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Research Paper Title

Climate change and migration in the Maldives: Some lessons for policy makers

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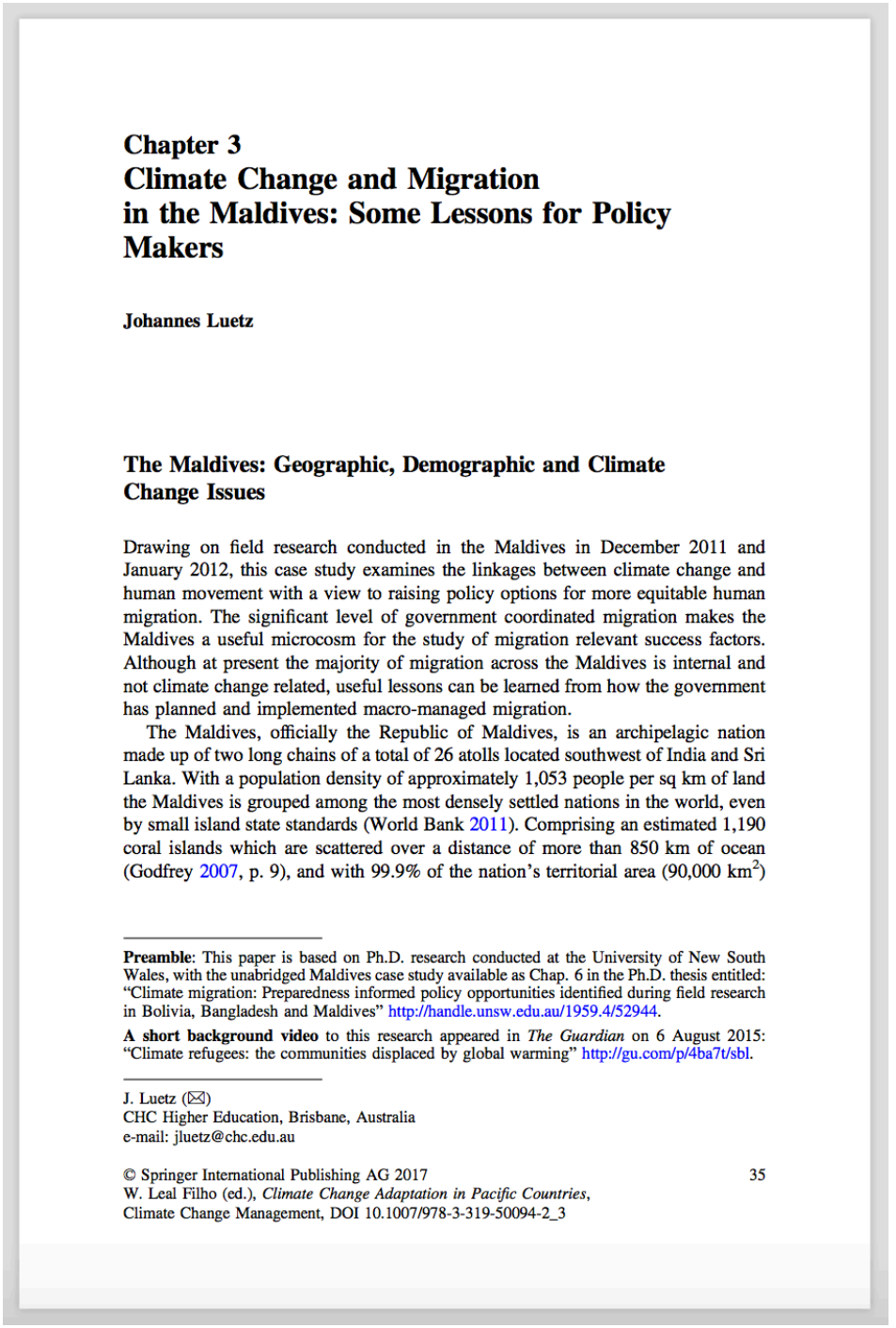

Chapter 3
Climate Change and Migration in the Maldives: Some Lessons for Policy Makers

Johannes Luetz

The Maldives: Geographic, Demographic and Climate Change Issues

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.

