pp. 102, 241; Luetz 2007, 2008, pp. 45-49).

(2) Policy maker foresight is an important success factor

Natural disasters and environmental change – of which climate change is a part and to which it contributes – can combine with other problems to swiftly overwhelm collective communal coping capacities. The resultant situations may be experienced as so frightful and exasperating as to trigger unplanned *ad hoc* migration responses which are lacking in critical preparation, coordination, and funding support. On the other hand, proactively planned migration is experienced by migrants as vastly more positive than *ad hoc* displacement, especially if it is actively sponsored by macro-policy support (Sections 6.6 and 6.7). Approaching climate migration proactively seems to make sense, a view which is broadly shared by respondents in communities of origin and destination. Policy maker foresight and anticipatory migration preparedness can prompt and promote proactive migration in such a way that critical preparations can enable a more benign migration experience where the element of force is more muted. The important caveat is that critical preparations are made *before* these are needed, and that affected communities are *actively involved* in the planning process. In the simplest of terms, forced migration may result where voluntary migration is delayed (cf, Foresight 2011). Progressive climate change and advancing environmental degradation in all fieldwork locations appear to make more forward-thinking migration planning a more and more critical success factor.

(3) Positive migration outcomes may be enabled through carefully targeted service provision

It is a clear finding of this research that there is a migration “tipping point” which is commonly shared across all strata of society (and across all case study sites) at the precise point in time when livelihoods are compromised beyond reasonable hopes of recovery.

When this point is reached, people migrate. Hence livelihood security appears to emerge as the last line of defence beyond which uncontrolled migration may be unavoidable. The creation of sustainable livelihoods in predominantly rural areas is therefore thought to be an important priority for migration planning and preparedness informed climate change adaptation. Meeting popular aspirational ambitions can be a powerful conduit for macro-managed migration. By intentionally aiming to meet aspirational pursuits in carefully preselected areas, policy makers may deflect population pressure away from ecologically fragile or unsustainable environments while concurrently meeting other macro-demographic planning objectives and sustainability requirements. Finding ways to ensure food security, water security, and livelihood security in the 21st Century context of progressive climate change, environmentally degenerative conditions, looming resource depletion and rampant biodiversity losses remains a formidable policy challenge. This contextual reality makes it all the more important that migration planning be carefully informed, guided and enhanced by hindsight, insight and foresight.

(4) Adaptation measures should be supported both in situ and ex situ

Climate migrants appear to want to stay *in* their countries – if at all possible. This makes adaptation measures *in* their countries an urgent priority. This finding challenges the notion presented in other research that “floods”, “streams”, “tides” or “tsunamis” of people are seeking to migrate to Western countries in the Global North (Stern 2007 p. 173, cited in Bettini 2012 p. 66; Dupont and Pearman 2006, Australian Government 2009, Bogardi and Warner 2009, Christian Aid 2007, Knight 2009). This research does not corroborate such expectations. Instead it appears that for a majority of respondents the decision to migrate is more a matter of last resort rather than one of first choice. With respect to “preferred” migration destinations it also seems that the “premise of preference” may be an unfathomable starting position for many poverty constrained forced migrants who have rarely been afforded the “luxury of choice”. While some people cannot afford to stay, others cannot afford to go. Migration is very expensive and has many hidden financial and social costs (Section 4.5 (6) Cost appraisal matters). For many would-be migrants mobility appears to be a prohibitive climate change adaptation strategy. And many of those who do decide to move “are as likely to migrate into places of environmental vulnerability as away from them” (Black et al 2011a, p. 448). From a policy maker perspective this makes it advisable to develop both *in situ* adaptation measures to assist those who stay (eg, education, livelihoods assistance, reforestation, drought resistant crops, etc.) as well as *ex situ* adaptation measures to assist those who go (eg, seasonal or labour migration schemes, urban integration programmes, skills and language training, etc.)

(5) The “problem” of nomenclature may need to be reconceptualised as a non-problem

It is an unequivocal finding of this research that the problem of proper nomenclature – while hotly debated among academics (Section 2.2) – seems to be a non-problem in the minds of the overwhelming majority of migrants (Sections 5.4 and 6.4). Most climate migrants do not care nearly as much about issues of preferred nomenclature as the academic debate would seem to suggest. More to the point, it appears that by largely dismissing the views of migrating individuals or communities as not really worthy of solicitation, the scholarly debate appears to be primarily preoccupied with promulgating the various normative preferences, political agendas, ideological allegiances, preferred futures, and/or organisational mandates of the relevant scholars or research institutions involved (Cournil 2011, p. 359-360, Bettini 2012, p. 64). In light of the very harsh circumstances of many respondents the questions of “preferred nomenclature” seemed intrinsically meaningless and almost farcical, and there was astonishingly and consistently little or no interest to engage. Notwithstanding, some interesting alternative terms were suggested in Bangladesh (ক্ষতিগ্রস্ত “Khotigrosto” = damaged, harmed, injured person; বাস্তুহারা “Bastohara” = displaced/landless person; অভিবাসী “Avibashi” = immigrant, migrant; Section 5.4) and Maldives (هِجْرَة كُرَا مِيهُون “Hijura Kura Meehun” = people who migrate; بَدْحَالُو وَا مِيهُون “Badhalu Vaa Meehun” = people who move; Section 6.4). It is conceivable that migrant interest in nomenclature may increase if in the future certain terms are imbued with and coupled to “entitlements”. At present, there are no entitlements claimable by migrating populations¹³ in all fieldwork locations, wherefore in the minds of most migrants the question of preferred nomenclature is reduced in significance to a matter of irrelevant semantics.

(6) Strengthening government capacity may enable more positive planned migrations

People movements in both Bolivia and Bangladesh are overwhelmingly imperceptible to policy makers and happen outside of their field of vision and monitoring capacity. Moreover, the vast majority of human movement occurs quite apart from any significant levels of institutional or policy support. By contrast, migration in the Maldives was overwhelmingly characterised by strong governance, proactive planning, community participation and forward-thinking macro-level coordination and financial support. The migration outcomes are polar opposites. While migration in Maldives was perceived as far from perfect, respondents nevertheless viewed their government coordinated pre-planned migration initiatives as inherently positive. In Bolivia and Bangladesh, on the other hand,

13 Irrespective of whether or not climate change is thought to be implicated in the migration process as a causal factor.

respondents regarded their own personal migration experiences as predominantly solitary, distressing, arduous, afflictive and even regrettable. These differential experiences seem to indicate a clear need to strengthen the capacity of local level government agencies, and to implement stronger and more accountable and responsive state institutions. This appears to be an especially urgent priority if the power vacuum in “state-absent” areas in urban slums is not to remain filled by “mastaans” or local gangsters (Section 5.6), and importantly, if the mounting needs for upscaled services desired by the urban poor are to be adequately met. This may enable more positive planned migrations.

(7) Education is the ultimate migration preparedness requisite

There is overwhelming evidence that a majority of migrant children in Bolivia and Bangladesh are not attending school but are instead helping their parents as full- or part-time income contributors. In the Maldives the main impediments to education are predominantly related to the archipelago’s geospatial properties. There is overwhelming evidence that the solution to subhuman slum subsistence lies in education. A vast majority of migrant respondents interviewed in Dhaka and Chittagong (Bangladesh) indicated “primary school” or “no schooling” as their highest level of educational attainment, and in Santa Cruz (Bolivia) the result was only marginally better. In both of these countries the average number of school years completed by slum dwelling migrants is likely to be no more than a few years of primary school. Naturally education raises options, and inversely, lack of education limits them. There can be no doubt that the unequivocal remedy with which to tackle both present and possible future forced migration scenarios will invariably involve a heightened commitment to free and compulsory education for all. This needs to be understood and prioritised as “no regrets” good development practice which will pay dividends irrespective of which climate change scenario is ultimately realised. Moreover, education also represents sound preparedness practice in general and will both heighten community resilience and improve overall well-being and the future prospects of children. Enhanced options for international migration in the future may also become more viable to a more highly educated populace. At its simplest, education is the *sine qua non* for all future migration preparedness.

7.6 Conclusion and PhD contribution to scholarship

Before concluding this Doctoral Study with a shortlist of policy recommendations (Section 7.7), this penultimate section will attempt to discuss some of its motivation, findings, implications, limitations and attempted contribution to scholarship. It will also sketch opportunities for further research.

As established by field research in Bolivia (Chapter 4), Bangladesh (Chapter 5) and the Maldives (Chapter 6), and as already noted during the discussion of pertinent issues in Sections 7.1 to 7.5, this research confirms the thesis of this Doctoral Study that preparedness directed climate migration is inherently preferable to delayed and/or *ad hoc* migration responses that are not initiated by foresight but triggered by sudden flight as may be provoked by climate disasters. Given that anticipatory migration may forestall problems *before* conditions deteriorate beyond reasonable hopes for displacement with dignity, and importantly, *before* leading to humanitarian emergencies requiring *ad hoc* responses, preparedness informed migration seems unequivocally reconfirmed as the policy posture of choice.

As also highlighted in all case studies, reasons for migration are numerous, interdependent and complex, making it essentially impossible to disaggregate the intertwined mix of reasons why people decide to move. Hence a monocausal attribution of reasons why people migrate appears methodologically unsound, given that reasons for migration are inclusive, not exclusive (Betts 2010, p. 378; Brown 2008, p. 9; CEEMA 2010). However, this should not be misconceived as implying that climate change is not a major causal factor in migration. While conceiving of climate change and migration as a chain of cause and effect is too simplistic, de-linking the two issues seems even more untenable, seeing that “absence of evidence about a [causation issue] does not imply evidence of absence of a [causation issue]” (Myers and Kent 1995, p. 29).

On the contrary, it seems that the relative contributing role of climate change to migration is substantial and growing (Brown 2007, p. 18). Referring to work done by Hugo (2010, pp. 9-35), Castles states that “it is already possible to identify the ‘hot spots’. This does not mean that we should adopt a mono-causal approach: the complex interlinkages with other factors will remain operative, but *the climate change component is likely to become increasingly significant*” (Castles 2010, p. 244; emphasis added). In short, while associating migration and climate change appears inherently onerous, disassociating the two issues appears innately untenable.

Although this linkage is not newly discovered (Section 2.3), it nevertheless raises some important questions which intersect with this research. This has to do with public perceptions and the way climate migration has been framed and constructed in academic discourse. For example, will the perception of a “smaller” potential threat engender less preparedness action to avert it than the perception of a “more serious” potential threat – or vice versa? In other words, will a bigger potential problem spawn more mitigation, or simply more “psychological denial”? (Diamond 2005, pp. 435-436) How should the message of climate migration be divulged in the public domain? Are numerical predictions of future migrations helpful or unhelpful for the promotion of preparedness, seeing

that the issue of climate migration is inherently immeasurable in precise quantitative terms? (Section 2.4)

Evidently, exaggeration, scare-mongering or baseless whistle-blowing are unhelpful strategies because “[t]he public may dismiss warnings because of previous warnings that proved to be false alarms, as illustrated by Aesop’s fable about the eventual fate of the shepherd boy who had repeatedly cried ‘Wolf!’ and whose cries for help were then ignored when a wolf did appear” (Diamond 2005, p. 434). On the other hand, deliberately downplaying a problem which is perceived to be real and growing appears deceptive, counterintuitive and even unethical. Just what the right balance and public messaging should be with respect to preparing for more future climate migration appears to remain a formidable dilemma.

As noted in Section 5.2, some academics and staff of international organisations appear to be in the habit of calling numerical predictions of large numbers of future forced migrants – or the alarmed scholars and articles propagating anticipatory action – as “alarmist” (McAdam and Saul 2010, p. 238; McAdam 2011 p. 11, IOM 2010, p. xv, 31, Gemenne 2009, Piguat 2013, pp. 154-155; Piguat et al 2011, pp. 4-5; Tacoli 2009, Hartmann 2010, Bettini 2012, Q24+Q25/Exp/Dhaka/20111205). While accurate prognoses of future forced migration scenarios are inherently difficult, if not impossible, to make as amply made clear in Section 2.4, this researcher measuredly rejects the use of the term “alarmist” on the grounds that its everyday usage, including the definition given by the Oxford dictionary, seem to insinuate exaggeration: “alarmist ... someone who is considered to be exaggerating a danger and so causing needless worry or panic” (McKean 2005, p. 36). In light of the growing body of evidence linking climate change to the progressive erosion of livelihoods the very notion of “exaggeration” appears not only scientifically ill-informed but also runs counter to the very premise of preparedness which seeks to address or pre-empt problems before they materialise beyond reasonable hopes of resolution (UNISDR 2011, Díaz et al 2010, p. 102 para 2b, 4; Mariscal et al 2011, pp. 14, 20; Marshall 2012, Medina-Elizalde and Rohling 2012, p. 956; Kennett et al 2012, p. 791; Brainard et al 2009, Kümmerer et al 2010, Mendelsohn 2009, p.126, Mariscal et al 2011, World Development Report 2010, p. 137; IPCC 2012, UNDP 2007, p. 39; cf, Brown 2007, 2008, 2008a).

Expressed in simple language, “[i]f local climate changes become so severe that farming can no longer support families, people will have to migrate, which is clearly disruptive” (Mendelsohn 2009, p.126). Importantly, such a migration response is not some distant future potentiality but is a coping mechanism already being applied by subsistence farmers in Bolivia right now (Chapter 4). By insinuating that, conceptually speaking, climate migration is a non-problem, or that the issue may be vastly exaggerated, or by dismissing preparatory advances that cite numerical predictions as a basis for action as

“alarmist rhetoric” (McAdam 2010d, Bettini 2012, Gemenne 2011, Piguet 2013), scholars seem to be inadvertently hampering the very preparedness and policy progress that could otherwise be getting underway. If circular debates about “nomenclatural correctness” (Section 2.2) could finally give way to proactive policy preparations this breakthrough could have an immediate and practical benefit to climate migrants *today*. Incidentally, “nomenclature” was the only issue which respondents similarly and unequivocally dismissed as a “non-problem” in all case study locations (Section 7.5).

Even though climate migrants cannot be counted as just mentioned,¹⁴ either today or in some distant future, this does not mean that they do not exist as real people who are struggling with real problems which have been caused or enhanced by real climate change. The engagement with hundreds of climate migrants during the course of this research (Chapters 4 to 6) has demonstrated that climate change appears unmistakably implicated in migration in all case study locations visited and that its impacts are significant and inflicting human suffering, either directly or through secondary or tertiary knock-on effects.

Global estimates of those displaced now range on the order of 23 to 62 million people per year (Leighton 2012, p. 693; GFMD 2010, p. 38; UN-OCHA 2009, p. 9; UNDP 2007, p. 8, 30, 75). These figures are clearly “*alarming*” but not “*alarmist*”, seeing that human suffering on such an order of magnitude reflecting *present* climate related displacement can hardly be described or dismissed as “exaggerating a danger and so causing needless worry or panic” (McKean 2005, p. 36). On a similar point the Global Forum on Migration and Development noted that

“exact impacts of climate change on migration and development are difficult to predict because of the wide variation in estimates of global numbers of people that could potentially be affected, and because of terminological differences. For example, estimates of people affected by climate-induced disasters between 2000 and 2004 mention some 240 million or 62 million a year [cf, UNDP 2007, p. 8, 30, 75]. Another prediction suggests that up to 1 billion people may be forced to move between 2007 and 2050 [cf, Christian Aid 2007, pp. 1, 5, 22], which sounds a lot but, at some 23 million a year [UN-OCHA 2009, p. 9], is fewer than the estimates of 62 million a year for the period 2000-2004.” (GFMD 2010, p. 38)

By reinterpreting an “*alarming* problem” as an “*alarmist* problem”, and by insinuating that the problem of climate migration is either intangible, immeasurable, unprovable and/or exaggerated, recent scholarly discourse (Chapter 2) appears to have significantly hampered prospects for migration preparedness, thereby offering a definitive disservice

14 How should this be possible if some countries do not even know the precise number of their citizens, let alone internally “migrating” citizens (eg, Bolivia; Section 4.5).

to climate migrants. Incidentally, this outcome may seem unsurprising seeing that the majority of scholars have largely been talking to one another “about” climate migrants instead of engaging *en par* “with” climate migrants (Sections 2.3 and 2.7).

As Myers and Kent indicated nearly two decades ago, “[i]n a situation of uncertainty where not all factors can be quantified to conventional satisfaction, let us not become preoccupied with what can be precisely counted if that is to the detriment of what ultimately counts” (Myers and Kent 1995, p. 33). Yet precisely this outcome appears to have materialised, with much of the scholarly debate remaining preoccupied with theorising normative/ideological issues and nomenclatural confabulations to the detriment of promulgating *practical* local level solutions and pertinent climate migration policy preparedness. Unfortunately, this loss of time has translated into needless suffering for climate migrants as exemplified by the many testimonies in Chapters 4 to 6.

In summary, while this author concedes that confronting seemingly gargantuan challenges can lead to torpidity, inaction or “analysis paralysis”, it is worth reiterating that the very notion of preparedness suggests readiness *before* both need and certainty arise. Therefore, the mere possibility (not probability or certainty) of humanitarian scale displacements and resultant human suffering should be enough to invoke a response of preparedness, irrespective of whether or not large displacements will ultimately materialise. In this respect it is pivotal that the discourse is shifted in a practice oriented and policy development direction and that no further time is needlessly diverted to normative debates. With regard to climate migration preparedness there seems to be little or no discernible harm in assuming and preparing for large numbers of future migrants, and then celebrating if numbers are smaller. As the United Nations Human Development Report has advocated regarding climate change adaptation: “Hoping – and working – for the best while preparing for the worst, serves as a useful first principle for adaptation planning” (UNDP 2007, p. 198).

There are other difficult questions which intersect with findings from this research. For example, should migration be pre-planned even while there is inconclusive evidence about whether (or for how long) a community can persist in perpetuity *in situ*? Should migration be delayed until a hopeless future fate becomes blatantly apparent to all? Will there *ever* be enough evidence to convince everybody at the community level that evacuation is inescapable?¹⁵ What is the “right” timing for coordinated migration? Can/should

15 So-called “climate sceptics”, for example, are typically ideologically motivated to disbelieve the scientific evidence (Oreskes and Conway 2010, Washington and Cook 2011). In the persuasion of this author so-called “sceptics” should more fittingly be called “contrarians”, “denialists” or “rejectionists” since their ideologically entrenched positions are not generally characterised by a quest for truth, as in the case of veritable sceptics.

people be forced to migrate away from danger to safety against their will? (eg, Silverio 2012, ABS-CBNNEWS 2012, AFP 2013) Will early rhetoric about a looming doomsday scenario foreclose other options for *in situ* adaptation that may have the potential to stave off the fate of forced emigration altogether?¹⁶ In other words, should planned out-migration be regarded as a valid form of “*pre*”-sponding¹⁷ to environmental degradation brought on by changing climatic or environmental conditions, or is the notion of “planned exodus” unhelpful or even counter-productive to the process of identifying alternative forms of *in situ* adaptation?

These are very difficult questions that are not easily answered. In fact, they highlight the limitations of this research and point to the very questions that future research may explore. Notwithstanding, in the view of this author the above questions should not be framed as dichotomies. (Some examples include: Should one approach be promoted *or* an alternative response? Should adaptation to climate change impacts be promoted *in situ or ex situ*? Should policy makers focus on mitigating greenhouse gas emissions *or* adapting to the resultant effects?)

Dichotomistic approaches are unhelpful because they force a false choice, reducing a complex compote of responses down to either one prioritisation *or* another. For example, Barnett and Mortreux exemplify such a dichotomistic framework approach by stating that “...while migration may need to remain a possibility to consider for the future, *the emphasis now needs to be* on reducing greenhouse gas emissions on a global level to slow the rate of climate change, and on developing strategies to enable Tuvaluans to adapt in order to sustain life as they know it in the places they value.” (Barnett and Mortreux 2008, p. 111; emphasis added)

In this dichotomy, the importance of mitigation is advanced at the expense of exploring early migration opportunities. Such a dichotomistic approach appears to have the unfortunate consequence that more time is needlessly wasted because “the emphasis now needs to be” on something other than preparedness informed migration planning. This author begs to differ. Based on the evidence discovered during the course of this research it is not one approach *or* another, rather it is one *with* the others. Approaches need to be “multi-faceted” (Gibbons and Nicholls 2006, p. 47). Of course climate migrants need to

16 For example, “Barnett and Adger cite Tuvalu as a case in which negotiations over migration rights to New Zealand might have undermined foreign aid investor confidence and thereby indirectly undermined the potential for adaptive capacity” (World Bank 2012, p. 34; attributed to Barnett and Adger 2003). Investor confidence may have been similarly muted in the Maldives after former President Nasheed announced plans to buy land elsewhere as an insurance policy for unmanageable sea level rise scenarios (Schmidl 2009).

17 This neologism suggests a “re-sponse” prompted by previous awareness of a problem, hence a “pre-sponse”.

be assisted to remain *in situ* through appropriate adaptation and mitigation responses, *and* they need to be assisted to adapt *ex situ*, if they so choose, through the coordinated implementation of anticipatory emigration schemes. Similar sentiments are advanced by James Lovelock: “[t]he only near certain conclusion we can draw from the changing climate and people’s response to it is that there is little time left in which to act. Therefore my plea is that adaptation is made at least equal in importance to policy-driven attempts to reduce emissions.” (Lovelock 2009, p. 75) Adapting to climate change by enabling positive migration responses seems to be urgent. Preparations should begin now.

If anything has emerged as self-evident from the complexities of this multi- or interdisciplinary research it is the conclusion that the required raft of responses is both very broad and that numerous priorities need rather swift implementation at multiple levels *concurrently*. It is not one approach *or* another, rather it is one priority *plus several others* as well; and quickly, lest another 20 years be wasted as occurred in the wake of the earliest IPCC reports which first warned of impending climate migration in 1990 and 1992 (Section 3.2). More to the point, some of the climate migrations and consequent human hardships that now constitute the large body of research in this dissertation may well have been avoided or mitigated by proactive policy responses 20 years ago.

Research limitations and further research

As already made clear in Section 1.6, research limitations and opportunities for further fieldwork are discussed within the context of the cultural and locational specificities of each case study (Sections 4.6, 5.6, and 6.6). Notwithstanding, more generally speaking it is quite clear that more ethnographic, empirical and longitudinal case studies are needed (McLeman and Hunter 2010; Black et al 2011a, p. 449; Gray and Mueller 2012; Warner and Laczko 2008).

Naturally, this research has strengths and weaknesses. With regard to its perceived strengths it may be mentioned that shorter fieldwork study periods made the inclusion of multiple case study locations possible, giving the research “breadth” and the benefit of comparative analysis which transcends location specific perspectives. As explained in Section 3.7, this breadth of investigation includes research visits to countries and communities in India (Appendix A) and the Philippines (Appendix B) which were very valuable in informing wider research findings but were not ultimately included as individual case studies in this dissertation. In synthesis, inclusion of six countries in this research, namely Bougainville / Papua New Guinea (Section 3.7), Bolivia (Chapter 4), Bangladesh (Chapter 5), India (Appendix A), Maldives (Chapter 6) and Philippines (Appendix B), offered this research the benefit of meta-analysis.

Inversely, multiple case study sites and “breadth” of comparative analysis implied that an element of “depth” was sacrificed as a trade-off, essentially making this research more vulnerable to the criticism that insufficient time was spent in each location to fully comprehend all relevant elements of socioeconomic and ethnographic migration significance which are interacting with processes of climatic and environmental change (Black et al 2011a; Gibbons and Nicholls 2006). At the same time it may be mentioned that all three case study countries were visited twice, wherefore acquaintance with case study locations allowed subsequent visits to be more focused than might otherwise have been the case.

It may also be pointed out that virtually all field study sites were remote and inaccessible, making longer *in situ* research extremely challenging. Notwithstanding, despite these logistical and other difficulties involved, spending longer periods of time living among climate migration affected communities should be highlighted as a promising research agenda and rough road map how other researchers might need to proceed. Next, far more research on climate migrant aspirations is needed. While this work represents an elementary attempt at drawing out climate migrant informed priorities and approaches, tools such as the Migrant Aspirations Aggregate Index (MAAI) or Migrant Aspirations Overview (MAO) will need to be further questioned and strengthened. Such work could also include the development of a more refined composite index similar to the UN’s Human Development Index (HDI)¹⁸ which may incorporate the multidimensionality of the various climate migration factors involved. While the HDI has been criticised for masking intra-country disparities, it does have a number of distinct advantages which seem similarly applicable to the field of measuring and advancing climate migration preparedness: (1) the index accommodates multidimensionality; (2) it is not constrained by language or complex narrative; (3) it can be analysed and comprehended with ease; (4) it allows for comparisons between countries and over time; (5) it can be used as a benchmark for measuring progress or regress (UNDP 1990, 2013; Sen 1999, 2010; Morrison 2009; Haslam et al 2009; Castles 1998; Tilak 1992; cf, Landry et al 2007). All of these characteristics are clearly preparedness enhancing assets which could benefit the climate migration research agenda in the future. While it has taken more than 20 years to develop, use and refine the UN’s HDI (cf, UNDP 1990; 2013), long experimentation, development and refinement times should not be seen as problematical, especially in view of the long time frames in which climate migration will continue to evolve.

18 Predicated on the premise that “People are the real wealth of a nation” (UNDP 1990, p. 9), and that “development must go much beyond the accumulation of wealth and the growth of gross national product and other income-related variables” (Sen 1999, p. 14), the United Nations Human Development Index (HDI) is “a composite measure of indicators along three dimensions: life expectancy, educational attainment and command over the resources needed for a decent living” (UNDP 2013, p. 1)

One final note appears necessary. While this dissertation has now been submitted as “final”, this researcher would prefer to present it as “work in progress” as it remains constrained by his limited understanding of many of the issues presented. As Albert Einstein famously said: “If we knew what it was we were doing, it wouldn’t be called ‘research,’ would it?” (Hawken et al 1999, p. 272)

7.7 Shortlist of policy recommendations

The aim of this study was to explore policy options and opportunities for successful climate migration preparedness (Chapter 1). By responding to knowledge gaps identified in the scholarly literature (Chapter 2), and by applying a preparedness framework and case study concept (Chapter 3) to collect migration relevant data in Bolivia (Chapter 4), Bangladesh (Chapter 5) and Maldives (Chapter 6), this research has sought to get a handle on some of the cross-cutting issues to help policy makers learn from affected migrants as the true experts of climate migration (Chapter 7).

Expressed in simple language, in this thesis “preparedness” was understood as taking mitigative and adaptive actions to address climate migration *before* benign options and opportunities are foreclosed, and importantly, *before* ultimate certainties arise about vulnerable locations and likely numbers of people at risk. As discussed in Chapter 3, if early warnings from the Intergovernmental Panel on Climate Change (IPCC) published in the 1990s had more effectively translated into mitigative and adaptive policy actions, some of the climate migrations and consequent human hardships that now constitute the large body of research in this dissertation might well have been mitigated or avoided.

In the hope that the preparedness paradigm of this thesis will invigorate and enable more practical community level solutions and the swift implementation of holistic climate migration policies which are simultaneously informed by both *local-level respondents* and *interdisciplinary research*, a shortlist of policy recommendations is advanced. In distilling out these priorities from the findings and comparative analysis of the three case studies, this section deliberately refrains from identifying them in any specific order of conceived importance. As explained in Section 7.6, dichotomistic approaches which prioritise some actions over others (or at their expense) are seen to be unhelpful when clearly a broad raft of responses is required. Given the long implementation lead times involved it seems far more important that a holistic development of various actions is not needlessly delayed. In conclusion, the following policy priorities are recommended (no order of importance is intended or implied):

- Create and safeguard livelihoods *before* these are compromised beyond reasonable hopes of recovery

- Plan macro-managed migrations wherever there is reasonable doubt that communities can persist in perpetuity *in situ*, and importantly, *before* environmental or climatic changes overwhelm communal coping capacities, trigger *ad hoc* evacuations, impede benign migration scenarios, or create unnecessary duress for migrants and/or hosts.
- Prepare rural migrants for urban realities *before* these are encountered
- Conserve natural and forest resources *before* they irrecoverably disappear (along with their diverse protective ecosystem services)
- Equip migrants to know their rights *before* these are transgressed
- Appraise financial and social costs of migration *before* these are incurred
- Protect host and guest communities from unfamiliar diseases *before* these are contracted
- Foster ethnocultural equity *before* transmigration forecloses options for harmonious integration and multicultural or multicommunal coexistence
- Invest in free and compulsory education for all *before* options are foreclosed and the hopes of a whole generation eclipsed (along with promising options for *in situ* and *ex situ* adaptation to climate change)
- Coordinate migration and mainstream services *before* slum conditions deteriorate beyond all reasonable prospects for human displacement with dignity, and importantly, *before* conditions degenerate beyond all hopes for remediation
- Meet the aspirational ambitions of migrants through upscaling of services in pre-selected future-proof locations *before* urbanisation commences, continues or even accelerates into environmentally fragile or unsustainable locations
- Implement awareness campaigns and community integration initiatives *before* unnecessary conflict and social problems evolve
- Establish a stronger state presence and more accountable government institutions in urban slums *before* parallel structures develop or expand in “state-absent” areas (eg, *mastaans* or “musclemen” controlling local level availability of rental space, land, amenities, etc and exacting exorbitant fees for the same); guarantee rights fulfilment through law enforcement with consequences
- Anticipate labour market requirements and create jobs *before* labour supplies supersede labour demands

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Appendix

This Appendix comprises various different documents and file formats. This diversity of formats and software effectively rules out a uniform layout and consecutive page numbering. Hence each Appendix Section follows its own self-consistent numbering format. It should be noted that this is intentional.

PhD field research: climate change migration management

India Synthesis Trip Report (8 - 19 Dec 2011)

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Objective: To conduct grassroots level PhD field research in both rural areas and urban catchments, incorporating communities of origin and destination to enhance understanding of migration push / pull factors (distinguishing between environment and/or climate related issues and NON-environment and/or climate related issues) with a view to informing relevant stakeholders of the perspectives, experiences, felt needs, aspirations and preferred solutions of forced migrant communities. The overarching objective is to gather data from a pool of respondents deemed sufficiently representative of the subject matter and region of investigation, and fundamentally, authoritative in terms of their experience and expertise as firsthand forced migrants.

Locations: Kolkata: 9-11 and 14 Dec 2011
Sundarbans Basanti ADP: 12-13 Dec
Chennai ADPs / slums: 15-19 Dec

Synthesis: The search for income generation opportunities seems to be the primary driver for rural-urban migration. However, migration in search of alternative income streams does not happen in isolation of environment or climate related pressures and stresses but is more often than not compounded or even triggered by slow or rapid onset disasters and/or degradation. Dependence on the environment for immediate sustenance is naturally higher in rural areas, wherefore agriculturally dependent farming communities in the Sundarbans are vulnerable to climatic shocks or immediate cyclonic devastation -- or its creeping after effects of soil salinisation and resultant declines in agricultural output. Vulnerabilities prevalent in city slums are obviously dissimilar in nature. While income generation opportunities are easier to grasp in the immediate short-term, many street residents live in protracted situations of desperate poverty, even years or decades after their initial arrival in the city.

