

□ RESEARCH PROPOSAL

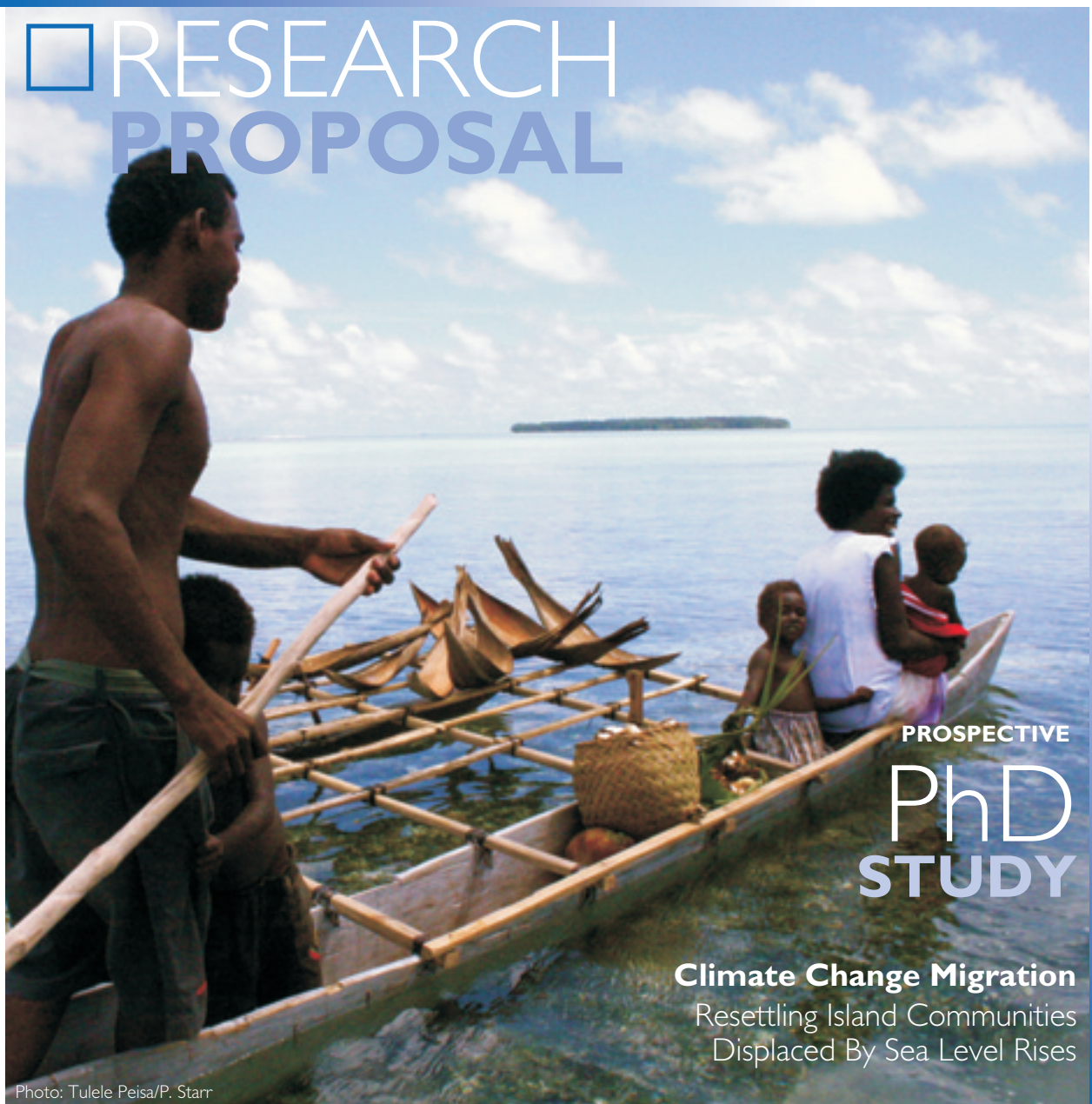


Photo: Tulele Peisa/P. Starr

PROSPECTIVE
PhD
STUDY

Climate Change Migration
Resettling Island Communities
Displaced By Sea Level Rises

Johannes M. Luetz

PACIFIC ATLANTIS

Climate Change Migration –
Resettling Island Communities
Displaced By Sea Level Rises

“ According to one of the world’s most prominent [NASA] climate scientists, ice sheet disintegration ... could yield sea level rises in the order of 5 metres this century. ... The IPCC sets out what can be thought of as a lowest common denominator consensus... Headline risk numbers may err on the side of understatement. ”

—2007/2008 UN Human Development Report ⁽⁶⁰⁾

Papua New Guinea: Thousands of low-lying islands in Oceania are under growing pressure from sea level rises.