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. With a population density of approximately 1,053 people per sq km of land the Maldives is grouped among the most densely settled nations in the world, even by small island state standards (World Bank 2011). 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 km^2)

Preamble: This paper is based on Ph.D. research conducted at the University of New South Wales, with the unabridged Maldives case study available as Chap. 6 in the Ph.D. thesis entitled: "Climate migration: Preparedness informed policy opportunities identified during field research in Bolivia, Bangladesh and Maldives" http://handle.unsw.edu.au/1959.4/52944.

A short background video to this research appeared in *The Guardian* on 6 August 2015: "Climate refugees: the communities displaced by global warming" http://gu.com/p/4ba7t/sbl.

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Maldives

(Photo: Salawin Chanthapan / iStockphoto)

Republic of Maldives:
Geospatial Issues & Demographic Issues

- **Two long chains of 26 atolls** southwest of India and Sri Lanka
- **1,190 coral islands** scattered over 850 km of ocean (Godfrey, 2007)
- **99.9%** of nation's territory (90,000 sq km) is **water**
- **Population density:** 1,053 people per sq km (World Bank, 2011)
- **193 inhabited islands + 88 resort islands** (MPND, 2006)
- The vast majority of islands are **uninhabited**

Uninhabited island

(Photo: Johannes Luetz)