Key Findings:

- There is evidence that Kolkata attracts in-migration based in part on environment and climate related reasons. Causes contributing to movement include declines in the agricultural resource base -- often brought about or enhanced by cyclonic activity prevalent in the Bay of Bengal and Sundarbans

Appendix A: This India fieldwork synthesis report was submitted to World Vision for internal use

mangrove World Heritage areas where land areas are low-lying and embankments porous and/or fragile and sea level rise and land subsidence are above average.

- Research in rural areas revealed overwhelming evidence that cyclone accompanied storm surges are degrading agricultural land for several years following salt water flooding and resultant salinisation. More than two years on following Cyclone Aila (May 2009) agricultural cultivation is still hampered by higher than average soil salt content and environmental agricultural rehabilitation has yet to take place to restore pre-cyclonic conditions. The presently ongoing paddy rice harvest was noted by several villagers as direct evidence of stunted or dwindling agricultural yields.
- Cyclone triggered storm surges also lead to wholesale livestock decimation as animals and poultry cannot generally be shifted to higher ground and consequently drown in large numbers as rushing storm surge water levels rise above normal animal breathing heights. The resultant high number of carcasses both contaminate water reserves and enhance incidences of water-borne diseases like cholera, thereby further hampering post disaster recovery and reconstruction efforts.
- The death of humans remains an avoidable tragedy in the absence of a sufficient number of cyclone shelters -- three people were killed in the village of investigation Birinchibari Dakshinpara by Cyclone Aila. In the absence of cyclone shelters two-storey brick buildings were mentioned and requested by villagers as alternative protective measures to counter and reduce imminent vulnerability (around 400 people found shelter in such a brick building made available to them by two brothers and home owners and saved from harm or death in Birinchibari Dakshinpara but more such buildings are urgently needed).
- There is strong evidence that villagers and cyclone survivors in the Sundarbans areas are taking strong interest in World Vision coordinated IDPP training programmes where Initial Disaster Preparedness Plans are drawn up and developed as community level aimed awareness raising measures. A training programme conducted during the research visit drew some 120 participants!
- There is overwhelming evidence that presumed temporary stays on the streets of Kolkata following arrival / in-migration more often than not morph into protracted situations with the majority of interviewees queried in Kolkata streets still trapped in survival subsistence years or even decades later. Several street dwellers and children literally born into street contexts are already second or third generation descendents of migrant parents or grand parents. Protracted poverty prolonging street life misery in subhuman conditions must be further researched if lasting transitions and integrations of people from the streets to mainstream society are to succeed.
- The emphasis of World Vision's Snehadeep Street Children's Project on "bridge classes" enhancing educational prospects are already seeing many children plucked up from the streets and funneled to schools -- a partial mainstream mainstay -- at least during daytime.
- There is evidence that the daily fight for sustenance and survival has forced the majority of long-term adult street dwellers into resigned acceptance of their lot. Several respondents indicated that their hope was limited to the hope for a better life for their children rather than for themselves.

Appendix A: This India fieldwork synthesis report was submitted to World Vision for internal use

- There is evidence that migrants and street dwellers in protracted situations linked to subhuman conditions are further hampered in any initiative that they might take simply because they do not know alternative ways of life exist beyond that of living on the street. One respondent shared that exchange programmes with young people could be trialled to ascertain if and how the awareness of alternative living conditions and places can invigorate or inculcate an intrinsically motivated drive for self-improvement. More research on this point appears promising and in line with community owned and self-executed development theory and practice.
- There are indications that government initiatives are both working and appreciated by beneficiaries but at times poorly implemented and/or monitored. Examples include the National Rural Employment Guarantee Act (NREGA) which guarantees an income of 100 Rupees (=2 USD) per day for at least 100 days a year, encouraging the unemployed rural poor to stay in their villages instead of venturing out as unpropertied migrants. The flipside appears to be that necessary seasonal migration is sometimes hampered which has traditionally benefited certain sectors seasonally depending on it. Another government scheme that lends itself as an example are slum clearance initiatives such as the tenement housing projects implemented by the Tamil Nadu Slum Clearance Board which aim to formalise informal settlements. While significant levels of slum clearance have been achieved with thousands of new tenement housing units built and allotted to eligible residents (occupants are entitled to a subsidised rent of 150 Rupees per month (= 3 USD) -- plus electricity on the order of the same amount payable every two months) -- many residents appear to be taking advantage of the scheme by subletting it out at a higher rate while continuing to live on the streets, or simply by refusing to pay the minimal rent in the first place -- generally feeling that they are entitled to free-ride on "freebees" (several interviewees used this expression). Local level ownership nurtured by NGOs over the long term, coupled with more accountability demanded and claimed by the government chasing arrears, are but two options that have been suggested as possible ways forward. Notwithstanding apparent challenges such as the professed need for "more space" for residents, it cannot be denied that many slums have been at least partially developed and improved for the long-term (life-long!) benefit of eligible allotment residents.
- Vulnerabilities expressed by Kolkata slum and street dwellers include exposure to fire, and also to falling glass when buildings are rattled by cyclonic winds which causes debris and shards of broken glass to rain down onto exposed, unsuspecting and unprotected street dwellers below.
- Vulnerabilities expressed by Chennai slum residents include exposure to mosquitoes which find ideal breeding grounds in huge quantities of garbage and refuse piled high in nearby dump sites. The refuse also contaminates the Coovum River and brings the unremediated mix of sewage waist high into many residents' homes whenever river flooding is caused by sudden and sustained rains which cause the riverbanks to breach and/or overflow.
- With rural-urban migration continuing unabated, already congested cities like Kolkata and Chennai are poised to incur significant further influx in population pressure, wherefore the need for a dual response of rural *in situ* adaptation measures which ward off -- to the extent possible -- further in-migration, and *ex situ* migration management response measures which reduce friction throughout

Appendix A: This India fieldwork synthesis report was submitted to World Vision for internal use

the practice and process of movement -- whether forced or voluntary -- and heighten prospects for sustainable urban resident resilience and dignity.

- Synthesis of the India research conducted reveals the search for income generation opportunities as the primary driver for rural-urban migration. However, this search for alternative income streams does not happen in isolation of environment or climate related pressures and stresses but is more often than not compounded or even triggered by slow or rapid onset disasters and/or degradation to which climate change contributes.

Appendix B: Philippines fieldwork synthesis report submitted to World Vision for internal use

PhD field research: climate change migration management

Philippines Synthesis Trip Report (08 - 22 January 2012)

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Assistant: Research visits were accompanied and aided by independent research assistant Chris Pforr from Cebu (chrispforr@hotmail.com) who also compiled a pictured webpage with personal impressions available @ <http://www.chrispforr.net/phils/survivors/survivors.htm>
Additional assistance was provided by my family who joined me on this research trip.

Objective: To conduct grassroots level PhD field research across the whole spectrum of forced migration, incorporating communities of origin and destination ("relocation/ resettlement sites") to enhance understanding of migration push / pull factors (distinguishing between environment and/or climate related issues and NON-environment and/or climate related issues) with a view to informing relevant stakeholders of the perspectives, experiences, felt needs, aspirations and preferred solutions of forced migrant communities. The overarching objective is to gather data from a pool of respondents deemed sufficiently representative of the subject matter and region of investigation, and fundamentally, authoritative in terms of their experience and expertise as forced migrants.

To fully appreciate the forced migration experience over time from disaster induced displacement, to evacuation, and through to relocation and resettlement, the Philippines research seeks to examine both older and more recent typhoon related movement.

During the first week research is to focus on communities affected by Typhoon Ketsana (PAGASA name: Ondoy) in and around Luzon/Manila more than two years after the devastating typhoon made landfall on 26 September 2009 -- in these locations resettlement has been largely completed.

During the second week research is to focus on communities devastated by Severe Tropical Storm Washi (PAGASA name: Sendong) in and around Cagayan de Oro/Mindanao where disaster induced displacement is "fresh" and where most survivors are still in evacuation centres following the storm's landfall on 16 December 2011 -- in these locations prospects of permanent resettlement are still a long way off. Thus by tracing forced migration over time following displacement it is envisaged that the research can yield a holistic overview with comprehensive emergent lessons learned that may inform preparedness practice of *future* disasters.

A small number of key informant/ expert interviews are to be conducted with academics and disaster management professionals to assess the extent to which climate change in the Philippines may be implicated in disaster induced displacement and to gauge whether an influx in future forced migration across the archipelago is likely and how it may be faced.

[The production of a short video documentary is planned for late 2012.]

Appendix B: Philippines fieldwork synthesis report submitted to World Vision for internal use

Locations: Manila/Luzon: 8-15 January 2012
Cagayan de Oro/Mindanao: 15-20 Jan 2012
(Exit meeting with presentation of research main findings to World Vision in Cagayan de Oro on 19 Jan 2012)
Manila/Luzon: 20-22 Jan 2012
(Exit meeting with presentation of research main findings to World Vision National Office Manila on 20 Jan 2012)

Synthesis: The significant level of government coordinated resettlement following disaster induced displacement makes the Philippines a useful case study for the research of relocation relevant push and pull factors (both environment and non-environment related). There is overwhelming evidence that "livelihood opportunities" (both in presence and/or absence) are intricately implicated in the mix of underlying core factors contributing to displacement. Despite this central causative factor underpinning human vulnerability, "livelihood opportunities" are largely under-appreciated both by the disaster management community as well as under-theorised in disaster risk reduction (DRR) discourse. Notwithstanding mentioned problems, there are opportunities for organisational learning following disaster events. A number of summarised key insights gleaned have been consolidated and synthesised below.

Key Findings:

- Relocation/ resettlement of disaster survivors following displacement is a common approach pursued by Philippines governments. To date thousands of relocatees have benefited from various forms of government assistance which usually include the provision of free housing as implemented and/or constructed by UN Habitat, Red Cross/ Red Crescent Societies and other agencies.
- According to Filipino researchers and disaster management professionals there is evidence of climate change in the Philippines in at least three perceptible ways: changing typhoon seasons, changing typhoon paths, and changing precipitation patterns (this view is supported by anecdotal accounts of community respondents). These changes linked to global climate change combine with local level anthropogenic (ie human induced) interferences (eg through legal and/or illegal mining, logging/ deforestation, pollution, unsustainable waste disposal practices, unabated population growth and human settlement patterns on marginal land etc) and impact adversely on local environments. Global level changes are thus working in concert with local level changes to compound existing vulnerabilities further to the detriment of local populations.
- It is the view of the phd researcher that storm disaster events may be understood more as trigger events (that push people over the edge) than actual displacement causes. According to this view the role of typhoons is more contextual than causative. Or to put it into the tongue-in-cheek lingo of one

Appendix B: Philippines fieldwork synthesis report submitted to World Vision for internal use

observer: "Fixing the underlying problems (huge squatter camps in hi-risk locations) will do more to fix the problem than stopping typhoons."

- The #1 aspiration voiced by respondents is "livelihoods". While there may be important nuances (one respondent explained that "employment/making money" was only for educated people whereas "livelihoods" was for everybody) the overwhelming majority of respondents indicated a stable source of income (livelihoods, making money, employment, work, etc) as the most highly valued aspiration. Appreciation of this uncontested priority is fundamental if Disaster Risk Reduction (DRR) efforts are to be more successful. In a significant number of cases DRR initiatives are consistently undermined as vulnerable populations insist on returning to or remaining on marginal land (eg flood prone riverbanks, landslide prone hillsides, etc) on account of livelihood opportunities which are available *in those places*. Community resilience building measures will likely be far more effective and long lasting if the DRR concept can be expanded from a narrowly viewed "technical" or training issue of instructing vulnerable populations on how to "reduce risk" *in situ* in vulnerable areas to a more comprehensive/ holistic migration management approach that aims to foster *ex situ* livelihood opportunities to actively draw people *away from* vulnerabilities. There is overwhelming evidence that at risk populations exposed to disaster risk would move "immediately" [to safer areas] if livelihoods were equally available to them there.
- It is the view of the phd researcher that livelihood generation is both under-appreciated in the disaster management community and under-theorised as a tool in DRR discourse, and likely represents the single biggest disaster preparedness opportunity missed.
- There is evidence that schooling/ education is the second strongest pull factor/ aspiration (following "livelihoods") determining where people will choose to settle. If this research hypothesis is proven true, schools might be more intentionally located in safer areas (or moved there over the course of time) so as to act as "magnets" for vulnerable populations to gravitate towards. Inversely, locating or (re-)building schools *in* or near marginal disaster prone areas likely implies that population centres will consolidate in close proximity, thereby pulling ever more people into the unsafe environment of the school's catchment.
- According to a housing construction consultant livelihood generation should be built *into* the design of resettlement villages long before implementation. All too often such sites provide "safety" but no "livelihoods", resulting in relocatees being constrained to return to their vulnerable places of origin in search of work, or being conflicted about the prospect of remaining in "jobless safety". In the view of the consultant industrial park style employment opportunities could be integrated at the design phase and located within or in close proximity of resettlement sites. In this way it might be possible to provide mutual benefits both to certain government promoted sectors (labour) as well as the population pools placed there (jobs). One by-standing commentator highlighted an important caveat or precondition: strict adherence to labour regulations to prevent conditions of "[c]heap 'slave' labor with no other employment opportunities within 20km!"
- In the view of one academic expert interviewee there are untapped opportunities for organisational learning following recurrent disaster events. While significant resources are allocated to the operational management of post-disaster recovery efforts, insufficient priority is placed on

Appendix B: Philippines fieldwork synthesis report submitted to World Vision for internal use

documenting processes and lessons learned. While learning takes place at an "individual" level by those involved in disaster management and recovery, more often than not lessons learned are not properly "harvested" through relevant publications, resulting in the whole sector needlessly repeating and perpetuating the same mistakes, or reinventing the same proverbial wheels. By contrast, "embedding" researchers in disaster rapid response teams to "document everything from day one" could enhance both internal organisational learning and also engage colleague organisations in fruitful dialogue / public discourse around challenges mutually faced, common lessons learned and best practices developed and disseminated.

- It is not uncommon that disaster survivors/ informal settlers are relocated away from more "urban" areas of origin to more "rural" (or remote) areas of destination. Interviewees disclosed that promoted skills trainings (as feeder initiatives for livelihood generation schemes) often did not reflect their urban context backgrounds. For example, while training in rug making as promoted by certain agencies offered some use, some interviewees appeared to prefer skills developments more specifically geared to their urban backgrounds (eg as call centre agents, computer programmers, etc)
- Timing matters. There are indications that timing is important for successful relocation outcomes. In at least one case encountered, both the momentum for action (and critical funding!) were irrevocably lost when implementation delays saw the funding agency leave the Philippines. While it is true to say that too rapid implementation of relocation site designs can compromise outcome critical community consultation, it is perhaps equally pivotal to ensure that implementation is not needlessly delayed beyond the point where momentum dies down and/or funding dries up. In another site visited hundreds of relocatees are still waiting to be connected to the electricity and water supply grids. More than two years on from Typhoon Ondoy this community showed signs of resignation and consternation, musing whether residents were being held as pawns for political purposes and wondering whether supplies might eventually be granted in conjunction with pending elections (and a politician's face on a placard taking credit).
- There is evidence that migrating overseas (eg as Overseas Filipino Workers or OFWs) is not the preferred model of relocation/ resettlement for the majority of respondents queried. With remittances by OFWs in 2011 passing the 20 billion US\$ mark and now accounting for "roughly 10-percent of the country's gross domestic product (GDP), [and making it] the top contributor to consumption [and] domestic growth" (The Philippine Star, 10 January, page B6 top), one expert interviewee commented that such financial figures did not accurately reflect the significant "social cost" borne by the Philippines as a country (with scores of families separated for years and countless children growing up parentless, etc) For the most part respondents queried stated locations in close proximity *in* the Philippines as the most preferred places to settle following displacement. While there was notable enthusiasm among interviewees to travel to countries overseas as visitors or temporary workers, there was notably less desire to relocate there permanently. This finding, if proven true and confirmed through other research, questions the assumption frequently made in the literature that "climate change refugees" will naturally want to emigrate to industrialised countries in large numbers. It is the view of the phd researcher that for now, it appears they do not.

APPENDIX C: PUBLICATIONS, CONFERENCE PRESENTATIONS, LECTURES AND FIELD RESEARCH ARISING FROM OR TO THIS THESIS

Research Reports, Journal Articles

- Luetz, J M and Barrón Pinto, W (2012) Sorprendido por la sorpresa: Investigación realizada en las comunidades guaraníes del Chaco boliviano desplazadas por la sequía. *Revista de la Fundación Global Democracia y Desarrollo (FUNGLODE)*. Vol 9. No 46. (Mayo/Junio). Páginas 46-53.
- Luetz, J M (2010) Se Busca Liderazgo: Cambio Climático post-Copenhague 2009. *Revista de la Fundación Global Democracia y Desarrollo (FUNGLODE)*. Vol 7. No 33. (Marzo/Abril). Páginas 46-53.
- Luetz, J M (ed., 2009) *Climate Change Threats to Health: The Vulnerability of Children*. Climate Change Series (Part 3). World Vision Australia. 36 pages. ISBN 978-0-9807094-6-9.
- Luetz, J M (ed., 2009) *Reduce Risk and Raise Resilience: Disaster Risk Reduction*. Climate Change Series (Part 2). World Vision Australia. 32 pages. ISBN 978-0-9807094-5-2.
- Luetz, J M (ed., 2009) *Poverty and a Parching Planet: Food and Water Security*. Climate Change Series (Part 1). World Vision Australia. 48 pages. ISBN 978-0-9807094-4-5.

Video Documentaries, Teaching Videos

- Luetz J M, Merson J, Pittaway E, Dufty B, Barrón W, O'Malley M (2011) Bolivia: Leaving the land: Researcher Johannes Luetz takes us on a personal journey of Bolivia where people are leaving the land in droves. UNSW-TV edited documentary produced for 2011 Refugee Conference published 16 June 2011 available @ <http://tv.unsw.edu.au/video/bolivia-leaving-the-land>
- Adamczyk U, Sheil J, Hall B, Saleh A, Chan J, Rifkin W, Rammelt C, Luetz J M, Bergonia A, Faetau T, Terkes S, O'Malley M, Foster M (2011) Is there a Doctor in the Greenhouse? Climate change simply explained teaching video. Leadership Networks for Climate Change. UNSW-TV. Available @ <http://tv.unsw.edu.au/04E68CE0-08D5-11E1-832C0050568336DC>
- Stevenson R, Raphael L, Sheil J, Rifkin W, Rammelt C, Luetz J M, Bergonia A, Faetau T, Terkes S, O'Malley M, Foster M (2011) Man vs Wild. Climate change simply explained teaching video. Leadership Networks for Climate Change. UNSW-TV. Available @ <http://tv.unsw.edu.au/video/man-vs-wild>
- Woo S, Hall B, Yee A, Primrose K, Soto T, Tan J, Starmach M, Rifkin W, Rammelt C, Luetz J M, Bergonia A, Faetau T, Terkes S, O'Malley M, Foster M (2011) Hit the Brakes. Climate change simply explained teaching video. Leadership Networks for Climate Change. UNSW-TV. Available @ <http://tv.unsw.edu.au/video/hit-the-brakes>

Conferences & Presentations

- **Prizewinning speaker** • Sydney, Australia • Leighton Hall, John Niland Scientia Building, UNSW • 25 September 2012 Represented Faculty of Arts and Social Sciences (FASS) at 2012 3MT academic public speaking competition UNSW interfaculty finals. Awarded ASPIRE award (\$500 AUD) for oratory PhD research presentation.
- **Prizewinning speaker** • Sydney, Australia • CLB, UNSW • 28 August 2012 Represented Institute of Environmental Studies (IES) at 2012 3MT academic public speaking competition Faculty of Arts and Social Sciences (FASS) faculty heats. Awarded 3MT FASS first prize (\$300 AUD) for oratory PhD research presentation.
- **Speaker** • Cagayan de Oro / Manila, Philippines • 19 / 20 January 2012 World Vision Development Foundation (WVDF) round table: Presented Philippines field research synthesis report on typhoon induced displacement and government coordinated resettlement to WVDF National Director and select policy, relief, research and advocacy analysts and specialists.

- **Delegate** • Sydney, Australia • NSW Parliament House • 10-11 November 2011
Climate change and migration in the Asia Pacific: Legal and policy responses.
- **Invited speaker** • London, UK • 5-9 September 2011
World Vision International Global Resilience Forum: Community Resilience & Disaster Risk Reduction and Natural Environment & Climate Issues Groups joint conference. Bolivia field research presentation.
- **Delegate** • Melbourne, Australia • University of Melbourne • 12-14 July 2011
Four degrees or more? Australia in a hot world. Conference reflecting on the likely social, ecological, economic and political implications of catastrophic warming for Australia and its region.
- **Speaker** • Sydney, Australia • Climate Change Research Centre (CCRC) at UNSW • 17 June 2011
Australian Meteorological and Oceanographic Society (AMOS) NSW Centre Postgraduate Student Symposium. Climate Change and Variability: Science, Impacts and Adaptation. Research presentation.
- **Invited documentary presenter** • Sydney, Australia • Centre for Refugee Research (CRR) at UNSW • 14-17 June 2011 • International Refugee Conference 2011. Looking to the future, learning from the past: A conference to mark 60 years of the Refugee Convention. Presented video documentary on climate change related displacement in Bolivia.
- **Delegate** • Brisbane, Australia • Queensland Gallery of Modern Art • 20 May 2011
Climate Adaptation Masterclass: 'From theory to implementation'. National Climate Change Adaptation Research Facility (NCCARF). Providing researchers, policy and decision-makers with the latest international thinking on climate change adaptation.
- **Speaker** • Sydney, Australia • Australian Graduate School of Management (AGSM) at UNSW • 16-18 November 2010
• Climate Change Adaptation and Governance Workshop. National Climate Change Adaptation Research Facility (NCCARF). Papua New Guinea PhD field research presentation.
- **Delegate** • Sydney, Australia • Doltone House • 11-12 October 2010
Behaviour Change for Sustainability: National Congress exploring the strategic challenges of behaviour change, and developing links between behaviour change and other social change tools.
- **Invited discussion group leader** • Phuket, Thailand • 6-8 July 2010
World Vision International Global Disaster Risk Review: Global Disaster Risk Reduction (DRR) and Community Resilience Programme (CRP) Review Learning Workshop.
- **Speaker** • Sydney, Australia • University of New South Wales (UNSW) • 23 June 2010
PhD research proposal presentation to the Institute of Environmental Studies (IES).
- **Invited speaker** • Ottawa, Canada • 5-11 May 2010
World Vision International Global Relief Forum. Humanitarian Imperative: Towards Destination 2020. Humanitarian & Emergency Affairs (HEA) global gathering. Research presentation.
- **Invited participant** • London, UK • University College London (UCL) • 26 April 2010
Disaster Risk Micro-Insurance Workshop @ Aon Benfield Hazards Research Centre. Joint initiative between World Vision International, Aon Benfield UCL Hazards Research Centre & Microinsurance.
- **Invited keynote speaker, panellist** • Bangkok, Thailand • 11-12 February 2010
Multi Emergency Learning Event: World Vision Asia Pacific Regional Consultation. Humanitarian framework PhD research presentation. Panel discussion.
- **Invited presenter** • Geneva, Switzerland • 12-13 May 2009
World Vision Humanitarian & Emergency Affairs (HEA) meeting: PhD research proposal presentation to World Vision International and Asia Pacific HEA international directors.

Lectures & Seminars

- **Guest lecturer • UNSW** • Undergraduate • 12 September 2012 • ARTS1751 • Poor World, Rich World • *Lecture Title: Climate change and small island states: field research in the Pacific and Maldives* • Faculty of Arts and Social Sciences, University of New South Wales, Sydney, Australia

- **Guest lecturer • UNSW • Postgraduate • 20-21 March 2012 • SOCW7852 • Politics of International Aid, Seminar: 3x2 hrs • Seminar Title: Climate change and sustainable development? • School of Social Sciences and International Studies, Faculty of Arts and Social Sciences, University of New South Wales, Sydney, Australia**
- **Guest lecturer • UNSW • Postgraduate • 18 May 2011 • SOCW7850 • Issues & Policy in Social Development • Lecture Title: Environmental issues in social development • School of Social Sciences and International Studies, Faculty of Arts and Social Sciences, University of New South Wales, Sydney, Australia**
- **Guest lecturer • UNSW • Undergraduate • 9 May 2011 • ENV51011 • Environmental Science I
Lecture Title: Environmental migration • School of Biological, Earth & Environmental Sciences, Faculty of Science, University of New South Wales, Sydney, Australia**

International Fieldwork

- **Philippines • Manila/Luzon (8-15 January 2012); Cagayan de Oro/Mindanao (15-20 January); Manila (20-22 January): Typhoon induced displacement and resettlement related PhD field research.**
- **Singapore • (6 January 2012): Earth Observatory of Singapore (EOS), Nanyang Technological University (NTU): PhD thesis related research visit and expert interview on GIS mapping and disaster induced displacement.**
- **Maldives • Malé (19-24 December 2011); Hanimaadhoo (24 Dec 2011 - 1 Jan 2012); Malé/Hulhumalé (1-3 January): PhD field research into climate change and non-climate change related human migration and resettlement.**
- **Sri Lanka • Colombo (19 December 2011)
Scoping visit to gauge existing Maldives-Sri Lanka migration links.**
- **India • Kolkata (8-11 December 2011); Basanti/Sundarbans (12-13 Dec); Kolkata (14 Dec); Chennai (15-19 Dec): PhD field research into conditions and aspirations of Kolkata street dwellers; cyclone related rural-urban migration from Sundarban areas following Cyclone Aila (2009); Chennai slum clearance and tenement housing development.**
- **Bangladesh • Dhaka (27 November 2011); Bhola Island (28-30 Nov); Chittagong (1-3 December); Dhaka (4-8 Dec): PhD field research into migration push / pull factors (distinguishing between environment and/or climate related issues and non-environment and/or non-climate related issues) with a view to informing relevant stakeholders of the perspectives, experiences, felt needs, aspirations and preferred solutions of forced migrant communities.**
- **Bolivia • Santa Cruz (24 November-5 December 2010); Camiri/Chaco communities (6-18 December); Santa Cruz (19 December 2010 - 6 January 2011); La Paz (7-12 Jan); Santa Cruz (13-20 Jan): PhD field research into drought induced / enhanced forced rural-urban migration.**
- **Papua New Guinea / Bougainville • Port Moresby (20-22 October 2010); Buka (23-25 Oct); Carteret Atoll (26-28 Oct); Buka/Tinputz/Maran Village (28-30 Oct); Nissan Atoll (31 Oct - 3 Nov); Buka (4-5 Nov); Port Moresby (6 Nov): PhD research (pilot study) into climate/ environment and non-climate/ non-environment related migration push factors.**
- **Bolivia • Santa Cruz, La Paz (14 December 2009 - 12 January 2010): PhD field research scoping visit into drought induced / enhanced forced rural-urban migration.**
- **Maldives • (May 2009): Self-funded PhD research scoping visit conducted with NGO Bluepeace Maldives to explore tsunami induced displacement from the Island of Kandholudhoo to Dhuvaaafaru following the 2004 Indian Ocean tsunami.**

GLOBAL

La revista de la Fundación
Global Democracia
y Desarrollo, Volumen 9
N° 46 Mayo/Junio 2012
RD\$ 200 - US\$ 5

Articular la economía verde

George Martine
Carlos López Damm
Wendy Barrón Pinto
Johannes M. Luetz

46

Eliades Acosta Matos

De Hollywood a Bollywood

Armando Almánzar

Estado de situación
de la literatura dominicana

**Ylonka Nacidit
Perdomo**

El funeral de
Emilio Prud'homme



Luetz, J M and Barrón Pinto, W (2012) Sorprendido por la sorpresa: Investigación realizada en las comunidades guaraníes del Chaco boliviano desplazadas por la sequía. *Revista de la Fundación Global Democracia y Desarrollo (FUNGLODE)*. Vol 9. No 46. (Mayo/Junio). Páginas 46-53.

Abstract in English:

Surprised by surprise: Research conducted among drought displaced Guaraní communities in Bolivia's Chaco

Over recent years the concept of “preparedness” has gained currency in humanitarian and disaster management circles. But can it also emerge as a useful conceptual framework in situations where people are struggling to cope with the stresses of being physically and socially displaced on account of climate change related pressures? This article presents research conducted among drought displaced Guaraní communities in Bolivia's Chaco. Three areas of interest are discussed, namely the issues of surprise, rights and costs. This research suggests that many young rural migrants heading to the cities are “surprised by surprise” as dreams give way to the reality of migrating away from one disaster only to encounter other unexpected difficulties. The article argues that a forward looking posture of “preparedness” is useful in policy and practice if climate change related migration is to become more equitable in future.

The article relates to one of three international PhD case studies dealing with climate change related migration. A short UNSW-TV edited documentary is available @ <http://tv.unsw.edu.au/video/bolivia-leaving-the-land>

Ocho años del intelectualismo de vanguardia

Corría el año 2004 cuando en la Fundación Global Democracia y Desarrollo surgió la idea de crear una revista académica. La finalidad: contribuir al desarrollo del pensamiento, a la exposición de las ideas, y a elevar el debate desde una óptica eminentemente intelectual. El discurso de la posmodernidad continuaba en ebullición; el reto, nuestro reto, era atraer, seducir a las voces vitales de las ideologías, de las escuelas filosóficas economicistas, humanísticas, políticas, tecnocráticas; lograr que en un poco más de cien páginas, cada dos meses, la ciudadanía lectora se apropie de su contenido, de las ideas de intelectuales e investigadores que marcan y representan la vanguardia del pensamiento.

Las 46 ediciones agrupan a más de trescientos autores, de todos los puntos cardinales de la Tierra, en plena interacción con los siete saberes y la complejidad de esta aldea global. *Global* conmemora ocho años de intelectualismo de vanguardia y de investigación para emprender futuro. Nuestra revista no se amilana, lucha en la contienda semántica que enrostra a la globalidad solo flaquezas, desplazando alcances importantes para el desarrollo equitativo, plural y participativo. Puesto que, lejos de imponer ideas o reducirlas, estas 46 ediciones provocan un eco que se difunde en los pensares.

La concepción de la revista *Global* del presidente de la República Dominicana, Leonel Fernández Reyna, devuelve a la intelectualidad el espacio para el diálogo y la confrontación, puesto que es en esa dialéctica que el pensamiento renace y pervive. El sociólogo Carlos Dore propicia que ese sabio debatir se convierta en una constante arraigada en la defensa de posturas lógicas y paradigmáticas.

En el transcurrir de ocho años suman quinientos artículos académicos que muestran el deseo de que el conocimiento se expanda; *Global* es referente en bibliotecas nacionales e internacionales, está al alcance de académicos y universitarios.

Los lectores tienen la confianza de que el sendero hacia la primera década incorporará nuevas miradas. La muestra es que esta edición del octavo aniversario reúne cuatro perspectivas (demográfica, estadística, legal y antropológica) sobre la articulación de la dinámica entre población y desarrollo, la hemos llamado la economía verde, y confluyen las firmas de José Miguel Guzmán, Michael Herrmann, George Maritne, Carlos López Damm, Wendy Barrón Pinto y Johannes M. Luetz.

Como desde el comienzo de sus tiempos, *Global* prima en destacar el pensamiento dominicano. En esta edición aniversaria, el Premio Nacional de Literatura 2012, Armando Almánzar, quita la venda a la literatura actual y retrata su futuro.

Comprometidos con una nueva narrativa de la historia nacional, la historiadora de género Ylonka Nacidit-Perdomo comienza en esta revista a revelar fragmentos epocales excepcionales.

Global no detiene el tiempo, provoca su avance, camina a la par.

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Global, editada por Funglode, es una revista bimestral de naturaleza multidisciplinaria, que canaliza las reflexiones de la entidad y de la sociedad, buscando elevar la calidad del debate.

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Impresión
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08

De Hollywood a Bollywood: ¿Se han globalizado también las industrias culturales?

Eliades Acosta Matos

La dialéctica del desarrollo de las industrias culturales no es unidireccional. Por la autopista por donde corren las imágenes, sonidos, conceptos y costumbres que han logrado la exitosa "americanización" del mundo globalizado, también lo hacen, pero en sentido contrario, las emisiones culturales de la periferia. Tras el éxito arrasador de Hollywood, el cautivador universo creado en Bollywood remonta la corriente e impacta en el centro de la matriz que marcara su origen. De la manera en que se asuma esta potencialmente fecunda pluralidad, depende el futuro de las industrias culturales... y de la humanidad.

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Historia de las relaciones dominico haitianas

Manuel Núñez

Este ensayo reseña la lectura de la obra *Historia de las relaciones dominico haitianas* de los embajadores Alberto Despradel Cabral y Miguel Reyes Sánchez. Los autores han hecho un balance de los contratos, tratados, notas diplomáticas, acuerdos y arbitrajes producidos en las relaciones de los dos países. Cada una de las circunstancias cronológicas ha sido ilustrada con comentarios y puntos de vista de los autores dominicanos y haitianos, desde una época pre estatal, es decir, las relaciones entre las dos colonias Saint Domingue y Santo Domingo, y las establecidas entre las dos repúblicas independientes. El artículo compendia en 10 grandes tesis, un esfuerzo intelectual que se deduce de la vastísima antología del pensamiento incluida por los autores del Premio Nacional de Ensayo 2012.

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Entrevista a Sócrates Moquete

Marco Coscione

Dominicano, arraigado hace casi 20 años en Brasil, es profesor de Economía y Ciencia Política y director del Departamento de Ciencias Económicas de la Universidad Estatal de Santa Cruz en Ilheus, Estado de Bahía. En la entrevista explica la construcción de incubadoras donde se gesta la economía solidaria para esta región productiva.





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La evolución de las relaciones de la Unión Europea con el grupo de países África, Caribe y Pacífico

Claire Guillemin

Los acuerdos de asociación económica se presentan como una respuesta al cuestionamiento de la relación entre los países europeos y los que conforman el bloque África, Caribe, Pacífico por el sistema comercial multilateral, y aparecen como posibles motores de integración y desarrollo. El acuerdo UE y Cariforo ilustra la renovación de estas relaciones sobre la base de la asociación.

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El caso irresoluble de la identidad del dominicano

Néstor Medrano

Es un hecho que va de la mano con la dialéctica, las definiciones no son cerradas, ni los conceptos deben serlo, cuando se busca una aproximación a lo que es o debe ser la identidad del dominicano. La temática en su conjunto debe popularizarse, dinamizarse, ser llevada más allá de las discusiones academicistas o enciclopédicas, para que el pueblo, objeto y forjador de esa identidad, participe a conciencia y tenga conocimiento de que realmente pertenece a algún sitio. La identidad del dominicano deberá ser siempre búsqueda, para proteger los orígenes desde sus partículas disolutas, pero existentes y tangibles, de la cultura del ser nacional.

Informe Especial Estado de situación de la literatura dominicana

Armando Almánzar Rodríguez

El Premio Nacional de Literatura 2012 considera como comienzo del problema de la producción literaria a la escuela, desde la primaria hasta la universidad, las deficiencias de la educación formal, la constancia de que se dan muy pocas horas de clase a la semana, el problema de los maestros. Otro problema, la carencia casi absoluta de editoriales como tales, la enorme cantidad de publicaciones de ficción que no poseen valor literario y, además, la proliferación de "escritores buhoneros" que venden pero no valen. Finalmente, la carencia de una crítica sistemática encaminada a hacernos comprender la esencia y calidad de lo que escribimos.

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Desarrollo basado en el consumo, población y cambio climático

George Martine

La explotación descontrolada de los recursos de la Tierra debilita la resistencia de los ecosistemas sobre los cuales depende la humanidad y multiplica la cantidad de fenómenos naturales. Irónicamente, los más pobres del mundo, cuya contribución a las emisiones de gases de efecto invernadero es mínima, son los más vulnerables a los efectos del cambio climático.

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Del desarrollo al buen vivir

Carlos López Damm

La Constitución de la República del Ecuador, ratificada mediante referéndum el 28 de septiembre de 2008 y en vigencia desde el 20 de octubre de ese año, y el Plan Nacional para el Buen Vivir, aprobado el 5 de noviembre de 2009, plantean retos acerca de la materialización y radicalización del proyecto de cambio de la Revolución Ciudadana a partir de la construcción de un Estado plurinacional e intercultural, para finalmente alcanzar el "buen vivir" de los ecuatorianos. Ecuador busca superar el concepto tradicional de desarrollo. 40

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Sorprendido por la sorpresa

Johannes M. Luetz y Wendy Barrón Pinto

En los últimos años el concepto de "estado de preparación" (*preparedness* en inglés) ganó adeptos en los círculos humanitarios y de gestión de desastres. Pero, ¿podría surgir también como un marco conceptual útil en situaciones donde las personas luchan para enfrentar la migración forzada a causa del cambio climático? El artículo presenta la investigación realizada en las comunidades guaraníes del Chaco boliviano desplazadas por la sequía, y demuestra que los jóvenes emigrantes rurales que se dirigían a las ciudades escapaban de un desastre pero se enfrentaban a otros problemas.

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Sorprendido por la sorpresa

En los últimos años el concepto de “estado de preparación” (*preparedness* en inglés) ganó adeptos en los círculos humanitarios y de gestión de desastres. Pero, ¿podría surgir también como un marco conceptual útil en situaciones donde las personas luchan para enfrentar la migración forzada a causa del cambio climático? El artículo presenta la investigación realizada en las comunidades guaraníes del Chaco boliviano desplazadas por la sequía, y demuestra que los jóvenes emigrantes rurales que se dirigían a las ciudades escapaban de un desastre pero se enfrentaban a otros problemas; en estas situaciones, el concepto humanitario de “preparación” puede garantizar procesos y resultados más equitativos.

Como introducción ofrecemos consideraciones etimológicas de la palabra “desastre”, la cual se deriva del prefijo peyorativo griego “des” (malo) y de “astre” (estrella). Según el diccionario de Oxford, la raíz de la palabra en la astrología significa literalmente el infortunio de que “nació estrellado”.¹ Durante siglos mucha gente creía que una catástrofe era el resultado de una “mala estrella”: un des-astre. Pero sabemos que los desastres naturales que han ocurrido a lo largo de la historia no se producen como consecuencia de una mala alineación de las estrellas, sino cuando se combinan amenazas y vulnerabilidades.

En las últimas décadas hemos visto que han aumentado los desastres y desplazamientos. Según un estudio publicado en 2009 por la Oficina para la Coordinación de Asuntos Humanitarios (conocida por sus siglas en inglés: OCHA), dependencia de las Naciones Unidas, en el año 2008 más de 36 millones de personas en el mundo fueron desplazadas debido a desastres naturales. En ese año, 42 millones de personas fueron desplazadas a causa de conflictos de violencia y guerra (incluye a refugiados que cruzaron las fronteras internacionales).²

El Banco Asiático de Desarrollo (BASD) lanza una advertencia por el creciente flujo de personas desplazadas a causa del empeoramiento del cambio climático.³ Según la publicación, los desastres naturales crecen de manera acelerada; solo en la parte del Pacífico de Asia, 42 millones de personas abandonaron sus hogares en

2010.⁴ Sin dudas, los efectos de un desastre implican una creciente ola de sufrimiento.

A pesar de que estos casos de desastres son en gran parte inevitables –y como hemos visto, se prevé que aumentarán como resultado del cambio climático–, sus impactos se pueden atenuar a través de la “preparación”. Por cierto, el verbo “preparar” se deriva del latín “prae” (antes) y “parāre” (alistarse). Según el *Diccionario de Etimología Chambers*, “preparar” significa literalmente “estar preparados de antemano”.⁵ Entonces tenemos la pregunta: ¿Pueden las comunidades prepararse *ante* la

los desplazamientos no solo hacia las urbes cruceña y tarijeña, sino también más allá de la frontera con Argentina y Paraguay. Debido a que el movimiento es dinámico, los números estimados de esta migración varían y fluctúan; sin embargo, los informes y estudios preliminares advierten que la sequía ha provocado un aumento significativo de la migración. Incluso cuando termina la cosecha de caña de azúcar, las familias que no regresan se ven obligadas a desplegar una serie de estrategias alternativas para poder sobrevivir.⁸

Este cambio de patrones de migración fue detectado gracias a los

Cuando un niño no quiere ir a la escuela los padres no lo presionan para que asista.

posibilidad de desplazamiento y de un desastre, aumentar la capacidad de recuperación y resistencia, y propulsar un estado de disposición y vigilancia?⁶

En la región del Chaco boliviano, las familias desplazadas luchan por recuperarse de los impactos de la sequía que lleva a las personas a desplazarse.⁷ Si bien la migración estacional de las comunidades guaraníes étnicas hacia las cosechas de caña de azúcar –conocidas también como “zafras”– ha sido tradicionalmente una costumbre en algunas zonas del departamento de Tarija y de la ciudad de Santa Cruz, la segunda más grande de Bolivia, los tres años consecutivos de sequía han aumentado

procesos de seguimiento trimestrales que la organización humanitaria Visión Mundial lleva a cabo como aporte al desarrollo comunitario de la región para confirmar el cumplimiento de los indicadores de desarrollo (por ejemplo, salud y educación). Mediante estas visitas se descubrió que un creciente número de niños ya no estaban alrededor de las comunidades y que cada vez había más casas abandonadas. Este proceso se conoce como monitoreo, y consiste en visitar a los niños que participan en los programas de apadrinamiento que otorga Visión Mundial.

Carlos Lazarte, gerente del Programa de Desarrollo de Área (PDA) de la comunidad de Tecobe que



Dionisio Pérez Manuel y su esposa, Aurelia Camargo Chaca, aconsejan y preparan a los jóvenes emigrantes en la comunidad Ivamirapinta. Los cursos se desarrollan en la Iglesia Unión Cristiana Evangélica.

atiende —junto a los 16 integrantes de Visión Mundial— a 23 comunidades con 3,500 niños apadrinados por la organización, explica: “No hemos podido evitar la emigración. De las 1,500 familias que atendemos —en Tecobe—, más de 200 familias han emigrado, y de los niños que tenemos patrocinados, más de 500 se fueron con sus familias a las zafras de caña de azúcar que están en Santa Cruz. Nos desplazamos hacia las zafras y, al realizar el monitoreo en el mes de septiembre, nos dimos cuenta de que las condiciones en las que viven son muy precarias, no gozan de atención de salud, la educación no existe, no hay medios para continuar con la educación para los niños; muchas familias viven en campamentos, estos albergan hasta 20 familias juntas por galpón [...] también han

sufrido inclusive la pérdida de sus niños, a causa de accidentes o mala nutrición”.⁹

Más confundidos, aislados y endeudados

Nuestra investigación revela que las tasas de migración varían de una comunidad a otra,¹⁰ pero lo cierto es que las cifras de desplazamientos aumentan.¹¹ Según un informe, “una consecuencia de la situación de emergencia por sequía es el aumento de la migración de las familias en búsqueda de alternativas para obtener ingresos”.¹² En 2009 emigraron “poco más de 400 familias”, y en 2010 “superan las mil”.¹³ Un gran porcentaje de los que buscan fuentes de trabajo alternativas retornan a sus comunidades de origen más confundidos, aislados y endeudados.

Las 34 entrevistas realizadas con personas afectadas, gerentes de ayuda humanitaria, académicos, científicos y migrantes (en lugares de origen de los migrantes y destino de los desplazamientos)¹⁴ están sintetizadas en tres puntos de vista y recomendaciones.

- Primera observación: El contraste entre la vida agrícola de las comunidades guaraníes y las relaciones socioeconómicas de la ciudad, más las barreras del idioma y cultura étnica. Los jóvenes migrantes están mal equipados para enfrentar esta transición.

En el transcurso de la investigación nos encontramos con don Dionisio (66 años) bajo la sombra de un árbol cerca de su casa en la comunidad de Ivamirapinta. Hablando un español llano, nos permite conocer su historia, cómo

empezó a migrar sin preparación y cómo los años de “trabajador de temporada” le trajeron dolor, soledad y deudas.

“Mi nombre es Dionisio Pérez Manuel, mi esposa es Aurelia Camargo, y actualmente soy un anciano de la Iglesia Unión Cristiana Evangélica, aquí en la comunidad de Ivamirapinta [...] A los 15 años salí a trabajar a la zafra y pensé que allá yo estaría bien con la plata (dinero) y podría ahorrar; pero no lo logré. Trabajé una zafra temporal y me fue bien... Pero en el segundo año de zafra, los compañeros de trabajo me invitaron a la bebida. A la tercera zafra seguí esa carrera, y para los 18 años estaba fracasado, pues no podía ahorrar, no me alcanzaba la plata. A los 20 años formé una familia y crecí con esa experiencia, porque nadie me preparó, nadie me educó, nadie me aconsejaba, que estaba mal gastar el dinero de la zafra en bebida [...] Analicé que eso no estaba bien y traté de aprender otro oficio, aprendí a manejar autos y a elaborar artesanías, hasta el momento he vivido con ese oficio, el cual me saca de toda necesidad de urgencia. Entonces esas experiencias las comparto con los jóvenes de la comunidad, con mi pueblo. Les explicó que no sigan ese camino, pues les aconsejo que sigan formándose. Hay que prepararse para el futuro, para no sufrir. Eso le explicó a todos los jóvenes, también a los adultos, a los casados y los miembros que acuden a nuestra iglesia. Les pido que eduquen a sus hijos, que demuestren amor y cariño. Ese es mi trabajo actual.”¹⁵

Al escuchar a don Dionisio se destaca que la migración hacia las

zonas de las zafras afecta el sentido de unidad, la identidad y la armonía de las familias indígenas. La identidad cultural homogénea, que incluye la virtud de la confianza y la relación recíproca que ofrece la comunidad rural, se diluye por una identidad urbana anónima, solitaria e individualista.

En la actualidad, el núcleo de la identidad de los jóvenes cambia por una cultura juvenil de modas urbanas, teléfonos móviles, juegos electrónicos y tatuajes. Algunos migrantes jóvenes regresan a las comunidades aborígenes exagerando los beneficios obtenidos tras sus desplazamientos y ocultan déficits y daños de

las ciudades. Esta actitud parece convencer aún más a los demás jóvenes de abandonar su hogar, estilo de vida y forma de ser. Por otro lado, la falta de preparación adecuada deja a muchos jóvenes con cicatrices psicológicas y en ocasiones con enfermedades de transmisión sexual (ETS).¹⁶

¿Se aprovecha la ciudad de los campesinos? Gualberto Carballo, gerente regional de Visión Mundial en la ciudad de Camiri, enfatiza un rasgo que caracteriza al guaraní del Chaco boliviano: “El guaraní es una persona que no se proyecta en el futuro, vive el momento; el guaraní comparte su chaquito, sus ganancias con el resto de los

miembros y no piensa en generar riquezas, no le es relevante un patrimonio”.¹⁷ Suponemos entonces que algunos ciudadanos se aprovechan de esta buena fe, y entonces podemos entender que la preparación implica el conocimiento de estas realidades *antes* de que se encuentren cara a cara con ellas.

- Segunda observación: Los migrantes guaraníes afrontan el oportunismo de la ciudad con insuficiente conocimiento de sus derechos a la educación, humanos y laborales. Por esta razón muchos desplazados son engañados con facilidad y es muy raro que se defiendan cuando sus derechos son vulnerados.

Ser “trabajador de temporada” le trajo a don Dionisio dolor, soledad y deudas.

Un gran número de organizaciones no gubernamentales (ONG) que trabajan en las comunidades afectadas, incluyendo Visión Mundial, se centra cada vez más en la importancia de la enseñanza y difusión de los derechos, basada en la educación como clave principal para capacitar y empoderar a las personas para protegerse. La enseñanza, la divulgación y la transmisión de los derechos parecen emerger como un principio de preparación útil que aumenta la conciencia y sienta las bases del futuro. Y uno de esos derechos es el de asistir a la escuela.

Según el estudio “Caña dulce, vida amarga”, realizado por la

Organización Internacional del Trabajo (OIT) y el Fondo de las Naciones Unidas para la Infancia (UNICEF): “La incorporación de niños, niñas y adolescentes al trabajo de la zafra [...] viola los derechos universalmente reconocidos de este sector de la población: les priva de su infancia, de su potencial y de su dignidad y es perjudicial para su desarrollo físico y mental [...] privándoles de la oportunidad de ir a la escuela u obligándoles a abandonarla prematuramente. Así, un derecho fundamental de todo niño, niña y adolescente, el derecho a la educación, resulta vulnerado”.¹⁸

Giovana Pérez, gerente de Visión Mundial en el PDA Koe Iyambae, provincia de Charagua, dice al respecto: “Por lo general en el área rural, cuando un niño no quiere ir a la escuela, los padres no lo presionan para que asista, tal vez tiene un objetivo, pues si el niño no va a clases, la mentalidad es: ‘Tengo una mano de obra más que me ayuda en el chaco’ [parcela de tierra de cultivo de maíz]”.²¹

Lazarte destaca la importancia de una estructura para la difusión de esos derechos: “En la zafra los niños sufren mucho, nuestra institución trabaja con enfoque en la

plementados, reforzados y, sobre todo, garantizados por el Gobierno nacional.

• Tercera observación: La decisión de migrar puede disminuir ciertos problemas, pero al mismo tiempo puede crear otros nuevos. Trasladarse no es solo un camino para generar ingresos económicos, también es muy caro desde un punto de vista financiero y de costos sociales. Este tercer punto está subestimado en las respuestas de las personas entrevistadas.

Nuestra investigación incluye a los jóvenes que se quedan en las comunidades rurales y cuyos padres han migrado. Durante nuestra visita a las comunidades del Chaco nos encontramos con niños, adolescentes y jóvenes que habían sido abandonados por sus padres y no sabían cuándo retornarían. Por lo general, los hijos se dejan a la supervisión de parientes cercanos que se encuentran con la responsabilidad añadida de proveerles alimentación. Uno de los encuestados declaró: “Es una carga alimentar otra boca más, nosotros mismos no tenemos ni siquiera para comer, pero son de la familia, ¡qué le vamos a hacer!”.²³

Como dato relevante, el Gobierno departamental de Santa Cruz de la Sierra tiene un programa de provisión de alimentos denominado Desayuno y Almuerzo Escolar, y se intenta expandirlo a los municipios y comunidades de todo el departamento²⁴. Esto parece tener un efecto que contribuye a la disposición de los padres para irse y dejar a sus hijos con más facilidad de lo que hubiera sido el caso, pues de cierto modo les garantiza

“El mañana pertenece a quienes se preparan desde hoy”. Proverbio africano

Si un niño conoce sus derechos a asistir a la escuela y a aprender, la actitud del cambio ya ha nacido. Vimos casos en que muchas familias migrantes dejan su comunidad, y sacan a sus hijos de la escuela, se van por seis meses, justo en la mitad del año escolar. Un alto porcentaje de los comunitarios encuestados adultos con los que hablamos nos indica que la escuela primaria era su más alto nivel educativo.¹⁹ Las estadísticas hablan: en Tarija, el 90% de los niños, niñas y adolescentes trabajadores no asisten a la escuela (en Santa Cruz el porcentaje fluctúa entre 33% y 55%); en Tarija, el 90% no superó el quinto grado de primaria (aproximadamente 50% en Santa Cruz).²⁰

niñez, lo que pretendemos y queremos hacer es una responsabilidad [compartida] de todos, tanto de los padres de esos niños, de las comunidades, las autoridades [...] En el interior de nuestras comunidades, también podríamos encarar este problema, a través de un liderazgo comunitario. Un liderazgo concientizado en vigilar la salud, la educación, la promoción de derechos. Pues no hay una estructura comunitaria que haga respetar esos derechos que los niños están aprendiendo”.²²

Por consiguiente, acertamos en que los derechos a la educación, humanos y laborales ofrecen protección solamente si son divulgados, conocidos, entendidos, im-

que sus hijos se beneficiarán con el programa siempre y cuando asistan a la escuela.

Existen costos no visibles que las personas desplazadas no alcanzan a discernir hasta que sufren las dificultades que van apareciendo. El capital inicial es consumido en vez de ser invertido en el desarrollo futuro, el retraso en el crecimiento económico, las ventas forzadas de bienes propios, el ausentismo escolar, las crisis familiares, la pérdida de medios de vida, los períodos prolongados de desempleo y el tema de salud que está relacionado con los efectos nocivos, incluyendo trauma psicológico permanente, son solo algunos de los altos costos asociados con los desastres, los desplazamientos y la migración forzada. En términos más sencillos, los desastres destruyen el desarrollo,

pero la preparación protege el progreso.

Invertir en la reducción de riesgos

El Grupo Intergubernamental de Expertos sobre Cambio Climático (IPCC), advierte que la reducción de riesgos es de suma importancia en el contexto de cambio climático²⁵ porque ya: “Se están observando [...] fenómenos extremos, como una mayor intensidad y duración de las sequías”²⁶. Esta observación está confirmado por expertos en manejo de desastres: “El cambio climático en Bolivia, se manifiesta a través del clima extremo”²⁷. Un estudio científico realizado por la Universidad de San Andrés (La Paz) en 2010, investigó los efectos que produce el cambio climático en el sur de Bolivia²⁸. El académico y doctor José Luis Montaña, sinte-

tizó el resultado: “La aridez sigue aumentando [...] y vamos a tener serios problemas, porque conforme sea más árida esta zona, va a ver mayor migración [...] a los centros más poblados. Entonces es bastante dramático para nosotros el tema de las variaciones climáticas en el territorio boliviano.”²⁹

Remarcamos que, el avance del cambio climático es uno de los desafíos más ingente que la humanidad enfrenta en este siglo.³⁰ Reducir riesgos en desastres no es una opción extra sino, una extra obligación!

Para concluir, deseamos resumir los tres puntos sintetizados:

- Preparar a los jóvenes sobre las realidades urbanas *antes* de que las encuentren.
- Hacer que los jóvenes conozcan sus derechos *antes* de que sean vulnerados.



Después de ver muchos animales muertos por el camino, este caballo vivo junto a su jinete gauchó guaraní fue un agradable contraste.



Después de ocho meses, doña Cándida se reencuentra con sus hijos. La separación fue el costo más alto para ella. Dijo: “Ahora no tenemos ni maíz, no tenemos nada, no importa qué, ya no quiero irme más”.

- Medir las consecuencias *antes* de que los costos financieros y sociales traigan una factura impagable.

Los esfuerzos internacionales y convenciones, incluido el Marco de Acción de Hyogo 2005-2015, han tratado de promover una cultura de prevención con el fin de dar prioridad a la *pre*-paración más que a la *re*-paración. La razón es sencilla: es más barato prevenir una crisis –en la medida de lo posible– que la reconstrucción después de la misma.

Sálvano Briceño, director de Estrategia Internacional de las Naciones Unidas para la Reducción de Desastres (EIRD), hace referencia a las pérdidas por desastres mundiales en 2007: “¡62,000 millones de dólares!”. Briceño ha interpretado esa cifra como una expresión de “lo que se podría haber salvado si se hubiera invertido más en medidas de reducción de riesgos.”³¹

Entonces: ¿Podría la preparación –“preparándose de antemano”– evitar que el desprevenido sea “sorprendido por sorpresa”?

Todavía no estamos seguros, pero como dijo Albert Einstein: “Si supiéramos lo que estamos haciendo, no se llamaría investigación, ¿verdad?”. Pero al mismo tiempo queremos ofrecer un rayo de luz en las palabras de un sencillo proverbio africano: “El mañana pertenece a quienes *se preparan* desde hoy”.

Nota: Un corto documental sobre la investigación, editado por la Universidad de New South Wales, está disponible en <<http://tv.unsw.edu.au/video/bolivia-leaving-the-land>>.

Nota: Los autores agradecen a Visión Mundial Bolivia y a World Vision Internacional por el apoyo recibido durante la investigación realizada en Bolivia en los años 2010-2011. De igual manera, agradecen al profesor y doctor John Merson por su revisión y comentarios constructivos. Sobre todo agradecen al pueblo guaraní, por su extraordinaria hospitalidad.

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Notas

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⁵ *Chambers Dictionary of Etymology*. The H.W. Wilson Company. 2004. Previously published as *Barnhart Dictionary of Etymology*. New York. ISBN 0-550-14230-4.

⁶ El concepto de “estado de preparación” está más detallado en el informe: Luetz J. M. (2008) *Planet Prepare*. World Vision International. 124 pp. ISBN 1-887983-47-3. <http://wvsiapacific.org/downloads/PlanetPrepare_Low-Res.pdf>.

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⁸ “Éxodo en el Chaco por los cambios climáticos”. *El Deber*. 25 de julio de 2010. <<http://www.eldeber.com.bo/2010/2010-07-25/vernotaahora.php?id=100724182115>>.

⁹ Entrevista realizada para los autores en la localidad El Cruce el 15 de diciembre del 2010.

¹⁰ Entrevista con Nicolás Manuel Sánchez (Capitán Grande de la Zona) realizada para los autores en la comunidad de Ipatimiri el 11 de diciembre de 2010.

¹¹ Entrevista con Nancy Gutiérrez (especialista en gestión de desastres y gerente de ayuda humanitaria de Visión Mundial) realizada para los autores en Santa Cruz (4.1.2011) y La Paz (12.1.2011).

¹² Visión Mundial Bolivia, Reporte de Situación de Emergencias No. 2 por Sequía Provincia Cordillera (Santa Cruz)

Región del Chaco, Bolivia. 2 de julio de 2010. En el archivo de los autores.

¹³ Datos del departamento de Chuquisaca y de la provincia de Cordillera extraídos del artículo “Éxodo en el Chaco por los cambios climáticos”. *El Deber*. 25 de julio del 2010. <<http://www.eldeber.com.bo/2010/2010-07-25/vernotaahora.php?id=100724182115>>.

¹⁴ Investigación cuantitativa y cualitativa sobre la migración inducida por la sequía, realizada en Camiri, Charagua, El Cruce, La Brecha, Itatiki, Guaichindi, Ipatimiri, Hacienda Yatigüügüa, Eiti, Sinai, Ivamirapinta, La Bélgica, Santa Cruz de la Sierra y La Paz, del 7.12.2010 hasta el 12.01.2011.

¹⁵ Entrevista realizada para los autores en la comunidad de Ivamirapinta el 17 de diciembre de 2010.

¹⁶ Entrevista con Giovana Pérez (gerente de Visión Mundial en el programa PDA Koe Iyambae) realizada para los autores en Charagua el 9 de diciembre de 2010.

¹⁷ Entrevista realizada para los autores en Camiri el 18 de diciembre del 2010.

¹⁸ Caña dulce, vida amarga: El trabajo de los niños, niñas y adolescentes en la zafra de caña de azúcar. Estudio realizado por la OIT/UNICEF en 2004. <http://white.oit.org.pe/ipcc/boletin/documentos/zafra_final_bo.pdf>.

¹⁹ Nota 14.

²⁰ Nota 18.

²¹ Entrevista realizada para los autores en Charagua el 9 de diciembre de 2010.

²² Entrevista realizada para los autores en la localidad de El Cruce el 15 de diciembre de 2010.

²³ Entrevista realizada para los autores en la localidad de El Cruce el 16 de diciembre de 2010.

²⁴ Entrevista con Gustavo García Gutiérrez (Oficial Mayor Administrativo Gobierno Municipal Charagua) realizada para los autores en Charagua el 9 de diciembre de 2010.

²⁵ IPCC (2012) *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Masstrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.

²⁶ IPCC (2011) NOTA DE PRENSA. Kampala, 18 de noviembre de 2011. <http://www.ipcc.ch/news_and_events/docs/srex/SREX_press_release_sp.pdf>.

²⁷ Entrevista con Nancy Gutiérrez (especialista en gestión de desastres y gerente de ayuda humanitaria de Visión Mundial) realizada para los autores en Santa Cruz (4.1.2011) y La Paz (12.1.2011).

²⁸ Universidad Mayor de San Andrés, La Paz, Bolivia. 2010. Proyecto de Grado. *Análisis de tendencias de las series cronológicas meteorológicas en los departamentos de Potosí y Chuquisaca*. Postulantes: William Henry Calle Choque, Reynaldo Gaspar Escobar Fernandez, Angela Paola Ramirez Rivera, Juan Carlos Velez Saramani. Asesores: Dr Ing. José Luis Montaña Vargas, Ing. Javier Mendoza Rodriguez.

²⁹ Entrevista con doctor José Luis Montaña realizada para los autores en La Paz (11.1.2011).

³⁰ IPCC (2007): *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

³¹ UN International Strategy for Disaster Reduction (ISDR). Press Release. 18 de enero de 2008. <http://www.unisdr.org/files/5429_pr200001disasterfigures2007.pdf>.



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Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

GENERAL QUESTIONS

Questionnaire number:	
Interview date:	
Interview location:	
Interviewee: (first name / surname)	
Interviewee gender: (male / female)	
Interviewee age: (approximate if unavailable)	
Interviewee nationality:	
Interviewee ethnicity:	
Interviewee religion:	
Interviewee marital status:	
Interviewee number of children:	
How many family members live with you now?	
Your highest educational level? No schooling Primary Secondary Tertiary	

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

MIGRATION BACKGROUND QUESTIONS

Did environmental or climate change-related problems ever cause or contribute to your decision to migrate? If “YES”: Write short summary of what happened and go to “**MIGRANT**” (M) questions.

If “NO”, ask: Do you expect environmental or climate change-related problems will prompt you to migrate in the future? If “Yes”: Write short summary of what the person expects will happen in the future, then go to “**FUTURE-MIGRANT**” (F) questions.