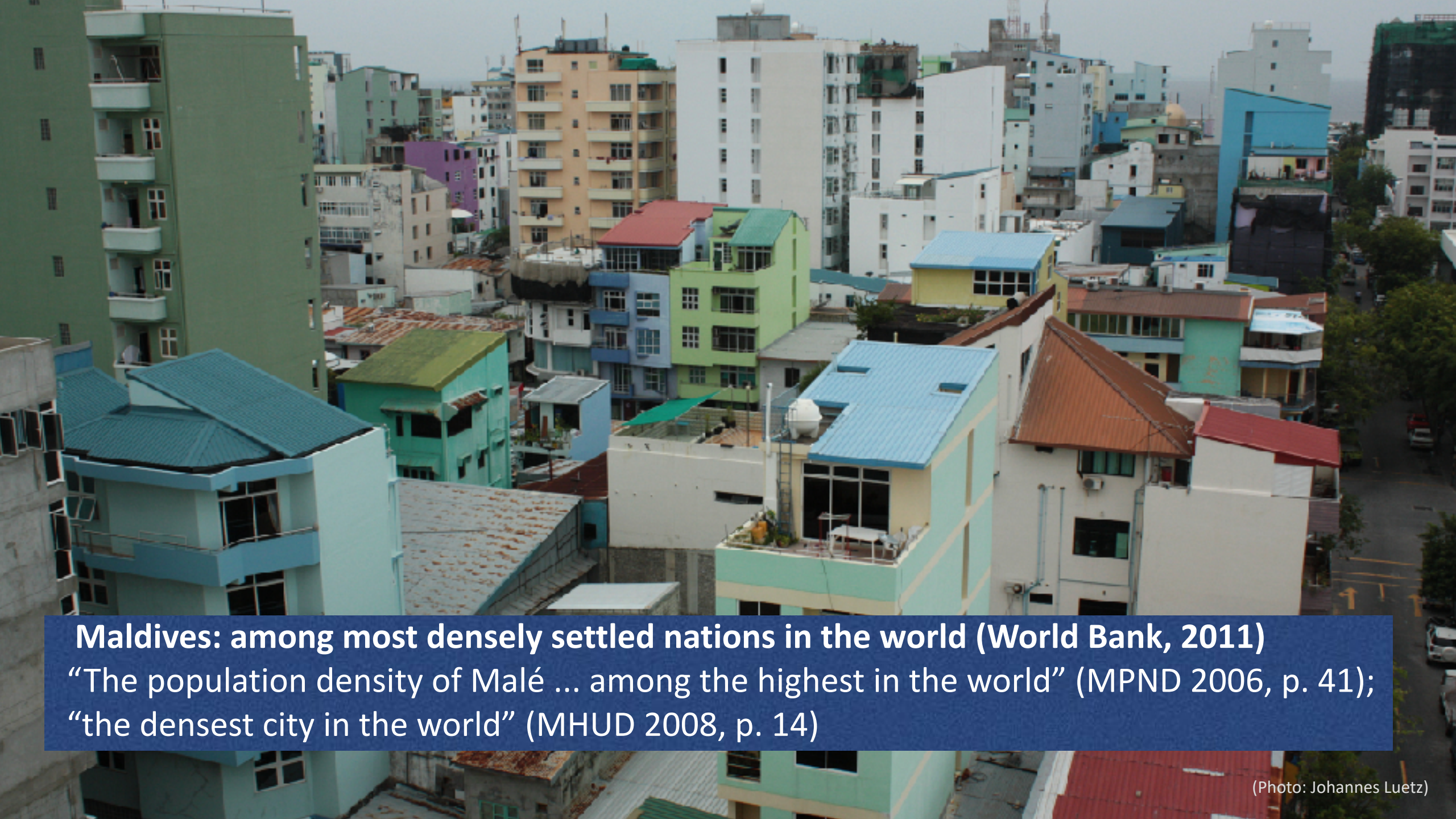
Inhabited island

(Photo: Johannes Luetz)

Maldives: Population 320,081 (World Bank, 2011)
Malé: Population 103,693 (MPND 2006, p. 8)
(80% of land less than 1 metre above sea level

Malé: 1.77 sq km

(Photo: Shahee Ilyas)



Maldives: among most densely settled nations in the world (World Bank, 2011)

"The population density of Malé ... among the highest in the world" (MPND 2006, p. 41);
"the densest city in the world" (MHUD 2008, p. 14)

(Photo: Johannes Luetz)

Republic of Maldives:
Indian Ocean Tsunami 2004

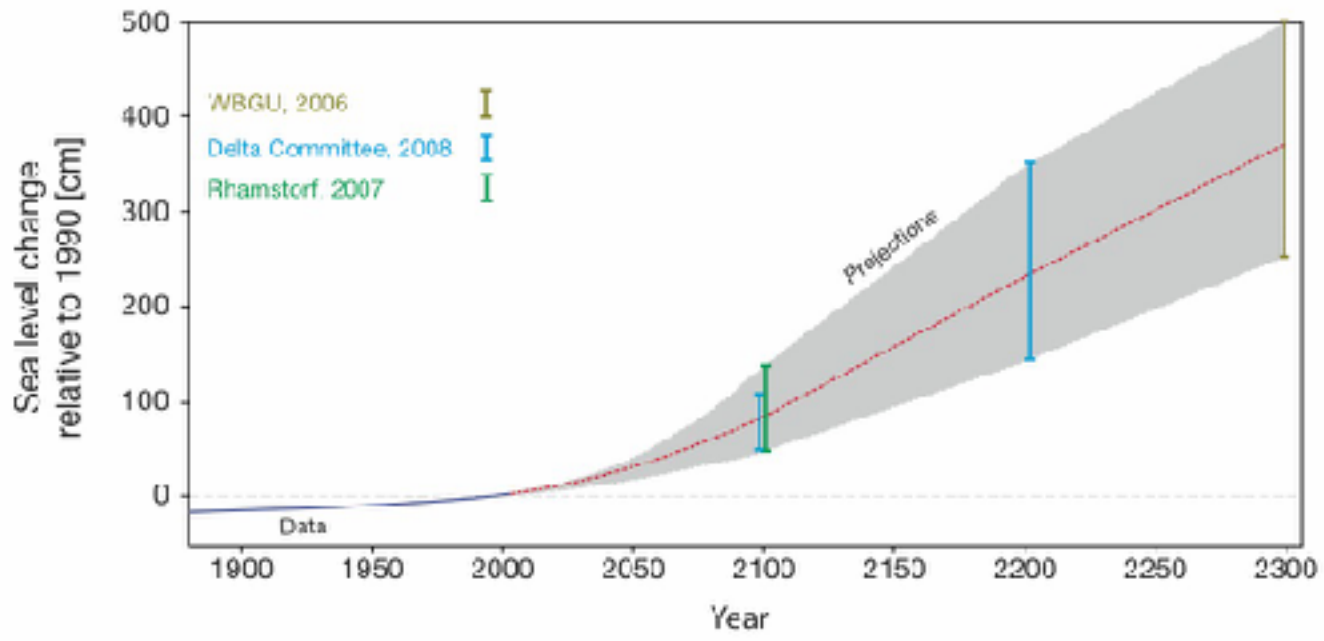
- **Waves "4-14 feet"** and noted "in all parts of the country"
- **83 people "confirmed dead"**, additional 25 people missing, assumed dead (ADB UN WB 2005, p. 4)
- 39 islands "significantly" damaged, 14 islands "completely" destroyed, **one-third of population "severely affected"**

Republic of Maldives:
Indian Ocean Tsunami 2004

- **More than 20,000 islanders (7% of population) displaced** (8,500 intra-island and nearly 12,000 inter-island)
- Estimated total damages = **62% of nation's GDP**
- "the Maldives experienced a **disaster of national proportion**" (ADB UN WB 2005, pp. 3-4)

Republic of Maldives:
Climate Change Issues

- Sea level rise
- Coral bleaching
- Coastal erosion
- Freshwater contamination
- Stronger storms



Source: Copenhagen Diagnosis 2009 p. 38; available: http://www.copenhagendiagnosis.com/ cf, slide 18 Map quoted from: http://www.ccrc.unsw.edu.au/Copenhagen/Copenhagen_Diagnosis_FIGURES.ppt (last accessed 10 Oct 2013)

Research Design: **Preparedness**

- Early preparedness benefits (Blanco et al 2009; Foresight 2011)
- “Hoping – and working – for the best while preparing for the worst, serves as a useful first principle for adaptation planning” (UNDP 2007, p. 198)
- “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; Leighton 2012, pp. 703, 718).

Research Methodology: **Data Collection**

- 33 semi-structured on-site interviews
- migrants, non-migrants, experts
- communities of origin and destination
- planned and impromptu focus groups
- estimated 90 respondents
- 27 interviews in Dhivehi
- Respondents: 20-82 years
- mixed methods analyses

Questionnaire guided conversations:
(1) interviewee demographics
(2) migration situation generally
(3) migration push factors
(4) migration pull factors
(5) preferred migration destinations
(6) preferred migration management and solutions

Research Methodology: **Data Analyses**

Data analyses followed mixed methods paradigm (Creswell & Plano Clark 2011), grounded theory (Charmaz 2006), comparing (Punch 2014; Tesch 1990), phenomenography (Marton 1981), and ethnomethodology (Silverman 1993).

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Climate change
Catastrophic Science

Climate refugees: the communities displaced by global warming – video

Source: UNSW

Thursday 6 August 2015 15.53 AEST

Comments 53

Save for later

With climate change set to force millions of people from their homes due to more frequent extreme weather events and rising sea levels, one academic has been travelling the world to see how the people facing relocation feel. "There's just no place like home," says University of New South Wales lecturer Johannes Luetz. People want to stay where they are," he explains, citing work in the Maldives to artificially raise islands. For others, forward planning and community education are just as important as addressing the 'protection gaps' prevalent at the international level