If “NO”, ask: Are you knowledgeable to speak about forced migration caused by climate or environmental change? If “YES”: Write short summary of what in the view of the respondent constitutes his or her expertise, then go to “**EXPERT**” (E) Questions.

If the answer is “NO” to all three introductory questions end the interview and thank the person for his or her time.

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

“MIGRANTS” (M), “FUTURE-MIGRANTS” (F), “EXPERTS” (E)

M: Think about the time you were forced to migrate in part because of environmental or climate change-related problems. What were the problems that prompted you to leave (e.g., weather changes, sea level rise, problems with the soil, freshwater decline, natural disaster, etc.)?

F/E: What are the problems that you think will prompt you [E: affected people in the area] to leave?

M, F, E: How and when did you first become aware of the problems?

M: How and when did you actually leave? [F: Expect to leave? E: Expect large-scale migration?]

M: How was [F: will / E: should] the decision to migrate [be] reached (personal/ family/ community-level)?

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

M: Are you able to visit your former [F: future] home from time to time? Please explain.

E: have you visited “origin” and/or “destination” communities of present and/or future migrants?

M, F: Please provide an estimate of the total number of people who already left your home community? E: Please provide an estimate of the total number of people already displaced from the area of investigation?

M, F: How many people will be displaced from your “home community”, when will they leave?

E: How many people will be displaced from the area of investigation in the future?

M: How did you support yourself in your former home (former livelihood)?

M, F: How do you support yourself now (present livelihood)? E: How do most people in the area of investigation support themselves?

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

M: Which environment or climate-related problems contributed [F: most contributes] to your decision to leave? How important was [F, E: is] each factor? M, F, E: From the list below, please rate each factor as either “unimportant” OR “important” OR “very important”.

Reason	Unimportant	Important	Very important
poor drinking water			
insufficient drinking water			
poor / degraded soil			
erosion / land loss			
insect infestation/ vectors (eg mosquitoes)			
diseases / pests			
sudden natural disasters (eg wind storms)			
slow-onset disasters (eg droughts)			
rises in sea level			
dwindling agricultural yields			
other problem:			
other problem:			

Which NON-environment or climate-related problems also contributed [F: most contributes] to your decision to leave? How important was [F, E: is] each factor? M, F, E: From the list below, please rate each factor as either “unimportant” OR “important” OR “very important”.

Reason	Unimportant	Important	Very important
population growth, i.e., overcrowding			
insufficient health care facilities			
insufficient educational facilities			
unemployment			
conflicts over resources			
safety concerns, crime			
political instability, civil war			
religious/ ethnic conflict			
following another family member			
better opportunities elsewhere			
other problem:			
other problem:			

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

M: How and with what level of success did you try to address these problems before deciding it was better to move? (ADAPTATION STRATEGIES) F, E: How do you / affected people address them?

M: If you had had additional help/ resources, which other strategies could have been employed?
F: If you [E: affected people] had additional help/ resources, could any other strategies be successfully employed?

M: If the situation in your former home improves, would you like to return? [F: stay here?]
E: Please explain why you believe people are open to migrating OR hesitant to do so?

M: After leaving your home, why did you decide to come here to this place? Please explain.

M: What made life better in your former home? Please explain.

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

M: What makes life better here in your adopted home? Please explain.

M: Were other people already here when you arrived? How did they welcome you? Please explain.
F, E: What reception do you think you [E: forced migrants] will receive in their “host” community?

M: What were some of the positive and/or negative experiences you had interacting with your “host” community? F, E: What do you expect to be some of the positive and/or negative experiences you [E: forced migrants] will have when interfacing with your [E: their] “host” communities?

M: Taking everything into account, are you better (or worse) off now that you are here?
F: Taking everything into account, do you expect things in your new home will be better (or worse) than in your present home? E: Taking everything into account, will the former or future home be preferential to the forced migrant community? How about the “host” community? All: Please explain.

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

PREFERRED NOMENCLATURE = SELF-DESCRIPTION

M, F, E: In your view, what is the best word (terminology) to characterise people [M: like yourself] who leave in part because of environmental or climate change-related problems? Please explain.

M, F, E: Different members of the public characterise people in your situation by different labels. From the list below, please indicate how accurately each term characterises the identity of affected people? From the list below, please rate each term based on your emotional response to it as “good” OR “bad” OR “don't know”.

Identity	Good	Bad	Don't know
migrant			
evacuee			
refugee			
exile			
victim			
displacee			
dislocatee			
other term: _____			
other term: _____			

M, F: Are there other terms which more accurately or suitably describe people in your [E: their] situation? Please volunteer your thoughts.

M, F: There has been debate among academics whether people in your [E: their] situation should be called “migrants” (e.g. “forced migrant”) or “refugees” (e.g. “climate refugee”). To date there is no

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

agreement how to call people in your [E: their] situation. What would you like to say to people who debate this question. Please elaborate.

M, F: Does it matter to you how people in your [E: their] situation are characterised? Please explain why or why not.

M, F, E: Sometimes it is maintained that the word “refugee” implies a forced fate, and the term “migrant” a degree of choice and free will, do you agree? Please elaborate.

M: As someone who was [F: expects to be] forced to move in part because of climate or environmental change-related reasons, [E: As someone knowledgeable] do you prefer to view yourself [E: an affected person] as a “migrant” (requiring opportunities) or a “refugee” (requiring protection)?

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

PREFERRED DESTINATIONS = SELF-DETERMINATION

M: If it had been possible, would you have preferred to go somewhere else? If so, where? (preferred village/ district/ province) Please explain.

M, F: If you could pick anywhere in the world, where would you choose to go? (preferred country)

E: If people could pick anywhere in the world, where do you think they would want to go? Please explain.

PREFERRED SOLUTIONS = SELF-GOVERNMENT

M: What did you learn from your experiences (before, during and after the move)? F, E: What did you learn from the experiences that you have become aware of?

M: If you were to do it again, what would you do differently?

M, F: What advice would you like to give policy makers exploring how best to assist people in your

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

[E: their] situation? Please explain.

M, F, E: What advice would you like to give development or humanitarian organisations seeking to “help people help themselves”?

M, F, E: What should be the role of civil society (eg affected islanders)? Please share your thoughts.

M, F, E: What role and responsibility can *you* assume to promote peaceful resettlement?

M, F: Are you aware that there are many other people in other parts of the world sharing your plight [E: the plight of forced displacement]? Please elaborate.

M, F, E: Would you be interested to share your experiences with them and/or to learn from the

Appendix D.1 Pilot Study Questionnaire

Climate Change Migration Management

Questions compiled by PhD candidate Johannes M Luetz

PhD Pilot Study: Bougainville, Papua New Guinea (20 October – 6 November 2010)

experiences of other people who are similarly affected? Please elaborate.

M, F, E: In your mind, who or what is primarily responsible for your [E: this] displacement?

M, F: In your mind, which agencies or institutions are primarily responsible to help you [E: them]?

M, F: In your mind, which agencies or institutions are best equipped to help you [E: them]?

“THANK YOU VERY MUCH FOR YOUR TIME!”

Would you like to receive a summary of the main findings of this research? (Y/N)

Is there any important aspect (or questions) missing in this research that should be incorporated in future research?

May I use your name, take your photo and share your experiences outside of this research?

Is there anything else you would like to say?



1. INTERVIEWEE DEMOGRAPHICS

Questionnaire number	
Audio file name (rec. time)	
Video cassette number (rec. time)	
Interview date	
Interview location	
Title / designation	
Interviewee first name, surname	
Sex (m / f)	
Age (approximate if unavailable)	
Nationality	
Ethnicity	
Religion	
Marital status	
Number of children	
How many family members live with you now?	
Highest level of education / degree <input type="checkbox"/> No school <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Tertiary	
Contact details	
Check permission to use research: <input type="checkbox"/> Cite name <input type="checkbox"/> Use photo/video	Date, signed:



3. PRESSURES: MIGRATION PUSH FACTORS

Which environment or climate related pressures contribute to migration and how important are they? From the list, please rate each factor as either unimportant OR important OR very important. Add and rate additional environment and/or climate related factors as relevant.

Environment related pressures (please ✓ tick one)	Unimportant	Important	Very important
poor drinking water			
insufficient drinking water			
poor / degraded soil			
erosion / land loss			
insect infestation/ vectors (eg mosquitoes)			
diseases / pests			
sudden natural disasters (eg wind storms)			
slow-onset disasters (eg droughts)			
rises in sea level			
dwindling agricultural yields			
other: _____			
other: _____			

What is the most important environment related push factor? _____

Which NON-environment or climate related pressures also contribute to migration and how important are they? From the list, please rate each factor as either unimportant OR important OR very important. Add and rate additional NON-environment and/or climate related factors as relevant.

NON-environment related pressures (please ✓ tick one)	Unimportant	Important	Very important
population growth, ie overcrowding			
insufficient/ poor health care facilities			
insufficient/ poor educational facilities			
unemployment			
conflicts over resources			
safety concerns, crime			
political instability, civil war			
religious/ ethnic conflict			
following another family member			
better opportunities elsewhere			
other: _____			
other: _____			

What is the most important NON-environment related push factor? _____



4. ASPIRATIONS: MIGRATION PULL FACTORS

In thinking about migration, what are the most important aspirations? (What do people seek most?) From the list, rate each possible aspiration as having a very high priority OR high priority OR medium priority OR low priority OR very low priority. Add and rate additional migrant aspirations as relevant.

Aspirations of forced migrant communities	VHP ★★★★★	HP ★★★★	MP ★★★	LP ★★	VLP ★
(please ✓ tick one) Example: to be happy in the new place		✓			
Employment/ making money					
Comfortable climate					
Same culture/ ethnicity					
Same language					
Same country					
Proximity “origin” community					
Better/ or higher education					
Better health care					
Reproductive/ family planning					
Moving together <i>with</i> family					
other: _____					
other: _____					
other: _____					

What is the most important aspiration? _____

5. PREFERRED MIGRATION DESTINATION/S

Where do people go when compelled to move? _____

Let’s imagine there were no restrictions (political, financial, etc), would people prefer to go elsewhere?

If so, where? _____ Why? _____

What is the most preferred migration destination? _____



6. PREFERRED MIGRANT SELF-IMAGE/S

People who feel compelled to move have been characterised by different labels. From the list, please rate each term based on your emotional response to it as good OR bad OR don't know. Add and rate additional terms as relevant.

Possible identities (please ✓ tick one)	Good ☺	Bad ☹	Don't know ☺
migrant			
evacuee			
refugee			
exile			
victim			
settler			
displaced person/ displacee			
dislocated person/ dislocatee			
other: _____			
other: _____			
other: _____			

Is it important how people who are compelled to move are labelled? (Explain why or why not)

Is there a local language expression that confers a more suitable image or characterisation?

What is the least preferred image or self-image, why? _____

What is the most preferred image or self-image, why? _____

In simple terms, to *emigrate* means to leave one's country to settle in another; to *migrate* means to move from one place to another; and to *immigrate* means to enter a country, intending to stay there. (Eg a person *emigrated from* Hong Kong and *immigrated to* Australia.)

In your view, which is the stronger motivation to move? 1. the urge to *leave a difficult situation*, OR 2. the attraction to *arrive at a better place elsewhere*? (They are intertwined, but which of the two is the stronger trigger in the migration situations you have seen in your community/ country context?)



7. PREFERRED MIGRATION MANAGEMENT / SOLUTIONS

What would make the experience of moving a positive instead of a negative one?

To make this happen, how can policy makers help? _____

To make this happen, how can NGOs help? _____

To make this happen, how can migrant communities help themselves? _____

To make this happen, what role and responsibility can you assume *individually*? _____

Should migrant communities be maintained or be assimilated by/ dissolved into host communities?

How can host communities be better prepared? _____

What did you learn from the migration experience (before, during and/or after the move)?

“THANK YOU VERY MUCH FOR YOUR TIME!”

Would you like to receive a summary of the main findings of this research? (Y/N)

Is there any vital aspect missing in this study that should be incorporated in future research? (Y/N)

Is there anything else you would like to say? (Y/N)

3.2(a) Approval

THE UNIVERSITY OF NEW SOUTH WALES

Arts, Humanities & Law Human Research Ethics Advisory Panel

Date: 27/09/2010
Research Centre: Institute of Environmental Studies
Supervisor: Associate Professor John Merson
Title of Project: Climate Change Migration Movement
Reference Number: **10 121**
Investigators: Mr Johannes Luetz

The Arts, Humanities & Law Human Research Ethics Advisory Panel has recommended to your Head of School/Unit/Centre and the Human Research Ethics Committee that this project, being of minimal ethical impact, may proceed. This approval is valid for 12 months from this date.



.....
Associate Professor Leong K. Chan
Convenor
Arts, Humanities & Law Human Research Ethics Advisory Panel



.....
Professor Mark Hoffman
Associate Dean Research
Faculty of Science

Human Research Ethics Advisory Panel B Arts, Humanities & Law

Date: 27.09.2011
Investigators: Mr Johannes Luetz
Supervisors: Associate Professor John Merson
Research Centre: Institute of Environmental Studies
Re: Climate Change Migration Movement
Reference Number: 10 121 EXT

The Human Research Ethics Advisory Panel B for the Arts, Humanities & Law is satisfied that this project is of minimal ethical impact and meets the requirements as set out in the National Statement on Ethical Conduct in Human Research*. Having taken into account the advice of the Panel, the Deputy Vice-Chancellor (Research) has approved the project to proceed.

Your Head of School/Unit/Centre will be informed of this decision.

This approval is valid for 12 months from the date stated above.

Yours sincerely



Associate Professor Annie Cossins
Panel Convenor
HREA Panel B for the Arts, Humanities & Law

Cc: Associate Professor John Merson
Director
Institute of Environmental Studies

* <http://www.nhmrc.gov.au/>

Approval No 10121

PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM

Climate Change Migration Management

Participant selection and purpose of study

I am inviting you to be interviewed for a PhD study on climate change migration management. This research is sponsored by the Institute of Environmental Studies (IES) at the University of New South Wales (UNSW) and is carried out in conjunction with the development organisation World Vision International (WVI). The project is among the first international studies to look at the management of climate change-related migration from the grassroots perspective of displaced populations. The role of the international community, policy makers and development and humanitarian organisations in this debate has been insufficiently informed by the perspective of the people concerned. The thesis argues that communities where climate change-related displacement is either already taking place or projected to occur in the future ought to be moved from the periphery to the centre of the climate change migration management debate if equitable resettlement solutions are to be arrived at.

Given your place of residence and/or your current role, you have been selected as a possible participant in this study. If you decide to participate, I will interview you (with the assistance of an interpreter, if necessary) about three research questions, outlined below:

1. Hearing from affected people on preferred nomenclature

Self-description: How do people who are displaced by climate change-related environmental degradation prefer to characterise themselves? Do they prefer to view themselves as “migrants” (requiring opportunities and a fair chance) or as “refugees” (requiring humanitarian intervention and protection)?

2. Hearing from affected people on preferred destinations for emigration

Self-determination: Where do people who are displaced by climate change-related environmental degradation want to go?

3. Hearing from affected people on preferred processes and solutions

Self-government: How do people who are displaced by climate change-related environmental degradation wish to solve their own problems and manage their resettlement?

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In sum, the project seeks to develop an holistic human subjects framework to inform the macro-level analytical perspective (i.e., policy makers, NGOs, and academics) with sound micro-level empirical data gathered among affected populations at grassroots level (i.e., present and future forced migrants and their respective communities). In this way I hope to inform myself and other stakeholders of your unique perspectives, experiences, felt needs and preferred solutions.

Description of study and risks

This interview is part of a data gathering process in four “hot spot” categories where climate change-related environmental degradation is expected to generate large numbers of displaced people, namely small island states, coastal megacities, deltaic regions, and glacial water-stressed regions. The objective is to gather data from a pool of respondents deemed “representative” of the subject matter of investigation, and fundamentally, “authoritative” in terms of their experience and expertise as firsthand forced migrants.

I anticipate that the interview will take about one hour, during which time I will ask you a number of questions and write down your responses. I may also need to follow up at a later stage by telephone, skype, and/or e-mail. I do not expect the interview to pose risks to any interviewer/s, interviewee/s, or interpreter/s. Although this study is undertaken with the overarching objective of seeing the plight of displaced populations improved, we cannot and do not guarantee or promise that you will receive any benefits from this study.

Confidentiality and disclosure of information

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. If you give me your permission by signing this document and ticking the relevant box below, you agree that I may either (a) attribute statements to you by name; or (b) attribute statements to an unnamed person working in the sector in which you work (e.g. by attributing the comment generally to “staff of NGOs”, “staff of international organisations”, “community leaders”, or “government officials”). If you do not agree to either of these forms of attribution (by ticking the third box), I will not attribute the statement to you by name or to a person working in your institution, but may use it by way of general background material, but not so as to permit its identification with you. If you wish to give me permission to circulate copies of my interview notes please indicate by ticking the relevant box.

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Complaints

Any complaints may be directed to the Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA (ph. 9385 4234, fax 9385 6648, email ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed of the outcome.

Feedback to participants

The research findings from these interviews and other research carried out under the project will be disseminated in the form of publications in academic journals, book chapters, and publicly available working papers and short articles. If you wish, I will keep you informed of such publications as and when they appear.

Your consent

Your decision whether or not to participate will not prejudice your future relations with myself, IES, UNSW or WVI. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice. A revocation of consent form appears at the end of this document.

Contact

If you have any questions, please feel free to contact me.

Johannes M Luetz

Institute of Environmental Studies (IES) Room 127, H22, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385-4603, mobile +61412155736, e-mail planetprepare@gmail.com)

**PARTICIPANT INFORMATION STATEMENT AND
CONSENT FORM**

Climate Change Migration Management

You are making a decision whether or not to participate. Your signature indicates that, having read the information provided above, you have decided to participate. Please also tick one of the boxes below, in addition to adding your signature.

I agree that comments made by me may be attributed to me by name in any research findings of the project.

or

I agree that comments made by me may be attributed to an unidentified person in the sector in which I work (e.g. by attributing the comment generally to “staff of NGOs”, “staff of international organisations”, “community leaders”, or “government officials”).

or

I do NOT agree to the attribution by name to me of comments made during the interview, unless my permission is subsequently given in writing.

and

I agree that copies of the written interview notes may be published and/or circulated (e.g., for evaluation by other interested stakeholders such as researchers, humanitarian staff, etc.)

or

I do NOT agree to the dissemination of the written interview notes.

.....
Signature of Research Participant

.....
Signature of Witness

.....
(Please PRINT name)

.....
(Please PRINT name)

.....
Date

.....
Nature of Witness

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REVOCATION OF CONSENT

Climate Change Migration Management

I hereby wish to **WITHDRAW** my consent to participate in the research proposal described above and understand that such withdrawal **WILL NOT** jeopardise any treatment or my relationship with Johannes M Luetz and/or the IES, UNSW or WVI.

.....
Signature

.....
Date

.....
Please PRINT Name

The section for Revocation of Consent should be forwarded to Johannes M Luetz, Institute of Environmental Studies (IES) Room 127, H22, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385-4603, mobile +61412155736, e-mail planetprepare@gmail.com)

CONFIDENTIALITY STATEMENT FOR INTERPRETERS

Climate Change Migration Management

I am inviting you to participate as an interpreter for a PhD study on climate change migration management. This research is sponsored by the Institute of Environmental Studies (IES) at the University of New South Wales (UNSW) and is carried out in conjunction with the development organisation World Vision International (WVI). The project is among the first international studies to look at the management of climate change-related migration from the grassroots perspective of displaced populations.

As an interpreter I will adhere to UNSW ethics guidelines and procedures. I understand and agree that any information obtained by me during the course of the interview will remain confidential.

.....
Signature of Interpreter

.....
Signature of Witness

.....
(Please PRINT name)

.....
(Please PRINT name)

.....
Date

.....
Nature of Witness

Appendix E

Bolivia Case Study

Interview Details	Spanish Original	English Translation
<p>Appendix E.1 (Gualberto Carballo, Camiri head office Visión Mundial Bolivia, 7 December 2010; Q19/Exp/Orig/Camiri/20101207).</p>	<p>“En el trabajo que realizamos, hacemos proyectos de salud, educación, proyectos de desarrollo económico, proyecto de protección de la niñez, VIH / SIDA, pues en la ejecución de estos proyectos, hacemos un monitoreo continuo a los niños y niñas que tenemos apadrinados en los programas. Por lo menos cada 90 días, un niño debe ser visto en la comunidad, verificado que está viviendo en la comunidad. Nosotros ya en el mes de marzo principios de abril, empezamos a darnos cuenta, según los reportes de monitoreo, de que había un gran porcentaje de ausentismo de niños por ende de familias que están migrando a otros centros urbanos a las zafras que comunmente salen las familias guaranies. Esto nos llamó la atención, y bueno, preocupados por esta situación, fuimos a verificar a cada familia a los líderes de estas comunidades, cuales son los factores de migración que han hecho a otros sectores. Uno de los factores que hemos podido verificar es el tema de la profundización de la sequía. La sequía se ha empezado a sentir, aproximadamente desde el mes de Enero de este año [2010]. Imagínese que desde Enero a la fecha que es 07 de diciembre, no ha llovido, recién son dos lluvias que han venido este año, hace unas semanas atrás. La situación se torno muy difícil donde la familia no consigue sus alimentos, tienen que salir a emplearse, ya sean de domésticos (as) o cargadores que ayudan en el mercado a llevar sus bultos ... o como les dije a las zafras. Las condiciones de esas familias, de estas personas que han salido de sus comunidades en busca de mejores condiciones o de ganar mas dinero, aveces eso empeora, porque vuelven con mas deudas, mas endeudados y la situación no ha cambiado, sino ha empeorado. La sequía, este año ha sido una de las peores que se ha vivido, si bien la zona del Chaco en</p>	<p>“In the implementation of our development projects (health, education, economic development projects, child protection, HIV/AIDS) we ensure continuous monitoring of sponsored children enrolled in our programmes. At least once every 90 days a child is to be seen in the community to verify that he [or she] is living in the community. From [about] the month of March / beginning of April we began to realise that according to this monitoring process a large percentage of children were absent in the communities. This caught our attention, and well, concerned about this situation, we went to check with each family or the leaders of these communities about the factors that caused this [out-]migration to other parts [of Bolivia]. The worsening drought is one of the factors we were able to verify. The drought began to be felt from about the month of January this year [2010]. Think about it: from January to date, which is the 7th of December, it didn’t rain, apart from two recent rains a few weeks ago. The situation is very difficult. When the family does not have food, they have to go out to find work, whether as domestic workers or as <i>cargadores</i> [load carriers] at the markets or, as I said, at the <i>zafras</i> [sugarcane harvests]. The conditions of families who leave their communities in search of better conditions or to earn more money sometimes gets worse, because they come back with more debt, and the situation [here] has not changed, but has even worsened. This drought was one of the worst that ever occurred. Although the whole Chaco is a dry zone – we have always had droughts – this year was stronger, more than any other year, wherefore in April the national government declared this area a natural disaster zone.”</p>

	<p>conjunto es una zona seca, siempre hemos tenido sequías, pero este año ha sido mas fuerte, mas que cualquier otro año, por ello es que el gobierno nacional en el mes de abril, ha declarado zona de desastre natural.”</p>	
<p>Appendix E.2 (Unidentified respondent interviewed on 7 December 2010 in Camiri, Cordillera Province)</p>	<p>“La Cordillera tiene alrededor de 90.000 Km cuadrados, aproximadamente tiene 105.000 habitantes, y el acto ganadero de 400.000 cabezas de ganado. [...] Yo me fuí en 1980, y volví despues de un poco mas de 15 años, se notaba que empezaba a cambiar el clima aca en la región Camiri, hubo una explosión demográfica. [...] De pronto hacía calor, eso fue desde 1995 al 2000, despues de 10 años a la fecha, practicamente el cambio climático esta presente. [...]</p> <p>De la carretera que baja de Santa Cruz y llega a Yacuiba, y pasa por Camiri, hemos dicho que había mucho desmonte [deforestación] que antes no había. Desde el 2003 al 2010 mas o menos, ha crecido la base productiva mucho, de tal manera que esta zona [apuntando la carretera trayecto Santa Cruz a Camiri], son chaco [parcelas] y ha provocado la deforestación y esto nos ha generado un cambio climático que ha venido acompañado de otras cosas más; incendios, fálta de agua para consumo humano, y varias cosas mas. Lo que te comentaba Johannes es que antes la base productiva era pequeña a lo largo de la ruta de Santa Cruz a Yacuiba, habían pocos campos de siembras. Y a raíz [consecuencia] de las políticas de estado – que tierra que no sea productiva, será revertida – hemos notado cómo a partir del 2003 al 2010 ha habido una deforestación muy grande, un chaqueo descontrolado irracional, que ha provocado que la base productiva crezca. Es decir que aparezcan chacos [parcelas] que antes no había. La erosión, quebradas y ríos secos han alternado el ecosistema natural y están provocando de alguna manera también un cambio climático, situación que en la actualidad ha hecho pasar un mal año a todos juntos, porque no solamente ha afectado al la fálta de agua [sequía] sino también al alimento para el consumo humano, consumo animal, y han habido problemas con</p>	<p>“The Cordillera has about 90,000 square kilometres [of land area], approximately 105,000 inhabitants, and ... 400,000 heads of cattle. [...] I left in 1980 and returned after a little over 15 years. [By then] you could tell the climate was beginning to change in the region of Camiri, [and] there was a population explosion. [...] Suddenly it was hot, ... climate change had arrived. [...]</p> <p>Along the road that runs from Santa Cruz to Yacuiba, passing Camiri, ... there is [now] much desmonte [land clearance] which you didn't see before. From 2003 to 2010 or so, the production base grew a lot, so much so that this area [along the road] now has chacos [plots/ parcels of farmland] which have caused deforestation and climate change, along with ... fire, lack of water for human consumption, and various other things. [...] In the past the production base was small along the road from Santa Cruz to Yacuiba, and there were few fields of crops. But as a consequence of state policies – that unproductive land is to be reverted – we've noticed that from 2003 to 2010 there has been a very big [increase in] deforestación, uncontrolled irrational slashing, which has led to a growing production base. In other words, there are now chacos that weren't there before. Erosion, dried up streams and rivers have changed the natural ecosystem and are somehow also causing climate change, ... water stress, [and] affecting food for human consumption [and] animal consumption. And there have been problems with fires, forest fires. [...] It is necessary that the national government joins the provincial governments and municipal governments to act as one [government] to touch on the land issue, because there must be regulation that allows us to somehow ensure food security and be in balance with the environment, with nature. If we go on like this, we will have a rather</p>

	<p>quemadas, provocando incendios forestales, y todo precisamente porque hay este tipo de factores que han alterado la vida como era anteriormente. Es necesario que el Gobierno Nacional junto al Gobierno Departamental y los Gobiernos Municipales hagan un solo [gobierno] y toquen el tema de la tierra, porque tiene que haber una regulación que nos permita de alguna manera garantizar la parte alimentaria, y hacer un equilibrio con el medio ambiente, con la naturaleza. Si vamos como vamos, vamos a tener un futuro bastante incierto. Yo creo que sí hay políticas nacionales que están a favor de la pachamama, de la madre tierra, yo creo que hay que frenar esto.</p> <p>Y aquellas familias que conservan sus montes [tierras], había que premiarlas, y darles incentivos, porqué?, porque ... al fin al cabo, van a generar calidad de vida y calidad de aire.”</p>	<p>uncertain future. [...]</p> <p>Those families who keep their forested land intact, you need to reward them and give them incentives. Why? Because in the end they will generate quality of life and air quality.”</p>
<p>Appendix E.3 (Unidentified respondent interviewed 8 December 2010 on cleared land to be named Copera Bossa Verde Community, Cordillera Province)</p>	<p>“¿Como se hace un Chaqueo? Primero se corta con la hacha [machete], se pica, se amontona, o se junta, para la facilidad de la quema. Es un trabajo que necesita mucho tiempo, por lo menos dos meses en el mismo lugar. Ahi vamos a sembrar maíz, y frejol, estamos pensando sembrar zapallo, y son 24 familias que van a vivir allí. [...] El chaqueo no ayuda a la tierra, perjudica a la lluvia mas que todo, todo el chaqueo. Por falta de tierra, 24 familias van a venir a vivir aqui, este año creo, ya estamos alambando, unas 50 hectareas. [P:] ¿Desde cuando hay los asentamientos, esto es cada año? [R:] Esto esta pasando desde hace 4 años, hemos estado tramitando para tener esas tierras o hacer un nuevo asentamiento a nombre de nuestra comunidad, ... los capitanes hicieron lo posible para sacar (en forma legal) con la personaduría jurídica. [...] Ahora ya esta formalmente organizado para el asentamiento legal. [Unas gotas de lluvia caén...] Esta es la segunda vez que caén las gotas, no hay lluvia fuerte desde hace 6 o 7 meses ... aqui se ve mucho la sequía...” (Encuestado no identificado entrevistó el 8 de diciembre de 2010, sobre tierra despejada para ser nombrado Comunidad Copera Bossa Verde, de la Provincia Cordillera.)</p>	<p>“How the slashing is done? First you cut with an axe [machete], chop, pile it up together, for ease of burning. It is work that takes a long time, at least two months in the same place. We are going to plant corn and beans, we are also thinking to sow pumpkin seed; altogether 24 families are going to live here. [...] Fire clearance does not help the earth, if anything it harms the rains, all this slashing and burning! For lack of land, however, we’re coming to live here, this year I think. We’re wiring off about 50 hectares. [Q: When did the settlement process begin?] [A:] This has been going on for the last four years. We have been negotiating to have this land and to form a new settlement on behalf of our community, ... the captains did their best to get things legalised with the legal system. [...] Now things are formally organised for the legal settlement. [A few raindrops are falling...] This is the second time that a few drops of rain have fallen, there have been no significant rains for six or seven months ... all around you can clearly see the drought.”</p>