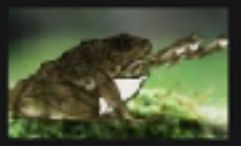
More from
Catastrophic Science


Radioactive seas: how nuclear disasters help climate research


Climate refugees: the communities displaced by global


How science can help lessen the impact of storm surges on


How terrorist attacks are being studied to make


The gastric-brooding frog: how to bring a species back


Tsunamis: how a new discovery could reduce future

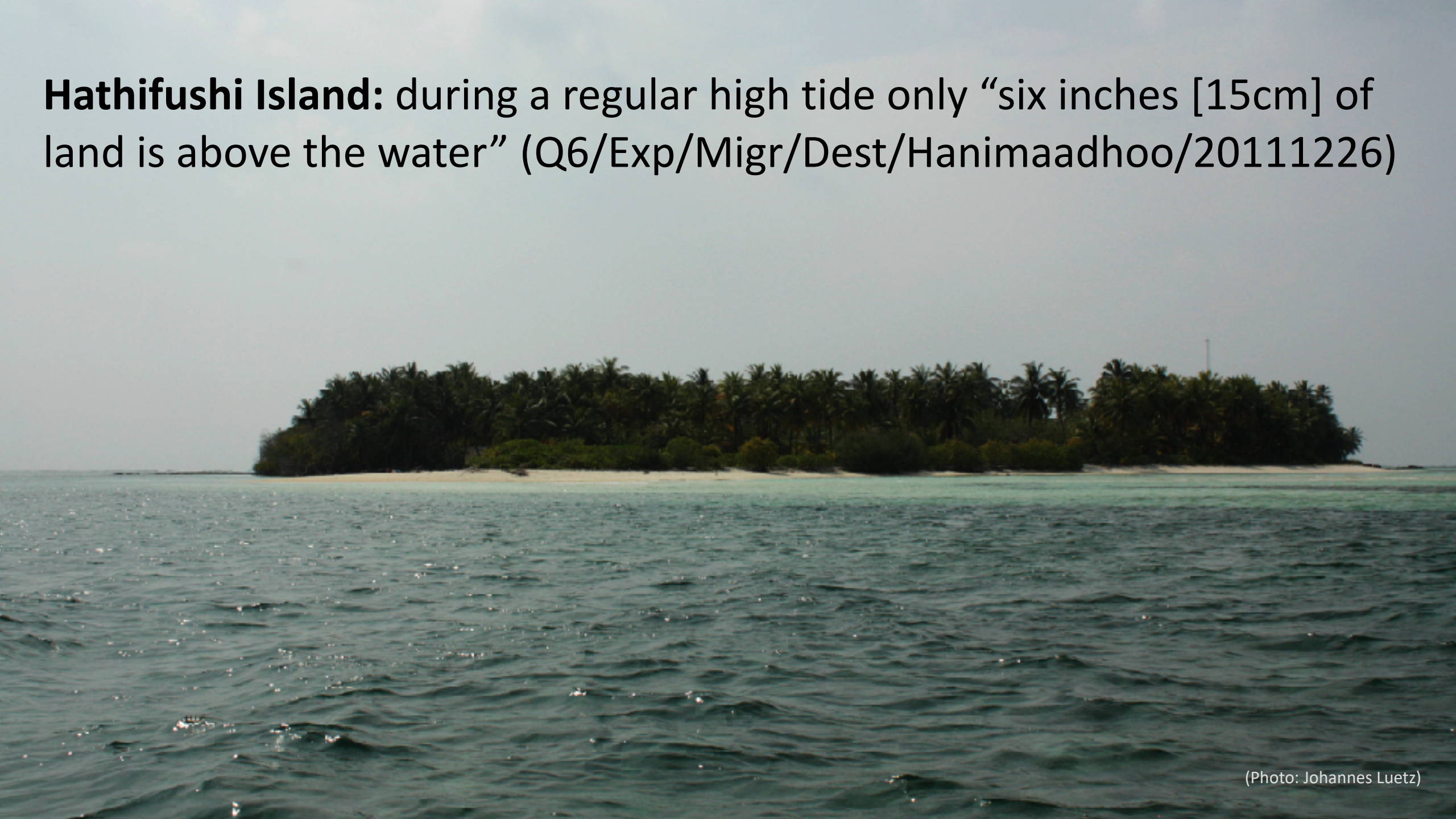
(YouTube) Climate refugees: the communities displaced by global warming https://youtu.be/pPWvGNeFPEs

(the guardian) Climate refugees: the communities displaced by global warming http://gu.com/p/4ba7t/sbl


CATASTROPHIC
SCIENCE
CLIMATE
MIGRATION

"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" (MEEW NAPA 2007, pp. 18-19).

Hathifushi Island: during a regular high tide only “six inches [15cm] of land is above the water” (Q6/Exp/Migr/Dest/Hanimaadhoo/20111226)



(Photo: Johannes Luetz)

Planned migration: Nolhivaranfaru

Photo quoted from Haveeru Daily, 2011
http://www.haveeru.com.mv/english/details/33879 (last accessed 10 Oct 2013)

Unplanned migration: Hathifushi

(Photo: Johannes Luetz)

Planned migration: Nolhivaranfaru

Unplanned migration: Hathifushi

(Photos: Johannes Luetz)

Planned migration: Nolhivaranfaru

- **Planned migration in 2011**
- 6 years of careful preparation
- host/guest community consult.
- government built new houses
- incentives & compensation

Unplanned migration: Hathifushi

- **Unplanned migration in 2007**
- 2 weeks of ad hoc preparation
- Tsunami 2004: 30-50cm flooding
- June 2007: 1m storm surge flooding
- Dec 2011: “host family system”

Key informant commentary (planned migration)

“[population consolidation in the Maldives] will continue…
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 ... 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 when a person starts actually living [in a small island they see a different reality].” (Nolhivaranfaru Council officer and migrant from Faridhoo Island; Q15/Exp/Migr/Dest/Nolhivaranfaru/20111229).

Key informant commentary (unplanned migration)

“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. 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 ... Hanimaadhoo. We started living in houses of Hanimaadhoo people, and we are still living in their houses.” (Q6/Exp/Migr/Dest/Hanimaadhoo/20111225)

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 *with* 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 *origin* community	3.2

Migrant Aspirations Aggregate Index (MAAI)

In summary…

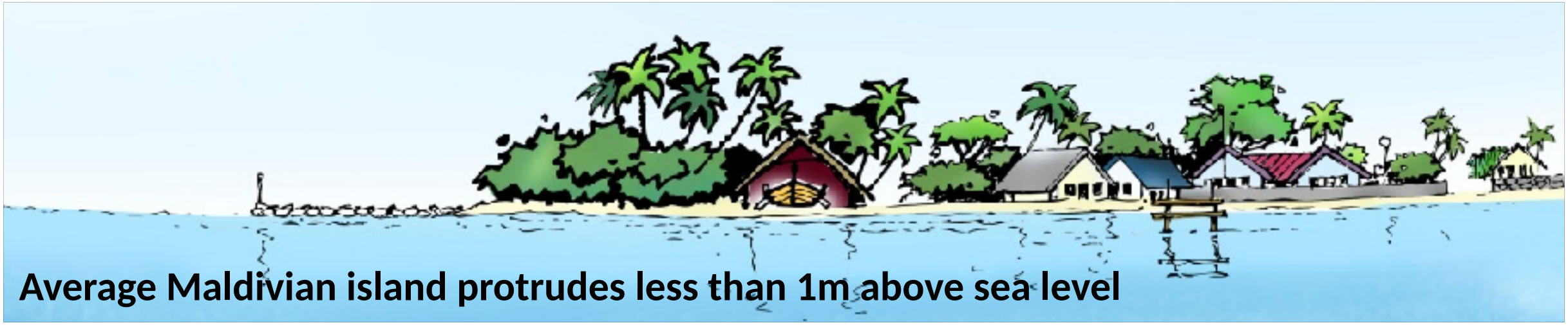
Population consolidation in the Maldives may perhaps be likened to the process of **rural-urban migration** seen elsewhere in the world: sparsely settled islands/regions are being abandoned for densely settled ("urbanised") ones. This predominant trend can be expected to continue as increasingly people 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).