<p>Appendix E.4 (Unidentified respondent interviewed on 9 December 2010 in Charagua, Cordillera Province)</p>	<p>“El otro tema por lo cual la gente emigra en el Isoso es que ... un padre de familia se ve con 10 hijos o 15 hijos, ... se ve agobiado por las necesidades, porque tiene una familia muy grande que sostener, y eso hace que él tenga la necesidad de salir y buscar otra trabajo, ... recursos para el sustento de la familia. [...] El tema de Planificación familiar es muy difícil de trabajar con este tema, ninguna institución del gobierno, ninguna ONG, ha logrado trabajar respecto a este tema. Para hacer un programa educativo, o productivo a largo plazo, hay que comprender el tema cultural. [...] Se ha querido trabajar en el tema de planificación familiar, como gobierno y con algunas instituciones, pero siempre hay una barrera. Y es el tema cultural, por lo vivido en el último siglo en el pueblo guaraní, y el tema de planificación familiar definitivamente no esta en su agenda. Ellos están en un proceso de expandirse, de expansión de su cultura, de tener mas gente guaraní, y de ocupar su territorio.”</p>	<p>“The issue why people emigrate from Isoso is [this]: a father finds himself with 10 children or 15 children, ... feels overwhelmed by their needs, because he has a very large family to support, and that causes him to feel an urge to leave and find another job [and] resources to sustain the family. [...] The issue of family planning is a very difficult and sensitive [matter], no government institution or NGO has been able to tackle this issue. [...] Those who have tried to address the issue of family planning – the government and some institutions – have always come up against a barrier. And [because of] this cultural issue that the Guaraní have lived through in the last century, the subject of family planning is definitely not on their agenda. They are in the process of expanding themselves, expanding their culture, to have more Guaraní, and occupy/claim their [ancestral] territory.”</p>
<p>Appendix E.5 (Unidentified female Mennonite interviewed on 9 December 2010 in Charagua, Cordillera Province)</p>	<p>“El tema del número de niños que cada familia tiene, inicialmente viene por un factor cultural. Ellos piensan que mientras más hijos tienen, están más bendecidos: ‘por lo tanto tengo más ayuda en el chaco con las siembras’. Y además de ello, tienen que el gobierno dictó otro decreto donde se emite otro bono, llamado Bono Juana Azurduy. Se trata de ayudar a cada mujer embarazada, desde el inicio del embarazo. Por cada control médico que ella se realice, recibe un bono de 50 Bolivianos hasta que nazca el niño. Al momento de dar a luz, ella recibe un monto de 120 o 150 Bolivianos me parece y este bono la sigue beneficiando durante un año, cada mes, pero con el único fin de beneficiar al niño y el control de sus vacunas. Y bueno, en la actualidad esto lo ven como un asunto económico: ‘sí me embarazo o tengo un niño mas, recibo este bono’. Y se ha podido ver que hay un mayor incremento de mujeres embarazadas. Sin embargo no están viendo a futuro lo que podría suceder: ‘pues sí nos llenamos de hijos, no podemos tener las condiciones</p>	<p>“The issue how many children each family has, initially comes down to a cultural factor. They think that the more children they have, the more blessed they are: ‘so I have more help in the Chaco with the crops’. Moreover, the government issued another Bono [social service benefit/ grant] called Bono Juana Azurduy. This is to help every pregnant woman, from the beginning of pregnancy. For every medical check-up she has, she receives a Bono of 50 Bolivianos , until the child is born. At the time of giving birth, she receives an amount of 120 Bolivianos , I think, and this Bono continues ... with the sole purpose of benefiting the child and ensuring his [/her] vaccinations. Well, at present they see this as an economic issue: ‘if I get pregnant or I have another child, I will receive this Bono.’ And it has been noticed that there is an increase in pregnant women. However, they’re not seeing implications through to the future, what may follow: ‘for if we abound in children, we cannot have the necessary economic conditions to give them a good quality of life.’ Yet starting</p>

	<p>económicas necesarias para poder darles una buena calidad de vida'. Por ello entrar con un programa de planificación familiar, es peligroso, por el tema cultural. No pienso que es imposible, pero es un tema que debemos analizar desde muchos puntos de vista y podríamos lograr buenos objetivos.”</p>	<p>a family planning programme is dangerous for cultural reasons. I don't think it's impossible, but it is a subject we need to analyse from many points of view.”</p>
<p>Appendix E.6 (Unidentified World Vision employee Koe Iyambae Charagua Province Programa de Desarrollo de Área (PDA) in Charagua)</p>	<p>“Si bien trabajan seis o siete meses en las zafras, a lo que sí generan un ingreso, este dinero que ganan, lo invierten a corto plazo. Lamentablemente no lo saben administrar, y se les acaba en dos meses, vuelven al mismo punto de partida, hasta esperar el próximo ciclo y volver a las zafras el próximo año. Entonces no hay una visión de futuro, culturalmente el pueblo guaraní no tiene una visión empresarial. Se podría decir que ellos viven el día y son conformistas.”</p>	<p>“While working for six or seven months in the <i>zafra</i>, during which time they do generate an income, the money they earn, they invest it in the short run. Unfortunately, [many migrants] do not know how to manage it well and run out in two months, returning to the same starting point while waiting for the next seasonal cycle to begin when they migrate again to the <i>zafra</i> the next year. So there is no future vision. Culturally, the Guaraní [people] do not have a business vision. You could say that they live for the day and are conformists.”</p>
<p>Appendix E.7 (Carlos Lazarte, Gerente PDA Tekove, Zona Central Camiri; 15 December 2010; Q13/Exp/Orig/El Cruce/20101215; cited in Luetz and Barrón 2012, p. 50)</p>	<p>“En la zafra los niños sufren mucho, nuestra institución trabaja con enfoque en la niñez, lo que pretendemos y queremos hacer es una responsabilidad [compartida] de todos, tanto de los padres de esos niños, de las comunidades, las autoridades [...] En el interior de nuestras comunidades, también podríamos encarar este problema, a través de un liderazgo comunitario. Un liderazgo concientizado en vigilar la salud, la educación, la promoción de derechos. Pues no hay una estructura comunitaria que haga respetar esos derechos que los niños están aprendiendo”.</p>	<p>“During the <i>zafra</i> the children suffer tremendously. As a child-focused organisation we hope and aspire to achieve a responsibility that is shared by all: by parents, communities and authorities. [...] Within our communities we could also address this problem [rights non-fulfilment] through community leadership. A leadership that is sensitised and ready to monitor health, education and the dissemination of rights. Presently there is no community structure that upholds those rights that the children are learning.”</p>
<p>Appendix E.8 (Unidentified 42-year-old respondent, Comunidad La Bélgica, 30 December 2010; Q22/ Exp/Migr/Dest/La Bélgica/20101230)</p>	<p>“Muchos de los trabajadores que trabajan en el ingenio, al menos esos que cargan, aveces se rompen un pie, no tienen a donde ir a reclamar, y si reclaman, le dicen; bueno, si quieren trabajar, trabajen, y sino, vayanse. Entonces que podemos decir?, No hay derechos, no se si hoy en día lo va a ver con este gobierno, pero yo veo que en vez que mejore, esta empeorando. Yo les digo a mi hijos, no se que podemos hacer... Pero ellos (los empresarios) sacan en la noticia (los medios de comunicación) que todo esta bien. cuando llegan los comisionados a la empresa, ellos lo ocultan, ellos no</p>	<p>“Many of the labourers who work in the mill [sugarcane refinery], especially those who carry [loads], when they break a foot, they have nowhere to go to demand/claim support, and if they try, they are told: 'look, if you want to work, work, and if not, go away.' So what can we say? There are no rights. I'm not sure there will be with this government, but what I see is that in place of getting better, things are getting worse. [...] But [the employers] divulge in the news [media] that all is well. When the commissioners come [to investigate] the company hides/eclipses [the workers],</p>

	<p>dejan que los trabajadores hablen, los que hablan son los encargados de cada sección. Hay que ver la realidad de hoy en día, de lo vivimos, de los que trabajamos en los ingenios: un trabajador viene a buscarse una vida mas cómoda, pero aveces se encuentran con una ruda realidad, y aceptan esa realidad de poder quedarse, con un sueldo mínimo, como le había dicho, de 1700, lo mas bajo, 900 Bolivianos, con una realidad de que uno tiene que pagar el alquiler, o la canasta familiar, que aveces sube cada día, y aveces la realidad es que los dueños de las empresas, aveces son impuntuales, trabajan dos o tres meses, pero le pagan solo uno. No tenemos la posibilidad de poder hablar así libremente, aveces el hombre (trabajador) se lo guarda. El trabajador se calla por todo, pues porque si da la cara, aveces los empresarios, o los encargados lo miran mal, y si llegan a saber los jefes de las empresas, la cabeza del que hablo primero, se va... y si no hablan, pues se quedan con esa realidad por dentro, que sufre, y tiene que dar la cara a; si quieres trabajar, trabaja, sino ichau! te vas.”</p>	<p>and does not let them speak. The [only] ones who speak are the section chiefs. We must see the reality of today, of life and work in the mills: a labourer arrives working towards a more comfortable life, but at times encounters a harsh reality, and accepts the reality of staying on a minimum salary, as I said, of 1,700 [Bolivianos], or as little as 900 Bolivianos, with the reality that he has to pay for rent, groceries, and meet the daily rising cost of living. And the reality is that the company owners are at times <i>impuntuales</i> [unpunctual]. They let [the worker] work two or three months, but pay him only one. We don't have the option to talk openly. The worker is guarded and silent about everything, because if he faces or speaks up to those in charge, they will go after the one who spoke up first. And if he doesn't speak up, he will quietly suffer and bear up with this reality on the inside: 'if you want to work, work; otherwise <i>ichau!</i> [bye], you're out.'”</p>
<p>Appendix E.9 (Dionisio Pérez Manuel; Comunidad Ivamirapinta, 17 December 2010; Q18/Migr/Orig/Ivamirapinta/20101217 emphasis original; see also Luetz and Barrón 2012, p. 49)</p>	<p>“Mi nombre es Dionisio Pérez Manuel, mi esposa es Aurelia Camargo, y actualmente soy un anciano de la Iglesia Unión Cristiana Evangélica, aquí en la comunidad de Ivamirapinta [...] A los 15 años salí a trabajar a la zafra y pensé que allá yo estaría bien con la plata (dinero) y podría ahorrar; pero no lo logré. Trabajé una zafra temporal y me fue bien... Pero en el segundo año de zafra, los compañeros de trabajo me invitaron a la bebida. A la tercera zafra seguí esa carrera, y para los 18 años estaba fracasado, pues no podía ahorrar, no me alcanzaba la plata. A los 20 años formé una familia y crecí con esa experiencia, porque nadie me preparó, nadie me educó, nadie me aconsejaba, que estaba mal gastar el dinero de la zafra en bebida [...] Analicé que eso no estaba bien y traté de aprender otro oficio, aprendí a manejar autos y a elaborar artesanías, hasta el momento he vivido con ese oficio, el cual me saca de toda necesidad de urgencia. Entonces esas experiencias las comparto con los jóvenes de la comunidad, con mi pueblo. Les explicó</p>	<p>“My name is Dionisio Pérez Manuel, my wife is Aurelia Camargo, and presently I am an elder at the Unión Cristiana Evangélica Church here in the Community of Ivamirapinta ... When I was 15 years old I left my community to work in the <i>zafra</i> thinking that I would find it easier there financially and be able to save [money]. But I couldn't. I worked one season and all went well... But the second year my colleagues invited me to drink. By the third season I joined them in earnest, and [soon] felt like a failure. I also couldn't save, and the money wasn't enough. At 20 years of age I started a family and carried on with that habit, because nobody had prepared me, nobody had educated me, nobody had advised me that it was amiss to spend my money on drink ... [Eventually] I realised that what I was doing wasn't good and tried to change trade ... and to design [furniture]. Up to this day I support myself like this – it pulled me out of my dire straits. Now I share these experiences with the youth of this community, my people. I tell them</p>

	<p>que no sigan ese camino, pues les aconsejo que sigan formándose. Hay que <i>prepararse</i> para el futuro, para no sufrir. Eso le explicó a todos los jóvenes, también a los adultos, a los casados y los miembros que acuden a nuestra iglesia. Les pido que eduquen a sus hijos, que demuestren amor y cariño. Ese es mi trabajo actual.”</p>	<p>not to go down that path, I advise them to study. There is so much to <i>prepare</i> for the future, so as not to suffer. This I explain to all the young ones, also to the adults, the married and members who come to our church. I ask them to educate their children, showing love and affection. That’s now my current job.”</p>

Appendix F

Bangladesh Case Study

Interview Details	Bengali Original	English Translation
Appendix F.1 (Motasim Billa in Batamara Paksia, Borhanuddin; Q02/Orig/Bhola/20111128; parts of this group conversation on the bridge were recorded on video by this researcher)	<p>বলরাম: আপনি যেটা বলছেন, এটা তো বোরহানউদ্দীন। আর ওপারটা হলো তজিমউদ্দীন।</p> <p>অন্য: তজিমউদ্দীন আর দৌলতখান।</p> <p>বলরাম: দৌলতখানটা কোন দিকটা?</p> <p>অন্য: এইদিকটা। ঐ যে দৌলতখান, ঐ দেখা যায়।</p> <p>জনতা: এই রাস্তা দিয়ে যাইতে হয়। এইটা ভাইঙ্গা গেছে।</p> <p>বলরাম: ভেঙে গেছে। এই যে, তজিমউদ্দীনের সাথে যে বোরহানউদ্দীনের এই রাস্তাটা কতদিন আগে ছিল?</p> <p>অন্য: এই রাস্তাটা আইজ হইছে, বছর পাঁচেক আগে।</p> <p>বলরাম: ৫ বছর আগে রাস্তা ছিল? এই নদী ছিল না তখন।</p> <p>অন্য: না।</p> <p>বলরাম: ৫ বছর আগে একদম স্ট্রেট রাস্তা ছিল? সরাসরি গাড়ি নিয়ে যাওয়া যাইত?</p> <p>অন্য: হ্যাঁ। যাইত।</p> <p>বলরাম: ৫ বছর আগে?</p> <p>অন্য: হ্যাঁ।</p> <p>বলরাম: ভাঙটা শুরু হইছে কবে থেকে?</p> <p>অন্য: ভাঙটা এই ৫ বছরের আগেই শুরু হইছে। ৫ বছর আগে শুরু হইয়া ... মনপুরা ইউনিয়ন ভাইঙা তারপরে মলংচরায় ঢুকছে।</p> <p>বলরাম: তো মলংচরা এখান থেকে কতটা দূরে হবে?</p> <p>অন্য: এখান থেকে ধরেন ৭ কিলোমিটার।</p> <p>বলরাম: ৭ কি.মি.? ৭ কিলো হলো মলংচরা।</p> <p>অন্য: অত অনুমান করছি যে এই কারণে একটু কম ভাঙছে।</p> <p>বলরাম: ব্লক ফেলার কারণে হয়তবা এই বছরটা কম ভাঙছে?</p> <p>অন্য: কম ভাঙছে। এইটা আমাগো ধারণা আরকি।</p> <p>বলরাম: অন্যান্য বছরের তুলনায়?</p> <p>অন্য: অন্যান্য বছরের তুলনায় আর বাকি আল্লাহ্ র ইচ্ছা। মানে ব্লকটা দেওয়ার কারণে এই বছরটা একটু কম ভাঙছে এইটা আমাগো</p>	<p>Balaram: What you said is that this is Borhanuddin and the other side is called Tajumuddin.</p> <p>Elderly 1: Tajumuddin and Daulatkhan.</p> <p>Balaram: Which direction is Daulatkhan?</p> <p>Elderly 1: In this direction. Over there, it can be seen.</p> <p>Crowd: This road leads there. The road is washed away.</p> <p>Balaram: How long ago was the road from Tajumuddin to Borhanuddin existing?</p> <p>Elderly 1: About 5 years ago.</p> <p>Balaram: So the road was there 5 years ago. Was the river not up to here then?</p> <p>Elderly 1: No.</p> <p>Balaram: Was there a straight road 5 years ago? Could you go directly by car?</p> <p>Elderly 1: Yes, you could.</p> <p>Balaram: 5 years ago?</p> <p>Elderly 1: Yes.</p> <p>Balaram: When did the erosion start?</p> <p>Elderly 1: Erosion started even before 5 years. It washed away Monpura Union and then entered Molongchara.</p> <p>Balaram: How far away is Molongchara from here?</p> <p>Elderly 1: Say about 7 km.</p> <p>Balaram: 7 km? 7 km to Molongchara? [motioning to concrete slabs on left side]</p> <p>Elderly 1: I am guessing that this is reason why there is less erosion.</p> <p>Balaram: Because of concrete block this year there is less erosion?</p> <p>Elderly 1: Yes, less erosion. That is what we think.</p> <p>Balaram: In comparison to other years?</p> <p>Elderly 1: Yes, and the rest is on Allah's will. Because of using those blocks there is less erosion this year. However, in the middle side of that area, less than 33 meters washed away as there were no blocks. I think if there were blocks over on this side then it would not have washed away.</p> <p>Elderly 1: 5 km wide and 7 km in</p>

	<p>ধারণা। তবে ঐ ব্লকের মাঝখানটা অল্প এক চেনের মত ভিতরে চুইকা গেছে। আমার মনে হয় যদি এইদিকে ব্লক হইত তাহলে আর ভাঙত না।</p> <p>অন্য: ৫ কি.মি. আর দৈর্ঘ্য ৭ কি.মি. হইব। বিরাট ইউনিয়ন আছিল।</p> <p>বলরাম: ঐ লোকগুলো কোথায়?</p> <p>অন্য: বিভিন্ন এলাকায় চলে গেছে। ঐ দক্ষিণের চরে গেছে, আমাদের এদিকেও আছে। কোন-কোন এইদিকে আছে। ঐদিকে কিছু দক্ষিণের চরেও গেছে। কিছু নোয়াখালীও গেছে।</p> <p>বলরাম: আর কোথায়?</p> <p>অন্য: বোরহানউদ্দীন - বোরহানউদ্দীনের মাঝে যে একটা চর আছে, নোয়াখালী আর বোরহানউদ্দীনের মাঝে একটা চর আছে।</p> <p>বলরাম: ঐটার নাম কি?</p> <p>অন্য: ঐটার নাম হইল মাঝের চর কয়, আবার সিধার চর কয়। নানান চর আরকি (নাম কয়)। আরেকটা কি নাম আছে না?</p> <p>জনতা: জহুরউদ্দিন।</p> <p>অন্য: জহুরউদ্দিন, এই তিনটা নাম মিলে একটা চর হইছে ঐ চরের ভিতরে কিছু মানুষ আছে।</p>	<p>length. It was a huge/large Union.</p> <p>Balaram: Where are those people now?</p> <p>Elderly 1: They went to different locations. Some went to the southern Char, some shifted over on these parts, some even went to Noakhali.</p> <p>Balaram: Where else?</p> <p>Elderly 1: Borhanuddin. There is a Char between Noakhali and Borhanuddin.</p> <p>Balaram: What is the name of that Char?</p> <p>Elderly 1: It is called "Majher Char", some call it "Sidhar Char". Different people call it by a different name. What is the other name [facing the crowd]?</p> <p>Crowd: Johuruddin.</p> <p>Elderly 1: Johuruddin. There are some people living combined in these three Chars.</p>
<p>Appendix F.2</p> <p>This transcript reflects a focus group interview with around 30 respondents at Bondortila Ward #39 Chittagong City Corporation; 1 December 2011; it also includes interviewees identified in Section 5.4: Q08/Dest/Chittagong/20111201, Q09/Dest/Chittagong/20111201</p>	<p>বলরাম: আপনারা তো বিভিন্ন জাইগা থেকে আসছেন। এখন কি আপনার অবস্থা কি ভালো? উত্তরদাতা: না এখন ভালো নাই। এখন খাই, কাজ করি। আগের থেকে ভালো হইত আছি কিন্তু তেমন ভালো নাই।</p>	<p>Balaram: You've come from different places. How is your situation now?</p> <p>Respondent: It's not that good here. Now I work, eat. May be better than before but not that well.</p>
		<p><i>Balaram in English: they said that they are not well here. They are facing challenges here. The challenges still there. But the nature is different.</i></p> <p><i>She said that the challenges are also here. Their expectation especially food to mouth is still a problem for them. They are living better than before. They can work and they can eat.</i></p>

		<p><i>Still there is an opportunity for them.</i></p> <p>Jobannes: <i>I am interested to know about their risk. Do they face more risk here or there? Also in terms of natural disaster risk?</i></p>
	<p>বলরাম: আপনারা কি এখন ভালো আছেন নাকি আগে ভালো ছিলেন? উত্তরদাতা: এখন ভালো আছি।</p> <p>বলরাম: আমরা যদি বিপদের কথা বলি, যে শহরে আপনারা বেশি বিপদে নাকি গ্রামে বেশি বিপদে ছিলেন? যদি বুকির কথা বলি, বুকিত নানা রকম হতে পারে। এখন বেশি ঝুঁকি, নাকি আগে বেশি ঝুঁকি ছিল? আপনাদের অনেকের বিয়ের উপযোগী মেয়ে আছে, আবার যেই খানে আছেন এই এলাকাটা একটু খারাপ এলাকা। সব কিছু মিলে আপনাদের কোন ঝুঁকি আছে কি? উত্তরদাতা: আমরা আগের থেকে এখন বেশি ভালো আছি। এখানে কাজ করতে পারছি। তবে এলাকাতে সমস্যা নাই।</p>	<p>Balaram: Are you better here or were you better off before? Respondent: Better now. Balaram: If we talk about dangers and risks, is it more here or in the village? Many of you have daughters who are of age for marriage and this place is not very safe. Do you feel that you are at risk? Respondent: We are better here than before. We can work here. There is no problem in the area.</p>
		<p>Balaram in English: <i>first they said that they don't have any financial problem. They are better than before.</i></p> <p>Jobannes: <i>what are the problems living in urban area?</i></p>
	<p>বলরাম: আগেত আপনারা গ্রামে ছিলেন, পরিবেশ ভালো ছিল। এখন আপনারা শহরে। এখানে আপনারা কি কি সমস্যার সম্মুখীন হন? উত্তরদাতা: এখানে বাচ্চা দের মানুষ করতে সমস্যা হয়। গ্রামে চাষ করতে পারতেন। এখানে কিছু করতে পারেন না। বলরাম: আর কি সমস্যা আছে? উত্তরদাতা: এই খানে কাজ করতে হয়। কাজ না করলে খাওয়া যায়না। এছাড়া ঘর ভাড়া দিতে হয়। পানির সমস্যা হয়। চেলেমেয়েদের জন্য পুষ্টিকর খাবারের ব্যবস্থা করা যায় কিনা? এইখানে আমরা পুষ্টিকর খাবারের ব্যবস্থা করতে পারিনা।</p>	<p>Balaram: Before you were in the village the environment was good. Now you are in the city. What are the problems you face here? Respondent: It is difficult to raise the children here. It was possible to cultivate in the village. Here you cannot do anything like that. Balaram: What other problems do you have? Respondent: Here you have to work. If you don't work you don't have food to eat. Besides you have to pay rent. There is water problem. We cannot provide nutritious food for the children here.</p>
		<p>Balaram in English: <i>they used to work in the home in the homestead land. But they can't give you the opportunity. They still have the problem of their children's education. They could not arrange nutritious food for everyday for the children.</i></p> <p><i>This is very hard to feed their children with nutritious food. Another thing is education. Only the male member of a family earns money. Another problem is they cannot afford the expense of their children's education.</i></p> <p>Jobannes: <i>How is the health? Is it good or bad?</i></p>
	<p>বলরাম: আপনারা বললেন যে ছেলে- মেয়েরা পুষ্টিহীনতায় ভুগছে। গ্রামে থাকার সময় তাদের অবস্থা কি ছিল? উত্তরদাতা: তখন এই সমস্যা ছিলনা। গ্রামের তাজা</p>	<p>Balaram: You are saying that the children are suffering from nutrition deficiency. How was it in the village? Respondent: It was not a problem</p>

	খাবার খেয়ে কোন সমস্যা হই নি। শহরে আসার পর আমাদের ছেলে মেয়েদের শহরের খাবার খেয়ে পেটে অসুখ হইছে।	there. They could eat fresh food. Our children have problem with stomach after coming to the city.
		<i>Balaram in English:</i> They said that they had to use fresh food for her family and children when they were in the village. But now they could not arrange fresh food for her family. <i>Jobannes:</i> Is everybody a migrant?
	বলরাম: আপনারা এখানে যারা আছেন তারা কি সবাই বিভিন্ন জাইগা থেকে এসেছেন নাকি স্থানীয় কেউ আছেন? উত্তরদাতা: না স্থানীয় কেউ নাই।	Balaram: Are you all from different places who came and settled here or are there anyone local? Respondent: No, there is no one local here.
		<i>Balaram in English:</i> No, all are from different places.
	বলরাম: এই জায়গাটা কার? উত্তরদাতা: এই জায়গাটা জমিদারের। মালিকের জায়গা।	Balaram: Who does this land belong to? Respondent: This place belongs to the landlord.
		<i>Balaram in English:</i> So this land it belongs to some individual. <i>Jobannes:</i> Are they paying rent monthly? Balaram: Yes
	বলরাম: কত টাকা দিতে হই প্রতি মাসে? উত্তরদাতা: ৪০০০ টাকা, দুই রুমের জন্য।	Balaram: How much do you have to pay monthly? Respondent: tk. 4,000 for two rooms.
		<i>Balaram in English:</i> twin room they pay 4,000 Taka. This is kind of slum. There is another option. One room is for 2,200 Taka. <i>Jobannes:</i> How could policy makers help them to migrate? <i>Balaram:</i> I am afraid they can't answer this question. We can talk about local authority.
	বলরাম: আপনারা তো বিভিন্ন জায়গা থেকে আসছেন। এখানে তো চেয়ারম্যান, মেম্বর আছে। তারা তো সরকারের একটা অংশ। আপনাদের তাদের কাছে কি আশা করেন? উত্তরদাতা: তারা তো আমাদের দেশে চলে যায়। আমরা চাই তারা যেন আমাদের দিকে তাকায়। আমরা যেন ভালো থাকি সেই দিকে নজর দেয়। আমাদের বাচ্চাদের প্রতি নজর দেয়। বলরাম: আপনারা ভালো থাকতে কি বোঝাতে চাইছেন? কোন কোন ক্ষেত্রে সাহায্য চান? উত্তরদাতা: আমাদের বাড়ি ঘর নাই, ছেলে মেয়েদের জন্য পড়ালেখা করার ব্যবস্থা নাই। আমাদের কাজের জন্য যদি ব্যবস্থা করা যায়। একটা কাজের সুযোগ যদি এলাকার মধ্যে ব্যবস্থা করে দিত।	Balaram: You came from different places. There is a Chairman and Member here who are a part of the government. What do you expect from them? Respondent: We want them to look at us. We hope that they will help in taking care of our children. Balaram: What do you mean by trying to live well? In what aspects are you looking for help? Respondent: We do not have house, there are no opportunities for our children for education. If work can be arranged for us. If we could've given work in the area.
		<i>Balaram in English:</i> they want some kind of job opportunity, education facilities for their children and nutritious food for their children. This kind of assistance they want from the local government. Basically, they want good kind of living condition.

		<p><i>Jobannes: Do they mention sanitation?</i> <i>Balaram: No they didn't. But they mentioned good kind of living condition. Now one thing came up about water facility. There is no water line of city corporation in the area.</i></p>
	<p>বলরাম: আপনাদের এখানে স্যানিটারি ল্যাট্রিনের অবস্থা কি? উত্তরদাতা: আমাদের কারো কারো ঘরে ল্যাট্রিন আছে। যাদের নাই, তাদের জন্য কমন ল্যাট্রিন আছে।</p>	<p>Balaram: What is the sanitary latrine here? Respondent: Some of us have latrine in our houses. Those who do not have to use the common latrine.</p>
		<p><i>Balaram in English: Some of them have sanitary latrine in their house, but who have not, for them there are common latrine.</i></p>
	<p>বলরাম: আপনাদের এখানে ড্রেন দেখতে পাচ্ছি। মশা – মাছি কেমন আছে? উত্তরদাতা: এইখানে প্রচুর মশা মাছি আছে। ড্রেনে পানি জমে আছে।</p>	<p>Balaram: We can see drains here. What is the situation with the mosquitoes and flies? Respondent: There are a lot of insects. Water is clogged in the drains.</p>
		<p><i>Balaram in English: I asked them there are lot of drains here and there. Do you have mosquitoes and flies. So they have problems in water, drainage system. They have sanitary latrines in their room and common site.</i> <i>Jobannes: Can you ask the woman from Bhola why she left Bhola?</i></p>
	<p>বলরাম: আপনাদের এখানে যারা আছেন, ভোলা থেকে আসছে এমন কেউ কি আছেন? উত্তরদাতা: আমি আছি। বলরাম: আপনার ইউনিয়ন এর নাম বলেন। উত্তরদাতা: চর ফ্যাশান বলরাম: আপনার নাম কি? উত্তরদাতা: খালেদা বেগম বলরাম: আপনার স্বামীর নাম? খালেদা: আলাউদ্দিন হোসেন বলরাম: আপনার সন্তান কয়জন? খালেদা: একজন বলরাম: আপনারা এক খানাতে কয় জন খান? খালেদা: ৬ জন। বলরাম: আপনি কতদিন হল এইখানে আসছেন? খালেদা: ১ বছর হল। বলরাম: আপনার গ্রামের ঠিকানা কি? খালেদা: গ্রামের নাম- মহাস্মাদ্গঞ্জ, ইউনিয়ন- কেরামতগঞ্জ, উপজেলা- চর ফ্যাশান, ভোলা বলরাম: আপনি ১বছর আগে আসছেন, কেন? ওখানে কি সমস্যা ছিল? খালেদা: নদী ভাঙ্গনে আমাদের বাড়ি চলে গেছে।</p>	<p>Balaram: Is there anyone among you who came from Bhola? Respondent: I came from Bhola. Balaram: Please tell us the name of your union? Respondent: Chorfashion. Balaram: What is your name? Respondent: Khaleda Begum. Balaram: What is your husband's name? Khaleda: Alauddin Hossain. Balaram: How many children do you have? Khaleda: One. Balaram: How many people do you have in your household? Khaleda: 6 people. Balaram: How long ago did you come here? Khaleda: One year ago. Balaram: What is the address of your village? Khaleda: Village – Muhammadgonj, Union – Keramotgonj, Upazilla – Chorfashion, Bhola. Balaram: Why did you come a year ago? What was the problem there? Khaleda: Our house was washed away by the river erosion.</p>
		<p><i>Balaram in English: She came here because of river erosion.</i></p>

	বলরাম: কত বছর আগে নদী আপনাদের ঘর ভাঙে? খালেদা: ২ বছর আগে।	Balaram: How long ago did you lose your house? Khaleda: Two years ago.
		Balaram in English: her home was broken and washed away in river erosion.
	বলরাম: আপনাদের চাষ বাসএর জমির কি অবস্থা? খালেদা: কোন জমি নাই। পানিতে ভেসে গেছে।	Balaram: Did you have land for cultivation? Khaleda: No. Everything's washed away.
		Balaram in English: She has no cultivable land. All land was washed away.
	বলরাম: আপনাদের ইউনিয়নের সব জায়গা কি নদী ভাঙনে চলে গেছে নাকি শুধু আপনার জায়গাটা? খালেদা: পুরাটা যায় নি। আমাদের টা চলে গেছে। শুধু আমাদের টা নাই।	Balaram: Is the whole Union washed away by the river erosion or only you are affected? Khaleda: Not the whole Union. [Only] we are affected.
		Balaram in English: Total area was not disappeared. Only her house was disappeared. She has one daughter and family member is six. Jobannes: How old is she?
	বলরাম: আপা আপনার বয়স কত?	Balaram: How old are you sister?
		Balaram in English: She is shying. May be she is 20 years old.
	বলরাম: আপনাদের মত যারা এখানে নদী ভাঙনের জন্য এখানে আসছেন, তাদেরকে কি বলবো? ক্ষতিগ্রস্ত? নাকি রিফুজি? খালেদা: ক্ষতিগ্রস্ত।	Balaram: People like you who moved due to river erosion, what should we call them? Affected or refugee? Khaleda: Khotigrosto [damaged, harmed, injured, affected].
		Jobannes in English: Why?
	বলরাম: কেন রিফুজি বলবনা? খালেদা: --	Balaram: Why should we not name you refugee? Khaleda: --
		Balaram in English: In Bangladesh, "refugee" is used to describe the persons from war. We use another word Bastobara, it means like Khotigrosto. Jobannes: what is the difference between the two words? Balaram: Khotigrosto means you lost something for partial period. But Bastobara means you lost everything. "Basto" means household. So you lost everything. When these people come to the city and live together then it's called slum. Jobannes: Why did she come here?
	বলরাম: খালেদা আপা আপনি বলবেন কি আরও অন্য জায়গা থাকতে আপনি এখানে কেন আসছেন? খালেদা: স্বামী আসছে তাই।	Balaram: There were many other places, but why did you come here? Khaleda: Because my husband came here.
		Balaram: She said that her husband came here so they came. Her husband has found some income generating opportunity here. Jobannes: Ok. What does her husband do in this area?