Queue at only Automated Teller Machine (ATM) available in Haa Dhaaluu Atoll comprising 33 islands, of which 13 are inhabited. The Island of Khulhudhuffushi is the atoll's regional hub. Education, health care and basic public services were recurrently highlighted as important aspirations.

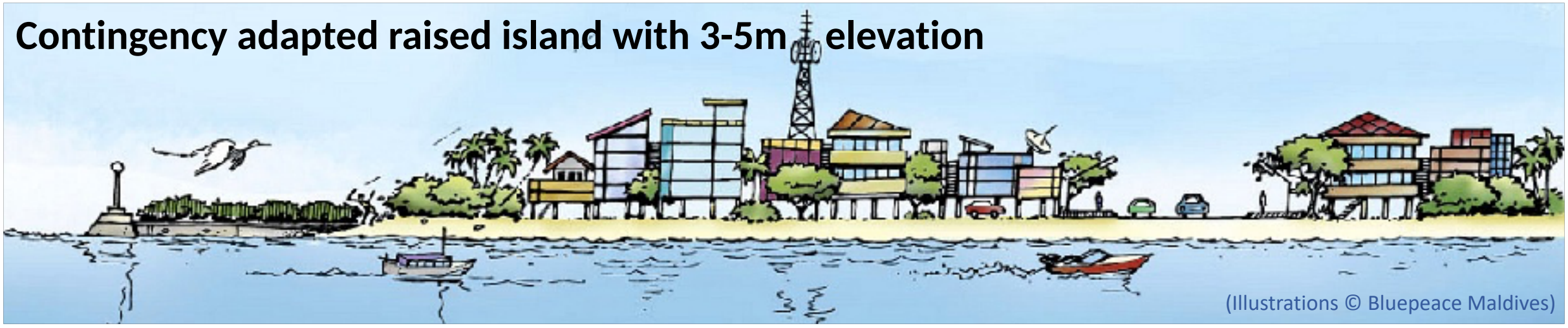
(Photo: Johannes Luetz)

In summary…

- Population consolidation 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 2002; MPND 2006 & 2007).
- The threat of tsunamis and climate change has heightened the sense of urgency with which populations are to be concentrated in safer and presumably future-proof urban centres (ADB UN WB 2005, p. 3; MPND 2007; MTAC 2012; Q29+30/Exp/Malé/20120102).



"The 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).

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Ibrahim Nasir
International Airport
Male'
Vilingili
Thilafushi
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1 km
2D


(Camera: Johannes Luetz)

(Photo: Johannes Luetz)

Concluding synthesis: (1) more urbanisation

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.

Concluding synthesis: (2) planned migration

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, policy maker foresight and anticipatory preparedness can enable more benign migration processes.

Concluding synthesis: (3) expand education

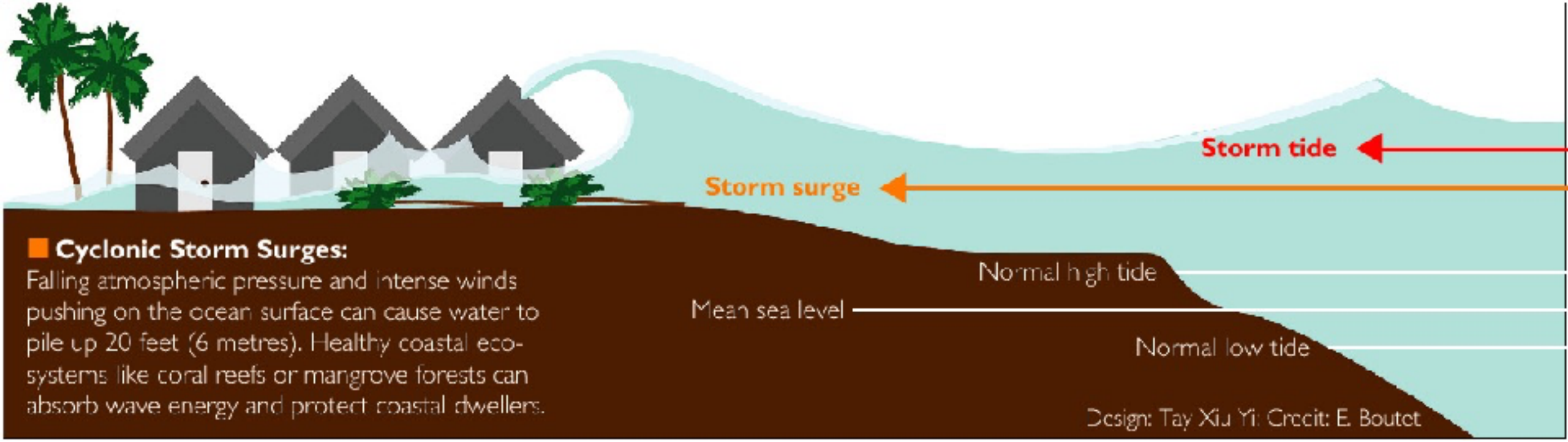
Equitable service provision, expansive education, social integration initiatives, and proactive government planning are recommended as essential policy priorities for preparedness informed and more positive migration outcomes. Education is a particularly important success factor in this case study: it holds the dual promise of enhancing options for emigration and contributing critical knowledge for in situ adaptation.

Policy recommendations

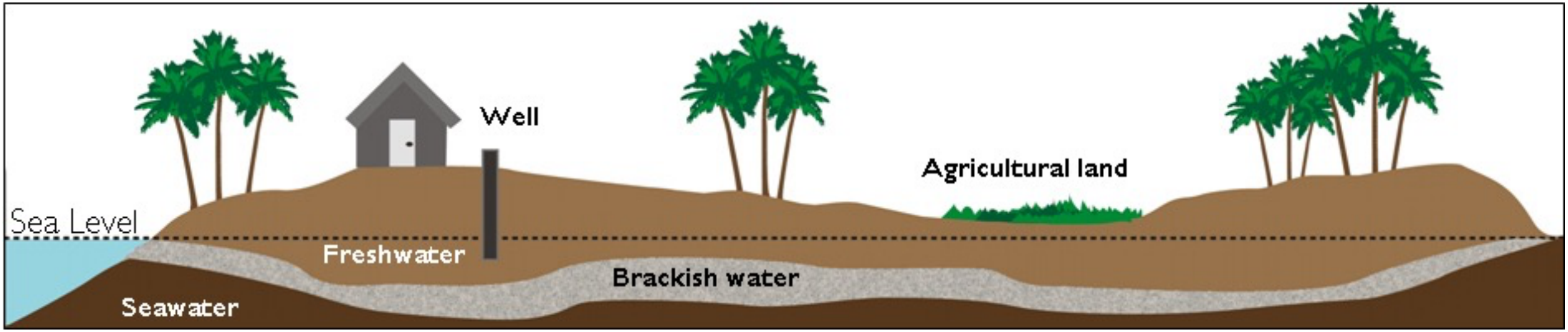
- **(1) Meet popular aspirational ambitions in regional hubs** *before* options for equitable and decentralised demographic development are foreclosed by unabating in-migration to Malé.
- **(2) Promote expansive education, free and compulsory for all**, *before* the ambitions for self-actualisation of 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.

Thank you!

Backup slides



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.
(Illustration quoted from Luetz 2008, p. 65; based on NOAA 2012)



Island subsistence (normal sea level) and progressive island submergence (rising sea level); (Illustrations quoted from Luetz 2008, p. 23; adapted from Aung et al 1998, p. 97)