	বলরাম: আপনার স্বামী কি করে এই খানে? খালেদা: রাজমিস্ত্রি।	Balaram: What does your husband do here? Khaleda: He is a mason.
		Balaram in English: Her husband is working as a labourer of buildings. Jobannes: Was she forced? Balaram: She is with her husband, because she has nothing to say.
	[...]	[...]
	বলরাম: আপা আপনার নাম কি বলবেন? উত্তরদাতা: অনুফা বলরাম: আপনি কোথায় থেকে এসেছেন? উত্তরদাতা: বরিশাল, ইকড়ি, গ্রাম- আতরখালি বলরাম: উপজেলা? অনুফা: ভান্দারি বলরাম: আপনার পরিবারতে কতজন? অনুফা: আটজন বলরাম: আপনার বয়স? অনুফা: বিশ বলরাম: আপনার লেখাপড়া? অনুফা: ক্লাস ৫ পর্যন্ত বলরাম: আপনি ৩ বছর যাবত এখানে আছেন? অনুফা: জি। অনুফা: আমি বড় ঘূর্ণিঝড় হইছে তারপর আসছি। বলরাম: সিডরের সময় আসছেন নাকি? অনুফা: জি বলরাম: আপনার স্বামী কি করেন? অনুফা: দিন মজুর বলরাম: এখানে কেন আসছেন? অনুফা: দেশে ঘর বাড়ি নাই। কাজ নাই। তাই আসছি। বলরাম: এখানে কেন আসছেন? ঢাকাতে যান নাই কেন? অনুফা: আগে থেকে আমার স্বামী এখানে কাজ করত। বলরাম: সিডরের পর এখানে কত পরিবার আসছে? অনুফা: ৫-৬ পরিবার আসছে বলরাম: যখন ঐখানে ঝড় আসছিল, তখন অইখান থেকে কেন আসছিলেন? সরকার এত সাহায্য করছে, আপনি পান নাই? অনুফা: না পাই নাই বলরাম: আপনি কি এখানে ভালো আছেন নাকি ঐখানে ভালো ছিলেন? অনুফা: কষ্ট হয়। বলরাম: গ্রামের থেকে এখানে ভালো আছেন? অনুফা: একটু এখানে ভালো আছেন।	Balaram: Can you please tell us your name? Respondent: Hanufa. Balaram: Where did you come from? Hanufa: Barishal, Ikri, village – Atorkhali. Balaram: Upazila? Hanufa: Bhandari. Balaram: How many people are there in your family? Hanufa: eight. Balaram: What's your age? Hanufa: Twenty. Balaram: How far did you study? Hanufa: Up to class five. Balaram: Are you here for 3 years? Hanufa: Yes. I came after the cyclone. Balaram: Did you come during [Cyclone] Sidr? Hanufa: Yes. Balaram: What does your husband do? Hanufa: He's a day labourer. Balaram: Why did you come here? Hanufa: No house in the village, no work, that's why we came. Balaram: Why here? Why not Dhaka? Hanufa: My husband used to work here from before. Balaram: How many families came here after Sidr? Hanufa: 5-6 families came. Balaram: Why did you come from there? The government helped a lot, didn't you receive any assistance? Hanufa: No, I didn't receive anything. Balaram: Are you better here or were you better off there? Hanufa: There is much suffering. Balaram: Are you better off than the village? Hanufa: It's a little better here.
		Balaram in English: Her name is Hanufa. Her husband is Milon Sheik. She is from Barishal. She has 8 persons in her family. After Cyclone Sidr, they moved here. All of her household and other properties were

		<p><i>destroyed. That time they had no income opportunity in there. 5-6 families all came together here. This area is known to her husband. Now her husband is the only member of her family. After Sidr, a lot of families got government support. But her family did not get anything from government and NGOs.</i></p> <p>Jobannes: <i>Why did they come here?</i></p> <p>Balaram: <i>She said her husband worked here so she came with him.</i></p> <p>Jobannes: <i>Did she say how the community migrated? What could be done to make things easier?</i></p>
	<p>বলরাম: আপনি বলছেন আগে থেকে একটু ভাল আছেন। কি কারণে এখন একটু ভালই আছেন? অনুফা: এখানে কাজ ছিল না। কিন্তু এখানে প্রতিদিন কাজ আছে। বলরাম: আপনার স্বামী দিনে কত টাকা পায়? অনুফা: ১৫০-২০০ টাকার মত। বলরাম: দিনে কত সময় কাজ করতে হয়? অনুফা: ঠিক নাই। ৩-৪-৫ ঘণ্টা কাজ করতে হয়।</p>	<p>Balaram: You said that you are better here. Why?</p> <p>Hanufa: There wasn't work in the village but we can get work here everyday.</p> <p>Balaram: How much does your husband earn each day?</p> <p>Hanufa: about 150-200 Taka.</p> <p>Balaram: How long does he have to work each day?</p> <p>Hanufa: Not fixed: 3/4/5 hours per day.</p>
		<p>Balaram in English: <i>Her husband earns 150-200 Taka daily. He also works daily 3-5 hours. But no limits in a week.</i></p>
	<p>বলরাম: আপনার ঘর ভাড়া কত দিতে হয়? অনুফা: ১৪০০ টাকা মাসে বলরাম: আপনার স্বামী যা আয় করে, তাতে আপনার এত বড় পরিবার অই টাকাতে চালানো কঠিন। কিভাবে চালান? নাকি অন্য কেউ আছে আয় করে? অনুফা: কষ্ট করে চলতে হয়।</p>	<p>Balaram: How much do you have to pay as rent?</p> <p>Hanufa: 1,400 Taka per month.</p> <p>Balaram: What your husband gets, it is hard to run the family with that money. How do you manage? Or are there others in the family who earns?</p> <p>Hanufa: We have to manage somehow.</p>
		<p>Balaram in English: <i>He sometimes works 4 days and sometimes works 6 days. I just calculated his monthly income. But this is quite impossible to manage a family with this monthly income. Out of this she has to pay 1,400 taka {rent}. How can she spend the other money with her family...</i></p>
	<p>বলরাম: সরকারের থেকে কি চাওয়ার আছে? উত্তরদাতা: আমাদের ঘর বাড়ি র জন্য সরকার একটা জায়গা দিতে পারে। আমাদের এখানে পানির লাইন নাই। পানির লাইন দিতে পারে। আমাদের এখানে স্যানিটারি ল্যাট্রিন ের ব্যবস্থা করতে পারে।</p>	<p>Balaram: Do you have any expectation from the government?</p> <p>Hanufa: Government can arrange for our accommodation. There is no water line here, that can be provided. Government can also arrange for sanitary latrines.</p>
		<p>Balaram in English: <i>I asked them what they need or assistance from government? They replied that they need less rent land, supply of water and establish more sanitary latrine.</i></p> <p>Jobannes: <i>Please thank them all.</i></p>

<p>Appendix F.3</p> <p>(Josho Rani, Noya Sohor, Chittagong; Q13/Dest/Chittagong/20111202).</p>	<p>বলরাম: আপনারা কত বছর আগে এসেছেন? উত্তরদাতা: আমরা ১৮ বছর আগে এসেছি। গাইবান্ধা থেকে এসেছি। বলরাম: কেন এসেছিলেন? উত্তরদাতা: বন্যাতে সব ভেসে নিয়ে গেছে। অভাবে পরে আসছি এইখানে। বলরাম: এখন গেলে কোথায় ওঠেন? উত্তরদাতা: আত্মীয় স্বজনের বাড়িতে উঠি।</p>	<p>Balaram: How many years ago did you come? Respondent: 18 years ago, we came from Gaibandha district. Balaram: Why did you come? Respondent: Everything is washed away in flood. We came here due to poverty. Balaram: Where do you stay if you go back to your own village? Respondent: At our relative's house.</p>
		<p><i>Balaram in English:</i> Their house was destroyed due to flood. They came here almost 18 years ago.</p>
	<p>বলরাম: আপনি কি করেন ? উত্তরদাতা: কিছু করি না। বলরাম: আপনার ছেলে মেয়ে কতজন? উত্তরদাতা: ৫ জন । বলরাম: আপনার সংসার কিভাবে চলে? উত্তরদাতা: আমরা ২ জন কাজ করি, তা দিয়ে সংসার চলে।</p>	<p>Balaram: What do you do? Respondent: I do not do anything. Balaram: How many children do you have? Respondent: five. Balaram: How do your family runs? Respondent: Two of us work and our family is running with that.</p>
		<p><i>Balaram in English:</i> She has 5 children. Now 6 family members. Her husband and she are both daily labourers. They break bricks at construction sites. <i>Johannes:</i> Why did she come from Gaibandha to Chittagong, why not go to Dhaka?</p>
	<p>বলরাম: আপা এই ভাই একটা প্রশ্ন করেছেন। গাইবান্ধা হল উত্তরে। আপনি ঢাকা না গিয়ে চিটাগাং কেন আসলেন? উত্তরদাতা: এখানে আমার দেশি লোক আছে। এই জন্য আসছি। ঢাকাতে কাজ পাওয়া কঠিন।</p>	<p>Balaram: Sister, this brother has a question. Gaibandha is in the North. Instead of going to Dhaka, why did you come to Chittagong? Respondent: We came here because more people from my village/district also came here. It is difficult to find work in Dhaka.</p>
		<p><i>Balaram in English:</i> Some of the people of Gaibandha were already in Chittagong. And it is very hard to find work in Dhaka.</p>
	<p>বলরাম: আপনি যে ইট ভাঙ্গেন, গড়ে আপনার ও আপনার স্বামীর আয় কত? উত্তরদাতা: শরীর ভালো থাকলে আমি ১০০/১৫০/২০০ টাকা আয় করি। অন্যদিকে আমার স্বামী ২০০/২৫০ টাকা আয় করে প্রতিদিন।</p>	<p>Balaram: By breaking bricks, what is your and your husband's average income? Respondent: If I am fit physically, I earn 100/150/200 Taka. On the other hand, my husband's income is 200/250 Taka per day. <i>Balaram in English:</i> Her husband's daily wages are 200/250 Taka every day. She also earned 100/200 Taka. This is the daily remuneration in the brick field, smashing bricks. <i>Johannes:</i> Can we try to tease out a bit more about the flood 18 years ago?</p>
	<p>বলরাম: আপা আপনার নাম টা কি?</p>	<p>Balaram: What is your name?</p>

	<p>উত্তরদাতা: জশরানি । বলরাম: আপনি কি আমাদের দয়া করে বলবেন ১৮ বছর আগে বন্যাতে কি হইছিল? উত্তরদাতা: এত কিছু কি আর মনে আছে? ঘর বাড়ি সব শেষ হয়ে গিয়েছিল। এখন তো আর সেসব মনে নাই।</p>	<p>Respondent: Josho Rani. Balaram: Can you please tell us what happened in the flood occurrence 18 years ago? Respondent: I cannot remember much. Our houses were washed away. I cannot remember those [flooding occurrences] anymore.</p>
		<p><i>Balaram in English:</i> The flood occurred 18 years ago. She does not remember anything now. They lost crops, house, and work opportunity. Jobannes: Was the flood the main cause of her migration? Balaram: Yes. Jobannes: So it appears the flood may have been the trigger event...</p>
	<p>বলরাম: আপনার বয়স কত? আনুমানিক বলেন।</p>	<p>Balaram: How old are you? Tell me approximately...</p>
		<p><i>Jobannes in English:</i> She does not know her age? Balaram: Maybe she is confused... I think her age is about 40 years now.</p>
	<p>বলরাম: আপনি কি পড়ালেখা করছেন? সাক্ষর করতে পারেন? উত্তরদাতা: না। বলরাম: গাইবান্ধার কোথা থেকে এসেছেন বলতে পারবেন? উত্তরদাতা: ধর্মপুর বলরাম: পোস্ট অফিস? উত্তরদাতা: লক্ষ্মপুর বলরাম: এখানকার ঠিকানা কি জানেন? উত্তরদাতা: সাজেদার বাড়ি, নয়া শহর, খুলশি।</p>	<p>Balaram: Did you take education? Are you able to sign [your name]? Respondent: No. Balaram: Where in Gaibandha you are from? Respondent: Dhormopur. Balaram: Post office? Respondent: Laxmipur. Balaram: Do you know the address here? Respondent: Sajedar Bari, Noya Sohor, Khulshi.</p>
		<p><i>Jobannes in English:</i> If we could identify some environment related reasons and non environment related reasons for migration... If you could ask her some of the factors that she can remember, some reasons for moving...</p>
	<p>বলরাম: যখন বন্যা হয়েছিল, তখন আর কি কি সমস্যা হয়েছিল? ধরেন বন্যা হলে খাবার পানির সমস্যা হয়, খাবারের সমস্যা হয়, পোকা-মাকর কামর দিতে পারে, এই রকম কি কি সমস্যা তখন হয়েছিল? আপনার অভাবের কারণের সাথে সাথে আর কি সমস্যা ছিল সেই সময়? উত্তরদাতা: না । অন্য কোন সমস্যা ছিল না।</p>	<p>Balaram: What other problems occurred apart from the flood? For example, were there problems to find safe water to drink, lack of food, insect attacks etc, did you face problems like these? Apart from poverty, what other problems did you face at that time? Respondent: No. We did not face any other problems.</p>
		<p><i>Balaram in English:</i> She mentioned only poverty. Jobannes: Ok. Let's ask her which situation is better, rural or urban...</p>
	<p>বলরাম: আপনি এখন যেই অবস্থাতে আছেন, আর</p>	<p>Balaram: Among the situation you are</p>

	<p>আগে যেই অবস্থাতে ছিলেন, কোনটা আপনার কাছে ভালো মনে হয়?</p> <p>উত্তরদাতা: এখানে ভালো আছি।</p> <p>বলরাম: এইখানে ভাড়া থাকেন, ওখানে নিজের বাড়ি ছিল, তারপর ও কেন এখানে ভালো আছেন বলছেন?</p> <p>উত্তরদাতা: এখানে কাজ করলে টাকা পাই। ওখানে কোন কাজ ছিলনা। না খেয়ে থাকতে হত।</p>	<p>in now or in the situation you were before? Which do you like better?</p> <p>Respondent: I am better off here.</p> <p>Balaram: You rent a house here and there you had your own house. Why are you still saying that you are better off here?</p> <p>Respondent: If I work, I can earn here. There was not much opportunity to work. We had to stay in hunger.</p>
		<p><i>Balaram in English: She is more satisfied here than in Gaibandha, because of the availability of work opportunities... More work is available here. That is why she is better off here.</i></p> <p><i>Johannes: Can you ask her to comment on the word “Khotigrosto” {damaged, harmed, injured, depreciated, ruinous } and the other terms?</i></p>
	<p>বলরাম: এখানে আপনি ভাড়া বাড়িতে থাকেন, যদিও ওখানে আপনার ভিটা আছে। অনেকে বলে আমরা “ক্ষতিগ্রস্ত” আবার অনেকে বলে আমরা “রিফিউজি”। আপনি নিজেকে কোনটা বলবেন?</p> <p>উত্তরদাতা: রিফিউজি।</p> <p>বলরাম: কেন রিফিউজি বলবেন?</p> <p>উত্তরদাতা: আমার সম্পত্তি নাই। ওখানে আমার সব কিছু আমার চাচার নিয়ে গেছে।</p> <p>বলরাম: সম্পত্তি না থাকলে আমরা আপনাকে বাস্তুহারা বলতে পারি।</p>	<p>Balaram: You are living in a rented house here and you had your own house there in the village. In this situation, some say we are “disaster affected”, some others say “refugee”. What would you consider yourself to be?</p> <p>Respondent: Refugee.</p> <p>Balaram: Why refugee?</p> <p>Respondent: I do not have any land/property. Everything of mine is taken by my uncles.</p> <p>Balaram: We can say you are landless since you do not have any land.</p>
		<p><i>Balaram in English: She considers herself a refugee. This is her opinion. I asked her why. She told me her father has some land property but her husband had nothing. Then I asked her, why not “Bastohara” {displaced/landless person}?</i></p>
	<p>বলরাম: “রিফিউজি” ও “বাস্তুহারা” এর মধ্যে কোন শব্দটা আপনি আপনার জন্য সঠিক বলে মনে করেন?</p> <p>উত্তরদাতা: বাস্তুহারা।</p>	<p>Balaram: Between “refugee” and “landless person”, which word do you think is appropriate for you?</p> <p>Respondent: “Bastohara” [displaced/landless person].</p>
		<p><i>Johannes in English: Please ask her what help she wants from policy makers and government?</i></p>
	<p>বলরাম: আপনার সরকারের কাছে কি চাওয়ার আছে? আরেকটু ভালো থাকার জন্য আপনার কি কি দরকার?</p> <p>উত্তরদাতা: ঘরবাড়ির অবস্থা ভালো করে দিলে ভালো হয়। ঘরে পানির ব্যবস্থা করলে এবং ভালো পায়খানা করে দিলে ভালো থাকব।</p>	<p>Balaram: What do you expect from the government for better living? What do you need more for a better living?</p> <p>Respondent: It would be better if the housing condition is improved. We will live well if the water supply and sanitary latrine facilities are provided in the house.</p>
		<p><i>Balaram in English: She is talking about</i></p>

		<i>housing, water supply, and sanitation.</i>
	<p>বলরাম: আপনি বললেন যে, গাইবান্ধাতে আপনার বাবার কিছু জমি আছে। কিন্তু আপনি সেটা পান নাই। আপনি কি জানেন হিন্দু ধর্মে বাবার সম্পত্তিতে মেয়ে সন্তানের কোন ভাগ থাকে না? আমি ও হিন্দু।</p> <p>উত্তরদাতা: কিন্তু আমার কোন ভাই নাই।</p> <p>বলরাম: ভাই না থাকলেও আপনি কিছু পাবেন না। আপনার বাবা জীবিত আছেন কি?</p> <p>উত্তরদাতা: না।</p> <p>বলরাম: আপনার ছেলে মেয়ে কয় জন আছে এখন?</p> <p>উত্তরদাতা: ৩ জন।</p> <p>বলরাম: লেখা পড়া করে?</p> <p>উত্তরদাতা: না।</p> <p>বলরাম: আপনার ছেলে মেয়ের লেখা পড়া করার জন্য আপনি কিছু চাইলেন না কেন?</p>	<p>Balaram: You mentioned that in Gaibandha your father had some land but you did not get any. Did you know that according to Hindu customs the girl child does not get any land from father? I am also a Hindu.</p> <p>Respondent: But I do not have any brothers.</p> <p>Balaram: Even if you do not have any brothers you would not get any land. Is your father still alive?</p> <p>Respondent: No.</p> <p>Balaram: How many children do you have now?</p> <p>Respondent: three.</p> <p>Balaram: Do they go to school?</p> <p>Respondent: No.</p> <p>Balaram: why didn't you mention anything about your children's education?</p>
	[...]	[...]
		<i>Jobannes in English: How much is the rent she has to pay?</i>
	<p>বলরাম: আপনি যেই ঘরটাতে থাকেন সেখানে কত ভাড়া দিতে হই?</p> <p>উত্তরদাতা: ১০০০ টাকা।</p>	<p>Balaram: How much do you have to pay for rent?</p> <p>Respondent: 1,000 Taka.</p>
		<i>Balaram in English: 1,000 Taka.</i>
	<p>বলরাম: ঘরে বেড়া আছে?</p> <p>উত্তরদাতা: আছে। মেঝে কাঁচা।</p> <p>বলরাম: ঘর কি কাছে? নাকি দূরে?</p> <p>উত্তরদাতা: দূরে।</p> <p>বলরাম: হেটে গেলে কতখন লাগবে?</p> <p>উত্তরদাতা: ১০/১৫ মিনিট।</p> <p>বলরাম: আপনাকে যদি আপনার আগের জায়গা তে ফিরে যেতে বলা হয়, তাহলে আপনি গাইবান্ধার চেয়ারম্যানের কাছে কি চাওয়ার আছে?</p> <p>উত্তরদাতা: চাইব আমার ঘর যেন ফিরিয়ে দেয়।</p>	<p>Balaram: Is your house fenced?</p> <p>Respondent: Yes. But the floor is muddy.</p> <p>Balaram: Is it close or far from here?</p> <p>Respondent: Far.</p> <p>Balaram: How long will it take to get there walking?</p> <p>Respondent: 10/15 minutes.</p> <p>Balaram: If you were asked to go back to Gaibandha then what kind of support would you expect from the Chairman there?</p> <p>Respondent: I would ask him to return my house.</p>
		<i>Balaram in English: She wants support from the UP chairman to get back her land and house.</i>
	<p>বলরাম: দিদি আপনাকে অনেক ধন্যবাদ। এই গবেষকও আপনাকে ধন্যবাদ দিতে চায়। আপনি অনেক প্রশ্নের সঠিক জবাব দিয়েছেন, যা ওর গবেষণাতে অনেক সাহায্য করবে।</p>	<p>Balaram: Thank you very much sister, and this researcher also wants to thank you. You answered many questions correctly which will help him in his research work.</p>
Appendix F.4 (Md Sumon, Hazikandi,	<p>সুমন: আমি মো: সুমন, আমার শিক্ষা প্রতিষ্ঠানের নাম দড়িচাঁদপুর রেজি: প্রা: বিদ্যালয় বলরাম:তুমি এখানে পড়ালেখা করত?</p>	<p>Sumon: I am Md. Sumon. The name of my educational institution is Dorichandpur Registered Primary School.</p>

<p>Chandpur, Tajumuddin, Bhola; Q05/Orig/Bhola/ 20111129)</p>	<p>সুমন: জ্বি, আমি এখানে পড়ালেখা করতাম বলরাম:কতদিন আগে? সুমন: ৮ বছর আগে বলরাম: ৮ বছর আগে? সুমন: জ্বি বলরাম: এই স্কুলটা কতদিন যাবৎ এখানে ছিল? সুমন:এখানে ছিল প্রায় ১৫-২০ বছর যাবৎ বলরাম:১৫-২০ বছর যাবৎ? সুমন: জ্বি বলরাম:এই জায়গাটায় কি? সুমন: এই জায়গায় ছিল আমাদের টয়লেট বলরাম:এখানে ২টা জিনিস দেখা যায়? সুমন: ২টা জিনিস দেখা যায়- এটা হলো আমাদের শিক্ষকদের টয়লেট আর এটা হলো স্টুডেন্টদের বলরাম: ছাত্রদের জন্য আলাদা আর শিক্ষকদের জন্য আলাদা ছিল? সুমন: জ্বি বলরাম: তোমাদের খেলার মাঠটা কোথায় ছিল? সুমন: আমাদের খেলার মাঠটা ছিল যেখানে এখন ঘড়টা বাঁধতেছে, ওখানে আমাদের খেলার মাঠ ছিল বলরাম: ওই জায়গায় ছিল খেলার মাঠ? সুমন: জ্বি বলরাম:এইগুলো ছিল ক্লাশরুম? সুমন:জ্বি, এইগুলো ছিল ক্লাশরুম বলরাম: ক্লাশরুম যদি থাকে, এইটা কোন ক্লাশ ছিল? সুমন: এইটা ছিল পঞ্চম শ্রেণী বলরাম:পঞ্চম শ্রেণী, তারপরে? তারপরের গুলো? ও---বলো সুমন:তারপরে ছিল আমাদের শিক্ষকদের বসার স্থান, অফ টাইমে বসার স্থান বলরাম:অফ টাইমে টিচাররা ওখানে বসতেন? সুমন: জ্বি, ওখানে বসতেন এবং তারপরে ছিল আমাদের চতুর্থ শ্রেণীর ক্লাশ এবং তারপরে এটা ছিল আমাদের তৃতীয় শ্রেণীর ক্লাশ। ক্লাশ থ্রি এবং এর আগে এখানে ক্লাশ ওয়ান শুরু হত। বলরাম:আর একটা ক্লাশরুম কোথায় ছিল? সুমন: আর একটা ক্লাশরুম ছিল এই জায়গায়। ক্লাশ টু যে জায়গায় এটাই ক্লাশ ফোর বসতো বলরাম: ওয়ান, ক্লাশ ওয়ান কোথায় বসতো? সুমন:ওয়ান ক্লাশ ওটা ছিল। ওটাতে ওয়ান, টু ছুটি হওয়ার পর ১২টার পর এটাতে ক্লাশ থ্রি এর পোলাপান বসত এবং এটাতে ক্লাশ ফোর এবং ওটাতে ক্লাশ ফাইভ বসত বলরাম: তারমানে আমি যদি বুঝে থাকি- একদম ঐ যে বাইরে ওখানে একটা ক্লাশরুম ছিল, ওটা</p>	<p>Balaram: Did you study here? Sumon: yes, I used to study here. Balaram: How long ago? Sumon: 8 years ago. Balaram: 8 years ago? Sumon: yes Balaram: How long had the school been here? Sumon: For about 15-20 years. Balaram: About 15-20 years? Sumon: Yes. Balaram: What was at this place? Sumon: We had our toilet here. Balaram: Two things can be seen here. What were these? Sumon: Yes, two things. This was our teachers' toilet and that was students' toilet. Balaram: Were the teachers & students toilet separate? Sumon: yes. Balaram: Where was your playground? Sumon: That place, where the house is being built now. Balaram: That place was your playground? Sumon: Yes. Balaram: Were these classrooms? Sumon: Yes, these were classrooms. Balaram: If these were classrooms, which class was this? Sumon: It was class five. Balaram: Class five. Then please tell us about those ones. Sumon: After that it was our teacher's room. The place for to sit during free time. Balaram: So the teachers' used sit there during leisure time, it that right? Sumon: Yes. They used to sit there. And after that it was our class room for grade four and then class room for grade three. Before grade three grade one students used to have their class in the first shift. Balaram: Where was the other classroom? Sumon: In this place, Grade IV sat where grade II used to sit. Balaram: Where did Grade I sit? Sumon: That place was the classroom for Grade I. At 12:00PM after the 1st shift of Grade I ended their class, Grade- III sat here, Grade IV in this place and Grade V over there. Balaram: Ok, as per my understanding</p>
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<p>ছিল ক্লাশ ওয়ান এর জন্য । এরপরে এই জায়গায় ছিল ক্লাশ টু এর জন্য একটা ক্লাশরুম। তোমার স্কুল ছিল দুই সিফট এ, দুই সিফট এর প্রথম সিফট হলো ওয়ান এবং টু, তাদের ক্লাশ হতো ক্লাশ ওয়ান এর ওটা এবং টু এর জন্য এইটা । এরপরে এই জায়গাটায় ছিল তোমাদের টিচারদের লাইব্রেরী, লাইব্রেরী রুমেরই পাশে আর একটা ক্লাশরুম ছিল ক্লাশ ফাইভ. ইং ১st শ্বেরভঃ এ ওখানে কোন ক্লাশ হতো না । যেহেতু ওয়ান এবং টু এই দুই জায়গায় বসতো । ১ম সিফট ছুটি হয়ে যেত ১২টার দিকে, এরপরে সেকেন্ড সিফট । সেকেন্ড সিফট যখন শুরু হতো তখন থ্রি, ফোর এবং ফাইভ এই তিন ক্লাশ । তখন থ্রি বসতো ঐ ক্লাশটায়, তারপরের ক্লাশ ওখানে ফোর, এরপরে টিচারদের লাইব্রেরী, তারপরে ক্লাশ ফাইভ ।</p> <p>সুমন: জি বলরাম:এই ক্লাশটা কতক্ষন পর্যান্ত চলত? সুমন:আমাদের ১২ টা থেকে ৩টা পর্যান্ত বলরাম:১২ টা থেকে ৩টা ? সুমন: জি বলরাম:দুই সিফট এর প্রথম সিফট ৯টা থেকে ১২টা এবং ২য় সিফট ১২টা থেকে ৩টা । আর এই স্কুলটা মনে কর যে টেটা ক্লাশ, ওয়ান থেকে ফাইভ পর্যান্ত পাঁচ ক্লাশে কত ছেলেমেয়ে পড়ালেখা করতো? সুমন:প্রায় ২৫০ থেকে ৩০০ ছেলেমেয়ে পড়ালেখা করতো বলরাম: ২৫০ থেকে ৩০০ ছেলেমেয়ে? সুমন: জি বলরাম:কতবছর যাবৎ স্কুলটা এখানে ছিল? সুমন: প্রায় ১৫ থেকে ২০ বছর যাবৎ ছিল । বলরাম:আর এখান থেকে সরিয়ে নিয়েছে কতদিন আগে? সুমন: প্রায় ৫-৬ মাস আগে বলরাম: এই যে ভাঙ্গনটা, এটা কি ৫-৬ মাসের মধ্যেই আসছে নাকি আগে থেকেই ভাঙ্গতে ছিল? সুমন: ৫-৬ মাসের ভিতর এইটুকু ভাঙ্গছে, কিন্তু আরও আগে থেকে ঐ দিকে ভাঙ্গছে বলরাম: মনে কর গত এক বছরে কতদূর ছিল? সুমন: কত.... সামনের দিকে প্রায় ১ কি.মি. ছিল বলরাম: এক বছরে এক কি.মি. ভাঙ্গছে? আপনাদের কি মনে হয়? সমবেত জনতা: জি বলরাম: এক বছরে এতদূর? সুমন: এখন তো ডাল সিজন, এখন ঘুনীঝড় সিজন । এখন একটু কম ভাঙ্গছে, বর্ষার সিজন</p>	<p>there was a class room out there for Grade I. Then here was a class room for Grade II. Your school had two shifts, 1st shift for Grade I & II. That place was for Grade I and this place for Grade II. Then this place was the library for teachers. There was another class room beside the library for Grade V. But during the 1st shift no classes were held on that place as Grade I & II sat in these two places. 1st shift ended at 12:00PM and then 2nd shift started. Classes for Grade III, IV & V used to take place when the 2nd shift started. Then Grade III sat in that class room, Grade IV over there and then was teachers' library, then was the room for Grade five.</p> <p>Sumon: Yes Balaram: How long did the classes continue? Sumon: Our classes went on from 12:00PM to 03:00PM. Balaram: From 12:00PM to 03:00PM? Sumon: Yes. Balaram: Among two shifts, 1st shift was from 09:00AM to 12:00PM and 2nd shift was from 12:00PM to 03:00PM. In all five grades how many students used to study in this school? Sumon: About 250-300 students studied in this school. Balaram: 250 to 300 students? Sumon: Yes. Balaram: How many years had the school been here? Sumon: About 15-20 years. Balaram: How long ago was the school shifted from this place? Sumon: About 5-6 months ago. Balaram: The erosion that we can see here, was it happening during this 5-6 months or was this happening from before? Sumon: Within these 5-6 months it eroded up to here, but before that it eroded on that side. Balaram: Can you show us, for example, up to where the land was last year? Sumon: How far..... the land was 1Km ahead. Balaram: Within one year 1 Km eroded! What's your (to the crowd) opinion? Crowd: Yes Balaram: So far within just one year? Sumon: Now it is off-season, Erosion takes place a little bit slowly now.</p>
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	<p>এ আমাদের প্রচুর পরিমাণে ভাঙ্গে, আপনারা এই জায়গায় দাঁড়াতে পারতেন না বলরাম: বছরে কয়মাস এই ভাঙ্গনের প্রবণতা বেশী থাকে? সুমন: বর্ষার ছয়মাস বেশী ভাঙ্গে বলরাম: যদি মাস হিসাব করে বলেন? সমবেত জনতা: বৈশাখ মাস থেকে আশ্বিন এই ছয়মাস বেশী ভাঙ্গে। বলরাম: আচ্ছা, ফাইন।</p>	<p>During rainy season erosion happens faster, you would not be able stand here. Balaram: How many months during the year is the erosion tendency higher? Sumon: 06 months during the rainy season. Balaram: Can you please mention the months. Crowd: From Boishak to Ashwin (Names of Bengali months) during these six months erosion happens faster. Balaram: Okay, fine.</p>
<p>Appendix F.5 (Md Sumon, Hazikandi, Chandpur, Tajumuddin, Bhola; Q05/Orig/Bhola/20111129)</p>		<p><i>Balaram in English:</i> Three kilometres far from here, about 5-6 years ago, his house was washed away by the river, after then his family shifted inside the embankment. From the very beginning he was reading in this school when he was 13 years old, now he is 18 years old. When he was 12-13 years then his family shifted there to here, this is the situation. Jobannes: So poverty is a problem preventing him to go back to school? Balaram: Yes Jobannes: Is it possible as age 18 to continue school, or is there a maximum age to go school? Balaram: No, no, this is average for primary education, usually in our country after 12-13 years there is secondary school, as limit is 6 to 12-13 this primary education. Now he is 18 years old, he is average for primary education. As he did not complete the primary education so if he starts his study he needs to get admission in Grade IV, but it is not suitable for --- Jobannes: How far his home from here? Balaram: Three kilometres. Jobannes: Is he guessing?</p>
	<p>বলরাম: ৩ কি.মি. কি তুমি অনুমান করে বলতেছ, না কোন মাপকাঠি ছিল? ৩ কি.মি. কি করে বুঝলে? সুমন: অনুমান করে</p>	<p>Balaram: Are you guessing that it was 3 km or was there any measurement? How do you know that it was 3 km? Sumon: I'm guessing.</p>
		<p><i>Balaram in English:</i> Yes, just guessing. Jobannes: How many times did he move?</p>
	<p>বলরাম: তুমি কতবার মুভ করেছ? তোমার জীবনে একবার নাকি আরও? সুমন: প্রথমবার</p>	<p>Balaram: How many times did you move? In your life time only once or more? Sumon: First time.</p>
		<p><i>Balaram in English:</i> This is first time in his life.</p>
	<p>বলরাম: তোমার ফ্যামিলি এর আগে কখনও, তোমার জন্মের আগে কখনও সফট হয়েছে,</p>	<p>Balaram: Do you know if your family moved before your birth?</p>

	জানো তুমি? সুমন: স্থি না	Sumon: No.
		<i>Balaram in English: This is first time shifting.</i> <i>Jobannes: What does he want to do now? What is his plan for life?</i>
	বলরাম: তোমার বয়স এখন ১৮ বছর, তুমিতো এখন ইয়াং মানুষ তুমি আসলে তোমার জীবন নিয়া, তুমি পড়ালেখাতো বন্ধ করে দিয়েছ, দারিদ্রতার কারণে হোক, সংসারের অভাব অনটনের কারণে হোক বন্ধ করে দিয়েছ। কিন্তু এখন তুমি কি চাও? তোমার জীবনটাকে আগিয়ে নিতে চাও? চিন্তাটা কি? সুমন: আমার চিন্তা হইলো আমি এখন, আমার ইচ্ছা যে পড়ালেখা করে একজন ভাল--- বলরাম: কিন্তু পড়ালেখা যদি করতে চাও মনে কর তুমি ক্লাশ ফোর পরন্ত পড়ছ, এখন পড়ালেখা শুরু করতে হলে তোমাকে কমপক্ষে সেই ক্লাশ ফোরে গিয়া ভর্তি হতে হবে, এর উপরেতো তুমি ভর্তি হতে পারবে না। কিন্তু তোমার বয়স এখন ১৮ বছর, তুমি কি ক্লাশ ফোরে গিয়া পড়তে পারবা? তোমার কি মনে হয়?	Balaram: You are 18 years old, still young, but you stopped your studies perhaps due to poverty... What do you want to do now? What are you thinking? Sumon: I wish to continue studies and be a good... Balaram: But if you want to study, since you studied only up to class four, you have to go and enroll in class four. You will not be allowed to enroll at higher level. Can you go and continue from that class? What do you think?
		<i>Balaram in English: He would like to continue his study, but I asked him now you are 18, you have to be admitted to Grade I, is it possible at this moment?</i>
	সুমন: স্থি পড়তে পারবো	Sumon: Yes, I can continue.
		<i>Jobannes in English: Is it possible?</i> <i>Balaram: It is depends on his commitment.</i> <i>Jobannes: Is that planned now?</i> <i>Balaram: No, if he gets any opportunity then he will try.</i> <i>Jobannes: What would be needed to get the opportunity?</i>
	বলরাম: আচ্ছা এই যে পড়ালেখা যদি তুমি শুরু করতে চাও তাহলে তোমার কি দরকার? তুমি তো বল্লা যে যদি সুযোগ পাই ক্লাশ ফোরে ভর্তি হতে হলেও পড়বো, কিন্তু এটা শুরু করতে হলে তোমার কি, কোন ধরনের সহযোগীতা দরকার? সুযোগটা কি দরকার? সুমন: সুযোগ বলতে স্যার আমার পড়ালেখার সামনের দিকে যে খরচ সে খরচটা যদি-- বলরাম: ক্লাশ ফোরতো ভাল এখন ক্লাশ টেন পরন্ত পড়তেও কোন খরচ লাগে না, সরকার বিনা বেতনে পড়ায়। এটা কিন্তু লাগে না, তাইলে কি দরকার তোমার? সমবেত সকলে:----- (অস্পষ্ট) বলরাম: ওর সমস্যাটা ওকে বলতে দেন, তাই	Balaram: If you want to start studying again, what do you need? You said that you are even ready to start from class four, but to start, what do you need? Do you need some assistance? If so, what? Sumon: There would be cost involved. If I can get that cost... Balaram: Not only up to class four but up to class ten it is free to study, the government pays for it. So what do you need? Crowd: ... [inaudible] Balaram: Please, let him express his problems. Sumon: Yes, the government is paying up to class ten but family income-wise we are not very strong.

	<p>না? সুমন: আমার ক্লাশ টেন পর্যন্ত সরকারই দিচ্ছে ঠিক আছে, কিন্তু আমার ফ্যামিলিগত ভাবেতো দুর্বল। বলরাম: কারন? সুমন: আমাদের ফ্যামিলিতে ৬ জন লোক, আমার বাবা একা কৃষি কাজ হালকাপাতলা করে এত হয় না, এই জন্য-</p>	<p>Balaram: What is the reason? Sumon: We are 6 in the family. My father is the only one doing agricultural work which is not enough. This is why...</p>
		<p><i>Balaram in English: His answer is his father is only earning member in his family. On only his little earnings it is quite impossible to continue feeding his family. So if he starts his study little-bit income may be stop, because nowadays he also supports his family. If he starts his study then he could not able to support his father so that his family may be with in crisis. If anybody support his family especially financially so that his family can smoothly functioning then he gets admission in school and start his study. This is his opinion, if somebody or some one support his family, then he again engage himself in study and continue his education.</i> <i>Johannes: I hope his plan works out.</i></p>
	<p>বলরাম: তোমার এই আশা পূর্ণ হউক সেই শুভ কামনা সে করতেছে। সুমন: জ্বি</p>	<p>Balaram: He wishes that your wish comes true. Sumon: Okay.</p>
		<p><i>Balaram in English: He also thanks you. Johannes: so education is very important for him. Final question, what about the others who are of the same age? Are they also in a situation like him or different?</i></p>
	<p>বলরাম: তোমার সমবয়সীতো আরও অনেকে আছে তাদের অবস্থাও কি তোমার মত নাকি--? সুমন: আমার চেয়েও সিনিয়র প্রায় সবারই একই অবস্থা</p>	<p>Balaram: There are many of your age, are their situations like yours? Sumon: It's the same, even for many older ones.</p>
		<p><i>Balaram in English: More or less it's the same situation.</i></p>
	<p>বলরাম: আচ্ছা এই যে তুমি স্কুলে যেতে চাও, পড়ালেখা করতে চাও সেখানে সরকার কিভাবে তোমাকে হেল্প করতে পারে? বাংলাদেশ সরকার তোমাকে কিভাবে হেল্প করতে পারে, তোমার কি মনে হয়? শুধু আমার না আমার মত আরও যারা আমার সহপাঠি আছে তাদের জন্য যদি সরকার এমন একটা উদ্যোগ নিত তাহলে পড়ালেখাটা করতে পারতাম, এরকম কিছু করণীয় আছে সরকারের, কি মনে হয় তোমার? সুমন: জ্বি, সরকার যদি আমার মত কাজের জন্য বা এইভাবে অভাবের জন্য ফ্যামিলিগত দুর্বলতার জন্য পড়ালেখা করতে পারে না কাজ-কর্ম করে</p>	<p>Balaram: How do you think the government can assist you that you wish to go to school? What do you think? Do you think that there should've been some government initiatives for youth like you so that you could continue your studies? Sumon: It would be good if government helped families like ours where children could not continue studies due to poverty. Balaram: Should the government help you with your education? Sumon: They have provided educational institutions for our education but... Balaram: The support that the</p>

	<p>খাইতেছে সবাইর ফ্যমিলিরে যদি সরকার হেল্প করে ।</p> <p>বলরাম: সরকার তোমার ফ্যমিলিকে হেল্প করবে তোমার পড়ালেখার জন্য?</p> <p>সুমন: আমার পড়ালেখার জন্য তো তারা শিক্ষাপ্রতিষ্ঠান দিছে ঠিক আছে, কিন্তু-</p> <p>বলরাম: শিক্ষা প্রতিষ্ঠানে এখন যে সাপোর্ট দিচ্ছে সরকারের দিক থেকে সেটা কি যথেষ্ট হয়, মনে কর তুমি এখন পড়ালেখা বন্ধ করে দিছ তোমার ফ্যমিলির কারণে, এই সব ক্ষেত্রে সরকারের ভূমিকা কি হবে? সরকার কি কি সহযোগীতা করে? বই বিনা মূল্যে দেয়, সব ক্লাশে বিনা মূল্যে বই দেয়?</p> <p>সুমন: জ্বি</p> <p>বলরাম: আচ্ছা পরীক্ষার সময়?</p> <p>জৈনৈক ব্যক্তি: নিজেরও কেনন লাগে ।</p> <p>বলরাম: সব বই সরকার দেয় না?</p> <p>সুমন: না, আমাদের দেখা যাচ্ছে ওডার উপারে কেনতে হয় নোট-গাইড, তারপর আবার---</p> <p>বলরাম: নোট গাইডতো সরকারের নিষিদ্ধ সেটা দিবে না কিন্তু খাতা-কলমতো তোমার কেনতে হবে, সরকার শুধুমাত্র বই দিচ্ছে আর বেতন দিতে হয় না তোমাদের? পরীক্ষার ফি দিতে হয় । কিন্তু এই পরীক্ষার ফি যদি মওকুফ করে দেয়, তারপর খাতা কলম তুমি যেটা বল্লা যেটা এখন কিনতে হয় ওটা যদি সরকার দেয় তাহলে তোমার কিছুটা সাপোর্ট হয় । নোট বই গাইড বই এগুলো অ্যালাউ না । কিন্তু খাতা কলম এটা একটা এসেনশিয়াল জিনিস এটা যদি তোমাকে, তোমাকে মানে স্কুলে দেয় তাহলে পড়ালেখাটা আরও সুখলি হতে পারে, এ হলো সরকারের দিক থেকে । আচ্ছা অন্যান্য এনজিও যারা কাজ করে, অনেক এনজিও কিন্তু শিক্ষার উপর কাজ করে, তোমাদের এলাকায় আছে কিনা আমি জানি না, তাহলে এনজিও এরকাছে তোমার প্রত্যাশাটা কি? তারা কিভাবে তোমাদের পড়ালেখা চালিয়ে রাখার জন্য কন্টিনিউ করার জন্য সাহায্য করতে পারে?</p>	<p>government is providing to the institutions, is it enough? You stopped your studies, what role can government play in this? What kind of support does government provide? Free books, do they give free books to students of all classes?</p> <p>Sumon: Yes.</p> <p>Balaram: What about during the exam?</p> <p>A person: sometimes you have to buy your own.</p> <p>Balaram: Does government not provide all the books?</p> <p>Sumon: No. Often the students have to buy extra books like the guide book or note books. Then again...</p> <p>Balaram: Notes and guides are not permitted by the government so they will not provide those. But you have to buy pens and exercise books. They only give books, and students don't have to pay fees, right? But you have to pay exam fees. But if you are exempt from the exam fees and provided with the other materials then it would be some support. Notes and guide books are not allowed by the government. There are some NGOs who are working on education. Are there NGOs working in your area? If so, what do you expect from them? How can they help to continue your studies?</p>
		<p>Balaram in English: I just mention at present the government provides only books free of cost, and also the government bears the tuition fees, but they also need to buy exercise books, khata, pencils, stationery, etc. Due to poverty he could not purchase these items, so if the government provides such kinds of stationeries for students then it is better. During examinations they have to pay examination fees, not tuition fees; examination fees are also a burden for them. If the</p>

		<p><i>government allows free exams or the government bears the exam fee then it is better, so from the government they expect such kinds of support. Along with the free tuition fee, free of cost book supports are available along this if Govt. take such kinds of initiatives then it is better for them. At the same time some NGOs can help in such ways – providing school stationeries, constructing the school structure, school furniture what are the some part of the educational environment, if the NGOs ensure such kinds of support then it is better for them.</i></p>
	<p>বলরাম: সমাজে, তোমার এলাকায় গণ্যমান্য লোক আছে না? সবার অবস্থা যে একদম খারাপ সেটা তো না। সমবেত জনতা: ----- (অস্পষ্ট) বলরাম: ঠিক আছে, এই যে ছেলেগুলো এদেরতো সামনে ভবিষ্যত আপনাদের কাছে, এদের ভবিষ্যত গড়ার জন্য আপনারা সামষ্টিকভাবে কি চিন্তা করছেন? কিভাবে এদের লেখা-পড়াটাকে নিশ্চিত করা যেতে পারে? আপনাদের চিন্তাটা কি? সমবেত জনতা: ----- (অস্পষ্ট) বলরাম: না সরকারের কথাতো আমরা এখানে শুনলাম যে সরকার বই দিতেছে, আর বেতনটা দিতে হয় না সেটা সরকার বহন করে কিন্তু এর পাশাপাশি আমরা যেটা লিখে নিলাম যে সরকার শুধু বই না এদের খাতা কিনতে হয়, কলম কিনতে হয়, পরীক্ষার সময় পরীক্ষার ফি দিতে হয়, এগুলো যদি সরকার এনসিওর করে দেয় তাহলে তাদের সুবিধা হয়। এগুলোতো সরকারের কথা বলছেন, এরপরে যে এনজিও গুলো আছে তারা কি করতে পারে? মনে করেন যে অনেক সময় স্কুলে ফার্নিচার থাকে না, ছেলেমেয়েরা আসবে তারা বসতে পারে না তখন এই রকম কিছু কিছু আসবাবপত্র যদি এনজিও থেকে দেয় তাহলে লেখাপড়ার পরিবেশটা সুন্দর হয়, লেখাপড়াটা সহজ হয়, এটা এনজিওরা করতে পারে। কিন্তু অ্যাজ এ কমিউনিটি পিউপল আপনাদের এই ছেলে-মেয়েদের জন্য আপনাদের কি করণীয় আছে? আপনারা কি করতে পারেন? জনৈক ব্যক্তি: আমরাতো চাই যে পড়ালেখাটা করুক। বলরাম: সেটা আপনারা চান, কিন্তু আপনারা কি করতে পারেন? পড়ালেখা যাতে করতে পারে। জনৈক ব্যক্তি: অর্থের কারণে আগাইতে পারি না বলরাম: অর্থের কারণে আগাইতে পারেন না? আর কোন ওয়ে নাই যেমন ওর কথা যদি আমি বলি ওর বাবা যদি চিন্তা করে যে না আমার যত</p>	<p>Balaram: In the society there are many people and not everyone's situation is bad, right? Crowd: ... [inaudible] Balaram: Okay. These young generation is your future, what are your collective thoughts on them? How can you ensure their education? What are your thoughts? Crowd: ... [inaudible] Balaram: We heard that government is providing books and no fees are needed but beside these we noted down that students have to buy exercise books and other materials, pay exam fees. And if the government can ensure these things then it will be beneficial for these children. What about the NGOs? What can they do? Sometimes in the classroom there might be need for furniture and NGOs provide those. But what can you as community people do for these children of yours? A person: We want them to continue studies. Balaram: That's what you want but what can you do? A person: We cannot move forward due to poverty. Balaram: Is it always for money that you as community cannot move forward? What if this boy's father wants to work harder and promises that he wants to send his son to school, are you willing to take his responsibility for education? Is it possible or not possible at all? A person: It was possible before but not anymore. If you are not hard working then even food for the child after coming back from the school is not secured. Balaram: Meaning, even if there is will, the way in not there? Crowd: Yes. A person: People had some land, they</p>

	<p>কষ্টই হোক আমার ছেলেকে আমি কাজে লাগাবো না। আমি আর একটু বেশী পরিশ্রম করে হলেও আমার ছেলেকে আমি পড়ালেখা করাবো, আমি সংসার চালাবো। যদি এরকম একটা দায়িত্ব গার্ডিয়ান হিসাবে আপনারা নিতে পারেন না? সেটা কি সম্ভব কিনা? নাকি একান্তই সম্ভব না?</p> <p>জনৈক ব্যক্তি: হইতে পারে স্যার এটা আগে ছিল এখন আর নাই। এখন পরিশ্রম না করলে এই পোলায়ও স্কুলেখোন আইয়া দুইডা খাইবো এ সুযোগটা স্যার এখন এই দেশে আর নাই বলরাম: মানে এখন ইচ্ছা থাকলেও উপায়টা নাই?</p> <p>সমবেত সবাই: জে নাই</p> <p>জনৈক ব্যক্তি: ছিল এই ধরনের এই ধরেন ৪ পত্তন জমি ছিল চাষ করছে, খাওয়াইছি-খাইছি, পোলাপানের লেখা-পড়া করাইছি, অ্যাহোন স্যার এই নদী ভাঙ্গতে ভাঙ্গতে অতিষ্ঠ হইয়া অনেকে কইছে পোলাপানের আর পড়ামু না নিজে ও আর কাজ-কাম করতে পারুম না।</p> <p>সমবেত সকলে: ০---(অস্পষ্ট)</p>	<p>cultivated, fed their children, sent them to school. But now people are fed up with the river erosion and saying that they neither will send their children to school nor will they work.</p> <p>Crowd: ... [inaudible]</p>
		<p><i>Balaram in English:</i> 20 years ago this area's people had solvency, there was only a little-bit poverty. Then they can send their children to school but nowadays they have no alternative. All of them are hand-to-mouth so they have no alternative to continue their children's education. Because their children also engage in income generating activities.</p> <p><i>Johannes:</i> Are the environmental issues a main cause of the poverty?</p>
	<p>বলরাম: আচ্ছা আপনারা কি মনে হয় এই যে নদী ভাঙ্গন এটাই কি প্রধান কারণ আপনার এলাকার দারিদ্রতার জন্য?</p> <p>সমবেত সকলে: জি</p>	<p>Balaram: Do you think that river erosion is the main reason for the poverty of the people of this area?</p> <p>Crowd: Yes.</p>
		<p><i>Johannes in English:</i> Main causes?</p> <p><i>Balaram:</i> Main causes.</p>
	<p>জনৈক ব্যক্তি: আমাদের ঘড়-বাড়ী ভাইঙ্গা যে চর পড়ছে না হেডা সরকার নিয়া গেছে আমাগো আর দখল নাই, হের আর দখল নাই। সরকার গাছ লাগাইছে।</p>	<p>A person: Our houses are washed away and "Chars" rose in the river but we do not own that [land]. It's taken by the government. They planted trees there.</p>
		<p><i>Balaram in English:</i> The new Char is government property but previously this was their land, but now they have no right to the land.</p> <p><i>Johannes:</i> I see, how far the char from here?</p>
	<p>বলরাম: এখান থেকে কত দূর হবে ওইটা?</p> <p>জনৈক ব্যক্তি: এইহানত ৫ কি.মি. হবে।</p> <p>বলরাম: কি ৫ কি.মি, এতদূর হবে নাকি?</p> <p>সমবেত সকলে: না-না ৩ সারে তিন কি.মি. হইবো।</p>	<p>Balaram: How far is that from here?</p> <p>A person: From here about 5 km.</p> <p>Balaram: 5km, that far?</p> <p>Crowd: No, no, probably about 3 or three and a half km.</p>

		<p>Balaram in English: 3 to 4 km far from here.</p> <p>Jobannes: So this char – over there – is where he had his house before the land was eroded away?</p> <p>Balaram: Yes.</p>
	<p>বলরাম: মানে উনি বলছে যে ওটা যদি তিন সারে তিন কি.মি. হয় তাহলে ঐ যে চর ওখানে কি আপনার বাড়ী ছিল?</p> <p>সমবেত সকলে: ঐডাই</p>	<p>Balaram: He is asking, if that is where you had your house?</p> <p>Crowd: Yes.</p>
		<p>Jobannes in English: More or less in the same place where the new land is accreting, but now he has no rights to it.</p> <p>Balaram: Now this is government property, the forest department has the ownership of the land.</p> <p>Jobannes: Okay, I understand, – and poverty is the real challenge preventing the children from going to school; what are the ways to overcome the poverty?</p>
	<p>বলরাম: উনি জানতে চাইছেন, আপনাদের এই যে দারিদ্রতা যার কারণে আপনাদের ছেলেমেয়েরা স্কুলে যেতে পারছে না, পড়ালেখা করতে পারছে না, কি করলে এই দারিদ্রতা দূর হতে পারে? আপনাদের কি মনে হয়? আপনাদের সামনে এমন কি ওয়ে আছে যে “এই দিকে আমরা গেলে আমাদের দারিদ্রতা থেকে আমরা মুক্তি পাব। কি চিন্তা করতেছেন আপনারা? জনৈক ব্যক্তি: স্যার দেখা যায় যে ঐ অঞ্চলগুলোতে কোন লোকসংখ্যা নাই তো, শুধু গাছ-গাছালিতে ভরাট, কোন জনসংখ্যা নাই ফলে এই দিকে অধিক জনসংখ্যা, নদী ভাঙ্গার কারণে সকল জনসংখ্যা সাইডে অবস্থান করছে কিন্তু স্যার যে ইউনিয়নটা বা নদী ভাইগা বিরাট জঙ্গল হইছে এখন বর্তমানে যদি সরকার ঐ জঙ্গল কাইডা জনগনরে ফিরাইয়া দিত জমি তাহইলে কিছুটা হইলেও তারা মুক্তি পাইত।</p> <p>বলরাম: জমি ফিরাইয়া দিলে কি হইত?</p> <p>সুমন: আর এখানে মানুষের বসত-বাড়ী হইত, জমিতে চাষ করতো বা মানুষের চাষাবাদের সুযোগ-সুবিধা হইতো, দেশের মানুষের ব্যবসা বানিজ্য হইতো।</p> <p>বলরাম: ওর কথাটো বুজতে পারছেন আপনারা? মুরম্বরী আপনারা কি সমর্থন করেন ওর কথা? বৃদ্ধ লোক: জি</p>	<p>Balaram: You mentioned that due to poverty you cannot send your children to school. What can be done to eradicate this poverty? What do you think? Do you have a way which you can consider to come out of the poverty? What are your thoughts?</p> <p>A person: These areas do not have many people, only trees. After river erosion people are living at the sides. Now if government could cut the jungle and provide us with land for house and cultivation then we could be free from poverty.</p> <p>Balaram: What would happen if the government returned you land?</p> <p>Sumon: People could’ve settled here, cultivated land and done business.</p> <p>Balaram: Did you understand what he is saying? Do you support what he says?</p> <p>Elderly: Yes.</p>
		<p>Balaram in English: Their response is the area is useless nowadays; if the government took initiative to replace them / move them back in that area then they could build their own house, cultivate the land in such a way</p>

		<i>that they again can start their family life.</i> Jobannes: In case they might move there, is it lot of land there?
	বলরাম: কত জমি হবে ওখানে? অনেক জমি? সমবেত সকলে: অনেক-অনেক, প্রচুর বলরাম: প্রচুর মানে কি? একটা অনুমান করে বলেন, একরে- জনৈক ব্যক্তি: এখানে মনে করেন ৪-৫ হাজার একর জমি হইবে	Balaram: How much land is there? Crowd: Much land, plenty... Balaram: what do you mean by much? Can you please guess in acres? A person: Say about 4-5 thousand acres of land.
		Balaram in English: More than 4 to 5 thousand acres. Jobannes: 4 to 5 thousand hectares? Balaram: Acre, 100 decimal = 1 Acre, such way 4 to 5 thousand Acre. Jobannes: All right, thats why they are hoping to the Government to select their settlement to move to the Char. Is the Char developed all by itself? Is it the siltation of the river?
	বলরাম: চর কি প্রতিবছরই উঁচু হইতেছে? সমবেত সকলে: জ্বি, জ্বি	Balaram: Is the Char rising every year? Crowd: Yes.
		Balaram in English: Yes Jobannes: This point over here or the other area? {...} Okay I see
	বলরাম: ও বলতেছে যে এটাতো আস্তে আস্তে এপার ভাংতেছে আবার ওপার আস্তে আস্তে গড়তেছে- জনৈক ব্যক্তি: স্যার ঐ পার আমাগো দেশ ভাঙ্গে চর হয় সমবেত সকলে: ----- (অস্পষ্ট) জনৈক ব্যক্তি: আর সরকার যদি ঘড়প্রতি একজন কইরা ঐখানে দেয় যে পরিমান চর রইছে তাইলে আর দেশের মানুষের অভাব নেই। ফরেস্ট ডিপার্টমেন্টই ক্ষতি করে বেশী সমবেত সকলে: বিশাল চর পইরা রইছে। ----- (অস্পষ্ট)	Balaram: He is saying that slowly this side of the river is breaking and the other part is building. A person: That side is building up upon breaking our side. Crowd: ... [inaudible] A person: There would be no poverty if the government distributed land according to household. The amount of land that is there would be plenty. The forest department does more damage. Crowd: A huge land in the Char is fallow ... [inaudible]
		Jobannes in English: I would like to take a photo of all.
	বলরাম: ও আপনাদের সবার একটা ছবি তুলতে চায়	Balaram: He wants to take a picture of you all.
		Jobannes in English: And I would like to take a photo of the foundation of the school.
	বলরাম: ঐ স্কুলের ঐখানে সবাই দাড়ান, ঐখানেই তুলবে।	Balaram: Please stand near the school. [...]
Appendix F.6 (Sakina Begum, Noya Sohor Khulshi Chittagong,	বলরাম: সন্দিপ থেকে কে এসেছেন? উত্তরদাতা: জী আমি। বলরাম: আপনার নাম কি? উত্তরদাতা: সখিনা বেগম। বলরাম: আপনার স্বামীর নাম কি? উত্তরদাতা: মো: হানিফ।	Balaram: Who among you came from Sondeep? Respondent: Me. Balaram: What is your name? Respondent: Sakhina Begum. Balaram: What is your husband's name?

<p>Q14/Dest/ Chittagong/ 20111202)</p>	<p>বলরাম: আপনার সন্তান কয়জন? উত্তরদাতা: আমার ২মেয়ে ১ ছেলে । বলরাম: এখন কয় জন আছে? উত্তরদাতা: আমি এবং আমার ছেলে, ছেলের বউ। একটা মেয়ের জামাই নাই। ও তার মেয়ে নিয়ে আছে। বলরাম: লেখা পড়া করছেন? সাক্ষর দিতে পারেন? উত্তরদাতা: না। তবে সাক্ষর দিতে পারি। বলরাম: আপনি কোথায় থাকেন? উত্তরদাতা: নয়াশহর থাকি। সালেক পুলিশের কলনিতে। বলরাম: আপনার কত বছর বয়সে বিয়ে হয়েছিল? উত্তরদাতা: ১৩ বছর । বলরাম: আপনি কবে আসছেন এখানে? উত্তরদাতা: স্বাধীনের পরে। বলরাম: আপনি কার সাথে আসছেন? উত্তরদাতা: বাবা-মা-ভাই-বন</p>	<p>Respondent: Md. Hanif. Balaram: How many children do you have? Respondent: I have two daughters and one son. Balaram: How many of you are living here? Respondent: Myself, my son and his wife. One of my daughters no longer has a husband. She lives with us with her daughter. Balaram: Did you go to school? Can you sign [your name]? Respondent: No. But I can sign. Balaram: Where do you live? Respondent: In Noya Sohor. In Salek Police's Colony. Balaram: How old were you when you got married? Respondent: 13 years old. Balaram: When did you come here? Respondent: After liberation. Balaram: Who did you come with? Respondent: Father, mother, brother and sister.</p>
		<p><i>Balaram in English: She came here with her parents and brothers and sisters after the liberation war. She got married at 13 years of age. Now she is 45 years old.</i></p>
	<p>বলরাম: নদী ভাঙ্গনের জন্য আসছেন নাকি অন্য কোন কারণে আসছেন সেটা কি আপনার মনে আছে? উত্তরদাতা: মনে আছে। যুদ্ধের পর আমরা আসছি। ৯১ এর বন্যাতে আমার মা-ভাই পানিতে ডুবে মারা গেছে।</p>	<p>Balaram: Do you remember whether you came because of river erosion or for any other reason? Respondent: I remember. We came after the war. My mother and brother drowned and were killed in the flood of 1991.</p>
		<p><i>Balaram in English: She lost her brother and mother in the cyclone of 1991.</i></p>
	<p>বলরাম: আপনি এখন কাদের সাথে থাকেন? উত্তরদাতা: আমার ছেলে মেয়ের সাথে। বলরাম: আপনি কিভাবে চলেন? কোন কাজ করেন? উত্তরদাতা: না । কাজ করতে পারি না। অনেক সময় অনাহারে থাকতে হয়। অনেক অসুস্থ। বলরাম: চিকিৎসা করতে পারেন না। উত্তরদাতা: চিকিৎসা করতে পারিনা। টাকা কোথায়? বলরাম: আপনার নাকি ২/৩ জন সন্তান মারা গেছে? কিভাবে? উত্তরদাতা: জী। চিকিৎসা করতে পারি নাই।</p>	<p>Balaram: Who do you live with now? Respondent: With my children. Balaram: How do you manage? Do you work? Respondent: No. I cannot work anymore. Often I do not have anything to eat. I am very sick. Balaram: Why don't you get treatment? Respondent: Cannot go to the doctor. Where is the money? Balaram: How did your children die? Respondent: I could not afford treatment for them.</p>
		<p><i>Balaram in English: She could not save her 3 children because of financial problems. Her children were very sick, and she could not afford any medical treatment for them.</i></p>

	<p>বলরামঃ এখন আপনি কি করেন? উত্তরদাতাঃ বিভিন্ন বাসাতে কাজ করি। বলরামঃ আপনার ছেলে কি করে? উত্তরদাতাঃ রিকসা চালায় । বলরামঃ কতদিন যাবত কাজ করেন? কত টাকা পান? উত্তরদাতাঃ এক বাসাতে ২ বেলা কাজ করি। ১৫০০ টাকা পাই। বলরামঃ ছেলে কত পায়? উত্তরদাতাঃ জানিনা। বিয়ে করার পর দেখে না।</p>	<p>Balaram: What do you do now? Respondent: I work in different houses. Balaram: What does your son do? Respondent: He is a rickshaw puller. Balaram: How long have you been working? How much do you get paid? Respondent: I work in one house two times – morning and evening. I get 1,500 Taka per month. Balaram: How much does your son get? Respondent: I do not know. He does not look after us after getting married.</p>
		<p><i>Balaram in English:</i> She works as a maidservant. She earns 1,500 Taka every month. Her son also is a rickshaw puller. But she does not know about his income.</p>
	<p>উত্তরদাতাঃ স্বাধীনতার পর ৯১ তে আমার বাবা মা আমাদের বাড়ি গিয়েছিলেন। আমাদের জমিজমা বুঝে নেবার জন্য। কিন্তু যাত্রাপথে ঝড়ের কবলে পরে, স্টিমার ডুবে সবাই মারা যায়।</p>	<p>Respondent: After Liberation, in 1991 my parents went to our village to claim our land. But on the way, they were killed in a steamer accident due to a cyclone attack.</p>
		<p><i>Balaram in English:</i> During 1991, her parents went to recover their assets. But they were killed when the steamer capsized and sank due to the cyclone.</p>
	<p>বলরামঃ আপনার এই অবস্থাতে সরকারের কাছে কি আপনার চাওয়ার কিছু আছে? উত্তরদাতাঃ কি চাইব। কেউ কখনও কিছু দেয় নাই। বলরামঃ তারপরও কিছু চাইতে হলে আপনি কি চাইবেন? উত্তরদাতাঃ চাইব আমার জন্য একটা ঘর করে দিক। কিছু টাকা দিলে গরু কিনতাম। এই বয়সে মানুষের বাসাতে কাজ করতে ভালো লাগেনা।</p>	<p>Balaram: Do you have any expectation from the government in this situation? Respondent: what shall I ask? No one gives anything ever. Balaram: Even so, if you had to ask for something, what would you ask for? Respondent: I would ask for a house. If I was given some money, I would buy a cow. I do not like to work at people's houses at this age.</p>
		<p><i>Balaram in English:</i> She wants the government to help her with a house and some cash. So that she can buy a cow and live well. Jobannes: Ok. Please thank her.</p>
	<p>বলরামঃ আপনাকে অনেক ধন্যবাদ সময় দেবার জন্য।</p>	<p>Balaram: Thank you very much for giving us time.</p>
<p>Appendix F.7 (Wilfred Sikukula; Director Humanitarian and Emergency Affairs (HEA) and Climate Change (CC) Bangladesh, Q23/Exp/Dhaka/ 20111205)</p>	<p>For me the most exasperating thing, ... is the hopelessness of the little children ... whose future is now locked into the slums. ... I am looking at children that are below 10 years who are growing up in those communities that are fast disappearing [ie, rural communities in Bhola Island], and what becomes their future. I begin to connect, particularly the rural children who are displaced, to the children whose future is now locked into the slums. So in a way I'm seeing the rural population moving into slums which in themselves, to me, were worse than the rural environments, much worse! So it is the children, actually, that hit me the hardest. [...] I am looking at the children in Bhola who are living in an island that could go underwater anytime, and then the children in the slums who are assailed by all the health problems, who are assailed by the sanitation problems, who are assailed by the immorality that is in those slums, who have no opportunity to go to school. I think we interviewed a lot of children there who have no chance of attending school</p>	

whatsoever, and yet they are in a school going age. And I recall the children who are actually in the sewage drains picking fruits that were falling there and eating [them]. I couldn't live with that. [...]

Education dissolves the boundaries. It eats away the borders that separate people. I'm in Bangladesh [from Zimbabwe] because I have an education, that is why I can be employed here. So education dissolves the borders. If you're well-educated in your trade in Bangladesh, you will compete [with] people of your calibre in the States, in the UK, and you will be preferred to them. If you're the best ... here, you're also the best ... elsewhere. There is that potential. So education is really one of the keys! It actually brings me to what I think is a possible strategy to address challenges in the slums: to educate the children that we're seeing, yes, educate those children in the slum, and you will break that vicious cycle of poverty in which they find themselves. [...] I think it ... calls on our creativity as NGOs as well as the creativity of government. We need to ... get a paradigm shift from thinking formally to thinking informally. We have to move out of thinking of a formal education system and think of an informal education system. Even home school where we can. Have a couple of teachers who are resident in the slums who are qualified to help the children start a formal and informal kind of education. Because if we think of physical structures for schools in slums, maybe that's too much. We can give them a basic education while they are still within the slums and gradually feed them into the formal education system.

Appendix G

Maldives Case Study

Interview Details	Dhivehi Original	English Translation
<p>Appendix G.1</p> <p>(Professor Patrick Nunn, UNSW-TV Studio, recorded video interview; 16 February 2012; Q33/Exp/UNSW-Sydney/20120216)</p>	<p>01:20 Q: Patrick Nunn, please tell us a bit about yourself.</p> <p>01:30 A: My name is Patrick Nunn, I'm Professor and Head of School at the University of New England in Armidale, Australia. For 25 years I've worked at the University of the South Pacific which is an international university in the pacific islands, I was based at its main teaching campus in Suva, Fiji. A lot of my research has been to do with climate change and the effects of recent and future climate change on the people of the tropical pacific islands, in particular, not just on the environments that they occupy but also on the coherence of the societies that they have, also their cultures and their traditional ways of life.</p> <p>I think that when we look at the pacific islands today, the first point that I would make is that there is an awful lot of misinformation out there, and over the last 20-30 years I think there has been a lot of misguided assistance directed towards the pacific islands that really hasn't produced the kinds of outcomes that aid donors expected to produce, and I'm very concerned that this doesn't continue into the future. I think there are huge problems for people in many parts of the pacific islands at the moment and those problems will multiply and worsen in the next few decades directly as a result of climate change. If we look at some of those problems, the problems that concern me most are around my research interests mostly are to do with sea level change and particularly sea level rise which is happening along every pacific island coast and is certainly registering its effects already on many many coastal settlements in the pacific islands. It is being exacerbated in many places by human activity so it's not just a natural process operating in isolation that humans have not affected at all, but it is something that is ubiquitous in the Pacific Islands.</p> <p>Sea level rise floods coastlines of course. It worsens floods arising from heavy rainfall for example in many many ways. One of my case studies has been Nadi Town in Fiji which is the main kind of tourist hub and it's where the international airport is, and when you look at the frequency and magnitude of flooding in Nadi over the last 15-20 years you can see that these floods have gradually become more frequent and they've become deeper and they've endured for longer. So there really is a problem. People tend to blame what I call proximal causes, they tend to blame the deforestation of the catchment, they tend to blame the filling up of the river channels with sediment or the cutting down of mangroves, whereas in my view, sea level rise which is currently happening at around 3.4mm a year off the coast there. Sea level rise is clearly something that has to be a major factor in this and so I think what we're seeing in small towns like Nadi is something that we will see increasingly over the next few decades in towns of similar size throughout the pacific, but of course, most people in the south pacific islands, as you know very well, live in small, often traditional settlements along the coast, they live along the coast not just for access, but because they depend on the ocean, particularly the near shore environments for food resources routinely. So they are out collecting things everyday from offshore areas. Now many of those settlements are also – I think drowning is an unnecessarily evocative word – but they are becoming inundated more regularly, life is becoming more difficult. Again, one of my recent studies has been in the Raiwa River Delta in Fiji where you can talk to people and they will tell you that ten years ago the villages</p>	<p>01:20 Q: Patrick Nunn, please tell us a bit about yourself.</p> <p>01:30 A: My name is Patrick Nunn, I'm Professor and Head of School at the University of New England in Armidale, Australia. For 25 years I've worked at the University of the South Pacific which is an international university in the pacific islands, I was based at its main teaching campus in Suva, Fiji. 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hardly ever got flooded, but now they are getting flooded several times every month, and flooded to the extent of the river water just entering the village, so that they have raised cement paths to get through the village at such times, and these things never happened in the past. Now again there is a tendency to blame proximal causes, ok, short-term climate variability is a common cause for this, human interference with the river drainage system and so on and so on. But clearly it's not, clearly it's something that's occurring along every pacific island coast, you cannot blame proximal causes. The long-term obvious cause is sea level rise and it is something that's projected to accelerate over the next few decades. So really thinking about the future it is very important to try in my view to move pacific island people away from short-term responses that are based on attribution to proximal causes. If we can explain to people that it's in fact a long-term cause, there is long-term change going on and it's going to go on at least for the rest of this century and almost certainly well after the end of this century. If we can explain that to them then hopefully they can begin to understand the need for really fundamental adaptation to this. And one of the ways of fundamentally adapting to this, in fact the only way for most communities along the pacific island coast is relocation. Relocation of coastal settlements from places where they are currently becoming increasingly vulnerable to sea level rise to places where they would be effectively immune from the effects of sea level rise, that's what relocation means. And it's easier, of course, in some countries than in others. In the Carterets, for example, it's very difficult, and in the Maldives, it's very difficult, as it is in Kiribati and Tuvalu and the Marshall Islands in the Pacific. But it's not impossible. I think it's something that governments have to come to terms with and they have to use donor funding really to try and move this project, this process along.

08:45 Q: Yesterday you made the point, and you said you had chosen your words very carefully, but your point was that most coastal settlements will become uninhabitable and that relocation will be necessary in most cases. Can you elaborate on that point in light of anticipated sea level rise which you are currently working on writing for the IPCC AR5, what are the projections, acceleration, what are we talking about?

09:28 A: Well, without referring to what we are doing in AR5, the latest published projections – and I'm not even sure that I'm up to date because it changes so often – but there is a whole set of publications that came out last year, possibly the year before, that were basically talking about as much as 1.9m above 1990 levels at the end of this century, so in a 110 years, 1.9m, that was the maximum. So I tend to take a sort of middle view of 1.2m by the end of this century, which is still twice as much as AR4 – that was stated in AR4 – which was the maximum of about 59[cm] – but there certainly are scientists out there who work on sea level projections who are convinced that 2m, over 2m by the end of this century, relative to 1990 levels, is highly likely.

Put that into the context of the pacific islands and something like 95% of everyone living in the pacific islands lives within 1/2km of the coast or something like that – I forget the exact statistic, you would know – but looking at sea level rise at that amount and looking at the nature of pacific island coasts, looking at the way people have been transforming pacific island coasts by themselves over the last few decades, you know, it's clear that many many settlements in the pacific islands will become uninhabitable. In the Raiwa delta study that I mentioned we identified – I think it was around 180 settlements with more than 200 people in them – and something like 90% of those will be underwater if the sea level rises 1.2m in that area. And almost certainly most of those settlements will become uninhabitable before that time because they are in a very vulnerable location where sea level rise is accompanied by subsidence. The same in places like Nadi, I think the lower parts of

Nadi town are going to be permanently underwater within the next 20 years, possibly 30 years. Whole nations, in the Pacific, and of course the Maldives in the Indian Ocean, will become uninhabitable as a result of this. We're not anymore about 15-20cm, we're talking about ten times that amount, and that makes a huge difference. And it really means that all the very earnest attempts to try and prepare islands like those in the Maldives and Kiribati for future sea level rise in the past are really no longer relevant. You can't expect an atoll island, unless there are exceptional circumstances, to survive under a sea level that's 1.2m higher than today. A lot of people in the early days thought that coral reefs would suddenly start to grow up and continue to protect islands, but there's no evidence that coral reefs have ever done that because it requires a huge ecological change as you know in addition to everything else – so many reefs are degraded in the Pacific – so it's not a straightforward process. So I think it's time for Pacific Island nations and island nations everywhere in the world to talk seriously now about relocation.

13:20 Q: You mentioned the word “anticipatory adaptation” which implies a very forward-thinking posture, and you mentioned “culturally filtered education”, speaking with the people and engaging with them in their native languages, and also the role that religious leaders could play. Can you unpack these recommendations a bit in this conversation?

13:50 A: Anticipatory adaptation – just the idea that many countries have now taken on board – the idea that what's going to happen in the rest of this century is as certain as it can be, and therefore it makes good economic and social societal sense to start preparing for these things now before they actually happen. And I think it's very difficult in the developing world to do this kind of thing, because the agendas of development are basically short-term agendas: put more money into the pockets of the people, you know, take more from the land, increase short-term profits and so on and so on. So I just don't think that anticipatory adaptation is really an idea that's taking off in island countries throughout the world. I've made the point time and time again, if we could people in Nadi Town, for example, to understand what is likely to happen in the next 20 years, and start to move out of the most vulnerable areas now, it would really save a lot of pain and expense further down the line, but it's not going to happen, and things will happen at the last minute, and they will be very painful and very expensive and very difficult.

My experience in the Pacific Islands, working with local communities around issues of climate change, it's clear to me that nobody in the Pacific Islands will take climate change seriously as a threat for as long as it is communicated in a language that they regard as foreign, and I think that this is a hugely important point that aid donors have missed. And it's not that people don't understand English, it's just, you know, if any of us imagine someone talking to us in a language that's not our first language, and trying to convince us of the importance of that issue without taking the trouble to put it into our first language, it's sending us the wrong message. And I've seen this happen many times in Pacific Island countries that people will sit in a room and will listen to messages about climate change and information about climate change that's presented in English, and they will nod very politely because that's what people in the Pacific do, and they will pretend that they will take it on board, but basically they will ignore it, and the talk around the communities – I speak Fijian, not very well, but I speak enough to have conversations – and the talk around the villages is that it is something that is theirs, not ours. And added to that in many communities in the Pacific is the sort of religious idea that they are godless people and so it's affecting them, but we are God-fearing people and therefore it is not going to have a major impact on us, there is a deity up there who will look after our interests so there is really no reason to worry, which really brings me on to your third point, which is about religious leaders. I think they – in developing countries, and

particularly those in the Pacific Islands where almost everyone is religious in the sense that they attend religious services and they subscribe to the tenets of Christian religion in the main throughout the Pacific, I think religious leaders have a huge potential for communicating imperatives about climate change to people in the Pacific in a way that governments could never do. You know, governments in the Pacific like governments anywhere at community level are generally regarded with a degree of contempt, and their messages are not taken seriously, but religious leaders, it's quite different. And in that regard I'm very happy that the Pacific Conference of Churches, which is an ecumenical Christian organisation in the Pacific which has headquarters in Suva, they have really taken on board the idea of climate change adaptation. A few years ago they issued what was called the Moana Declaration about relocation, and this was three of four years ago now, so at the time it was quite new, it was before really Pacific Island leaders had started talking about that, and I think they understand very clearly that there is a need for people in the Pacific to adapt, so I look forward to continue working with them.

19:25 Q: So that would be the same, even though the Maldives, for example, is a Muslim country and the South Pacific is Christian...

19:35 A: I can't answer that question, I can't answer that.

19:40 Q: In your talk you mentioned flashpoints and the potential for societal unrest as perhaps one way that this will unfold in the coming decades or one pitfall to try and avoid today. Can you share your thoughts around that.

A: Well, it's February 2012, and earlier this month there were floods in Nadi, in Fiji, they imposed a curfew and the police were patrolling Nadi Town in canoes or kayaks or something like that to keep the looters out 20:00 of the shops, you know. My point about flashpoints was that large urban centres in the Pacific Islands are already places where there is increasing – I don't want to say criminal activity – but increasing antisocial activity. There are a lot of people there particularly in the squatter settlements that are growing around the fringes of these towns, a lot of people who don't have regular employment, or that's why they came to the city, so there is a growing societal problem that needs to be managed. My argument would be that over the next few decades, both as a result of extreme events superimposed on sea level rise, and sea level rise by itself, we are going to have increasing instances of crises in these kinds of urban settlements that are going to become increasingly difficult for countries to manage. And I gave the example of the Honiara Riots in – I think it was 2000 – Honiara, in Solomon Islands. This was a riot about land, it was a riot about resources and access to opportunities and things like that, but I think it illustrated to Pacific Island people that there are urban settlements or urban centres in the Pacific that are already potential flashpoints and I would argue, you know, that they are going to be made more numerous and the flashpoints become, perhaps more frequent, you know, if we don't take steps now to manage future environmental stresses arising from climate change. The other example I'd give, of course, would be Nuku'alofa in Tonga where again there were riots.

22:20 Q: All of this raises the question how to prepare for it? And so the different stakeholders I always ask respondents about is the policy makers, the NGOs, the corporate sector, even the communities themselves, what contributions can they make in sort of preparing for some of these things to happen... What are some of your views around how the different stakeholders can face up to what's coming and to prepare before things get worse?

22:55 A: Well, to start from the community level, I think there are already some communities that are responding to sea level rise. I showed pictures of a few the other

is within a geographic boundary from the nucleus you can travel to any island within that cluster within an hour on a slow boat, on a dhoni, yes. So we've identified some 32 clusters, so therefore 32 nucleus for these 32 clusters. The government is now putting focus on developing those islands with the satellites within that cluster for other services, and also provide, you know, we've started an entirely new transport system in the Maldives. Up til 2008 we've not had a regular transport system for passengers between islands. We've had for a very very long time transport between islands and the capital Malé, but we've not had transport between inter-atoll and intra-atoll, we've not had that, so therefore people would have to wait on their island for somebody to come on a casual visit and then go – if the destination of this vessel is where they want to go they might get onto that and go. Or they would have to hire a boat which becomes very expensive. So to make an hour's journey, if you have to hire a boat, it will cost you something like 2,000/3,000 Rufiyaa, that's about 150 to 200\$, you know, that is very expensive, just for an hour's drive! We're talking about 14/20 nautical miles, that's a very short distance, really! So since 2008 we've started a nationwide transport ferry system. Every atoll has now the ferry system up and running. On some atolls it is working very well, while on the others it is still a skeletal service, very basic, not up to the standard which we want it to be, but it's improving gradually, and we believe transport is something that you cannot – in a geography like Maldives – we cannot pull the islands together, ok, we cannot. We realised, we cannot pluck and replant people, it's not possible. The only way to connect people would be via a transport link.

Q: Is that therefore a new policy that is different from relocating people to more of an inter-connectivity concept?

A: It's more connectivity and mobility. Yes. That is the main concept for integrating people. There was a programme, at the very beginning the programme was called, - this was around 2000, early 2000, - the programme was "population consolidation" and ... something else. And under that programme they kept on bringing people to larger islands. And then after the tsunami came the concept of "safer islands", where they started building some resilient physical features onto the islands. The policy has evolved, now to make them clusters of islands, and then providing people with connectivity, and identifying some of the islands within that cluster focusing on for different social and economic activities.

Q: Is there any documentation available that looks at the evolutionary process of these different phases of development?

A: You would be able to find it from the Ministry of Finance. They have a department called National Planning. The Department of National Planning, they would have the concept of "population consolidation" programme, and the "safer island" programme, and then how we've identified the clusters for development as well. But this is the policy currently that is being implemented.

Q: So these are three phases I've identified, "population consolidation", the "safer island" concept and presently the "clusters" concept. And the 32 clusters, is this across the...

A: Yes, it's across the whole archipelago. But it's still incomplete, because what has happened, the centres, the nucleus for these clusters were identified based on existing socioeconomic infrastructure and activities. Therefore, naturally, the ones that are already thriving became the nucleus for these clusters, and the clusters were limited by a geographic boundary that is defined by the travel distance. Therefore, naturally, some islands have been left out. So we are still to identify how do we deal with them.

Q: Would that go back to population consolidation, perhaps, and relocation?

A: We might have to combine those two things, so it's still incomplete, it's still in the process of evolution, but with these 32 clusters it deals with some 70% of the population ... some 70% of the population is being taken care of through that, where we are now.

Q: And the clusters concept is something that your Department, your Ministry is coordinating?

A: I can show you the clusters. It's on the web. The Ministry has a website. This thing called "resource map" on the Ministry's website. And this is the website. You might have to do a google plug-in, if you do this, "resource", and then if you just get "commercial centres" and "regional centres" - there you got, ... and now, if you want to look at the islands for "inhabited islands" in the clusters, you should select, - say you take an atoll, - say you take this settlement, just that one, and then you should be able to see all the inhabited islands in that cluster. Each of these violet circles is a cluster... one of the 32, ... but if you draw that... what happens - here is an island which we can't put into any cluster. How do we deal with that? This island has quite a large population, what do we do with that?

Q: Does this webpage have background information on the clusters concept?

A: There is no text on the webpage, but these are the clusters. And then you can identify the inhabited islands by "atoll-wise", or you can get the entire archipelago, that's all the inhabited islands, and there you find... here are some islands which we could not put into a cluster. The clusters were mainly on population size, socioeconomic infrastructure, and, basically those were the ones, so banks, hospitals, schools, the extent to which people have been depending on that island, is based on those criterias, these centres have been identified. That's a centre, and that is a 14-mile radius...

Q: There are several red names...

A: All the red names are inhabited islands, you can choose from this uninhabited ones as well, those are all uninhabited islands. All the ones in red are inhabited ones. So you can select the entire archipelago, or you can select atoll-wise. And you can also get the other islands, you can also get all the tourism islands, that's all the tourism islands there - so you know where the resorts are for these ones, you can also get the ones allocated for fisheries development, and for housing, the ones we've targeted for housing programmes, you can also get for - we've also identified some of the areas for mining sand, we've identified those as well, and for agricultural [purposes]. So it's a useful map.

Q: And any document around the clusters concept?

A: For the clusters there is a document.

Q: On the web?

A: No, it's not on the web. I have to get it for you. I think it's in Dhivehi, I think you might have to do a translation. ... But [the clusters map] is on the Ministry's webpage, it's a google-based thing which we have customised to this, so you might have to install a google app / google earth - a plug-in. "Ministry of Housing", and then "Resource Map".

Q: And the document in Dhivehi which you say I may have to translate ...

A: It's not here, but I'll get it for you, you can collect it from my secretary. You could try to see me after four, if you've got more questions. [...]

Q: We've been really impressed with the adaptation of Maldivians, and of course my research has to do with climate migration. And as people have pointed to the Maldives as an island state particularly vulnerable to future sea level rise scenarios predicted by scientists, and coming here to get an idea of what the future may hold, seeing all the adaptation, and the construction, and the reinforcements, we've been very impressed ...

A: One thing you might also want to read is ... there are some pieces of research now coming out which talk about these islands being affected by climate change, but not necessarily drowning. Some are morphologically more resilient than the others. So we are not preparing ourselves for the doomsday scenario yet. That's why we're making all these plans. Identifying among the islands the ones that are naturally more resilient to the physical effects of climate change is an important subject that we have to understand. There are some pieces of research which indicate the island nations may not necessarily sink, but they will undergo major transformations which will make life very difficult for humans because you can't keep changing as the island changes. Because some of these islands we see, they keep shifting within the lagoon. They keep changing, migrating within the system. You can't migrate your house with the island migrating. How do you deal with those sorts of challenges... So I don't like this oversimplification of the island nations sinking, but the challenges, - that is the reality! And that is what we need to know. Over-exaggeration of things is not useful. We just want to know the reality, when you only know the reality, you can prepare yourself for that.

Q: That's to "prepare" – that's a key word in my mind... everywhere we look we see people preparing and managing the ocean in an incredible way. I mean, I've done some work in the South Pacific in Papua New Guinea, and that's a very different picture. There are some islands that really are experiencing local level sea level rise – whether the island is going down or local sea level is just particularly pronounced – they don't have the same kind of resources like Maldives, and don't have the expertise.

A: We see some islands have eroded quite substantially, but at the same time we've also seen more shifting, moving around, that is the real challenge for us.

Q: Shifting of people...?

A: No, shifting of islands. I know some islands that have shifted. I've done some work myself. I used to be a PhD student [University of Auckland] before I became a politician. I did some research – I'll show you this particular atoll. I'll show you one particular island which is an interesting one.

Q: While you do this, can I get out my video camera and get the explanation on film?

A: I don't have a problem with that. I don't have a problem, you can certainly do that, if you want to do that. [...] This particular island – we have photos of this island – aerial photos from 1969. And this is more recent, in late 2000. The entire island, without it changing its area, has shifted 100m within that 35-year window. If you look at this, see the bands of vegetation? See there's a band, there's a band, there's a

band, there's a band, there's a band, - every time this is a shifting, a shifting, a shifting – but this is the entire island shifting. The island was somewhere around here around 1969. The entire island has shifted. So it's not sinking, but it's migrating. Imagine if somebody had a house here! You can't move your house with that. So how do you deal with that? Now that is the sort of things that we should really be dealing with and preparing ourselves for. This is one particular, very pronounced example of island migration within the reef system which poses a threat to human populations on the islands.

Q: And is climate change implicated in the migration of the island?

A: Yes, what really happens with this is, what happens with the rising seas, when the water level over the reef rises and when the reef can't keep up with that, you have a greater window through which the energy can penetrate into the lagoon, which changes the hydrodynamics of the lagoon, which then shifts the equilibrium position for the island to be more stable – that causes the shifting. The island tries to find its [equilibrium] – it's a very dynamic system – the island tries to find the most stable position within the reef system, given any energy regime – and the energy regime within the reef system is changing with the rising seas.

Q: Is this likely to continue or intensify as sea level rises?

A: The predictions are that this is going to intensify, and it's going to continue, so we need to find among these islands which are the most stable ones. Which has the least shifting or dynamism – which has the least dynamism when it responds to rising seas and more energy coming over the reef.

Q: So the islands will not drown as you say...

A: Ultimately, the system can't keep up... ultimately, the system can't keep up! I try to draw the analogy with the smoker. You continue to smoke, your system adjusts to it, so you don't feel anything, because [the body] – this is a natural system so it makes slight adjustments with the harm you do, so you don't feel it. Ultimately, it comes to a tipping point where it breaks down and you go to a terminal illness like cancer or whatever it is, or your lungs just collapse. – The same thing will happen. But we haven't reached the tipping point yet. And we're trying to avoid that – through the negotiations we're trying to do is to avoid reaching the tipping point.

Q: Will you know when the tipping point is reached?

A: I think it's very difficult for anyone to say that – yet. I don't think it's an absolute mark where you say, "this is the point". I think it's very difficult. What we believe, one-and-a-half degrees is that point. The others say it's two degrees. When it goes to definitely four degrees, then definitely it's going to be – you've gone way beyond the tipping point then.

Q: And what will happen? People like Ali Rilwan [of Bluepeace NGO] have suggested contingency adapted raised islands, a few islands in various places to prepare for possibilities of future scenarios.

A: You can raise the islands, you can put forts around the islands, you can do all sorts of engineering pieces of work, but they're hugely expensive. Now we have 1,200 islands, and the total area is 300sq km. The length of the shorelines all summed up together is 644[km]. And if you are to protect every island, every bit of shoreline, it costs about \$4,000 per linear meter of shoreline. So 644km will come to something like four billion dollars. And we're talking about a population of 315,000 people.

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Abstract

High levels of human mobility brought on by global megatrends such as population growth, urbanisation, globalisation, coastward migration, environmental degradation, resource depletion, and sprawling of slums in developing countries are likely to be reinforced by climate change, making it plausible that human mobility will increase significantly during the 21st Century. Within the academic, development and international community there is no uniform view how this potentiality should be faced, but projections typically agree that the majority of this migration can be expected to occur in developing countries characterised by high levels of poverty and vulnerability. Moreover, it can be observed that a significant amount of climate change related migration is already underway.

A review of the literature reveals knowledge gaps with respect to both interdisciplinary and local-level research that expressly invites the perspectives of climate migrants. This dissertation responds to these gaps both by drawing on literature in several fields of inquiry, and by intentionally engaging with migration affected populations to identify what preferred solutions they envisage. Taking a humanitarian preparedness approach, this research seeks to identify what migrants want so that appropriate policy instruments for equitable macro-managed migration processes can be discussed, developed, drafted and legislated well before they are needed. To this end, this research aims to learn from various forms of current migrations which may or may not all be climate induced. At its simplest, this thesis argues that policy preparedness is the a priori policy posture of choice.

Drawing on fieldwork conducted in Bolivia, Bangladesh and the Maldives, this research repositions climate migrants at the centre of a scholarly debate that has largely marginalised or even patronised them. It concludes: (1) inviting the contributions of migrants leads to preferable migration outcomes; (2) policy maker foresight is an important success factor; (3) targeted service provision can enable more positive migration outcomes; (4) many migrants wish to stay in their countries / communities, thereby highlighting the importance of in situ adaptation; (5) nomenclature is a non-problem in the minds of most migrants; (6) accountable and responsive government institutions have a key role to play in enabling anticipatory migrations; (7) education is the sine qua non for all future migration preparedness.