Photo: Tammy Peluso

ABSTRACT

PHD PROPOSAL

The first evacuation of low-lying islands due to rising sea levels is underway in the Carteret Islands. Other islands have already disappeared under the sea or are on the brink of doing so. Unless there is a change in current climate trends, the coming years will see sea levels rise to levels which will render atolls and low-lying islands uninhabitable. This implies the forced relocation of thousands of islanders to new homelands. While low-lying islands are most vulnerable to sea level rises on account of their exposure to the open ocean, mainland coastal communities will suffer a delayed but magnified fallout on account of their dense populations and slum settlement patterns. Unless there is an immediate political sea change towards decarbonising the global economy, the coming decades will see the displacement of millions of islanders and coast dwellers in low-lying coastal countries like Bangladesh, India, China, Vietnam, Myanmar, Philippines, Indonesia, etc. Present-day forced migrations of island communities to new homelands lend themselves as useful case studies to identify opportunities and success factors for future massive-scale resettlements. Learning today's lessons can inform duty bearers in the international community to prepare for millions of "climate change refugees" ^(a) prior to their looming displacement, and avert a humanitarian catastrophe on an order of magnitude not hereunto experienced by humanity.

PACIFIC PORTENT

“Climate shifts, manifested in rising sea levels and more intense droughts and storms, could stimulate large scale movements of people within, and across, international borders. Individually or collectively, such developments could destabilise nations internally, aggravate tensions between states and endanger human security.”

—Dr. Alan Du Pont and Dr. Graeme Pearman, Lowy Institute for International Policy ⁽⁹⁾

Carteret Atoll, Papua New Guinea: The Carteret Atoll could be submerged by as early 2015. Resettlement is underway.

Photo: Tulele Peisa, courtesy P. Starr

Prospective PhD Title: Opportunities And Success Factors For Controlled Climate Change Migration – Lessons From Present-Day Small Island Resettlements. (World Vision has indicated interest to co-sponsor the study.)

Synopsis: Resettlement of the first island communities is now underway. More evacuations are looming as islands become uninhabitable long before they are submerged (see Figures 1 and 2 on page 5). Current evacuations of small island communities offer cutting edge case studies to inform the international community to prepare for future mass movements of environmental "refugees" ^(a) the likes of which the world has not witnessed. In this "live" lab lessons, opportunities and success factors can be studied and identified. This PhD study endeavours to make a contribution.

Rationale: This synopsis of a PhD proposal is based on a one-year study on climate change preparedness carried out for the international humanitarian organisation World Vision. The published findings are available online and provide the context and *research rationale* for the study (click on the lower link to view the Asia Pacific Disaster Report "Planet Prepare.") *Secondary literature* will guide the PhD study (see "Planet Prepare," pages 108-121).

Method: Empirical research / grassroots interviews can be carried out in three areas:

1. Selected island communities which have already initiated evacuation procedures (Carterets and associated atolls in Bougainville, Papua New Guinea: Nissan, Nuguria, etc.).
2. Selected island communities increasingly threatened by rising sea levels (Tuvalu, Kiribati, Solomon Islands, Vanuatu, Maldives, Marshall Islands, Tonga, Samoa, Cook Islands, etc.)
3. Selected mainland coastal communities in Asia where mega-migration is forecast to displace the largest number of "climate change refugees" ^(a) during the second half of the 21st century (Bangladesh, India, China, Vietnam, etc.)

■ Preliminary Research and Rationale:

<http://wvasiapacific.org/planet-prepare.html>

■ Report "Planet Prepare" (124 pages):

http://wvasiapacific.org/downloads/PlanetPrepare_LowRes.pdf

“By mid-century, climate change is expected to reduce water resources in many small islands, e.g. in the ... Pacific, to the point where they become insufficient to meet demand during low-rainfall periods.” (85)

—Intergovernmental Panel on Climate Change,
Fourth Assessment Report 2007

WATER WORLD

Carteret Atoll, Papua New Guinea: Low-lying islands become uninhabitable long before their submersion. Before being overtopped and sliced in two the Island of Huene (this photo, background) was one islet. Saltwater seeps up from below, freshwater has long run out.

Photo: Tulele Peisa, courtesy P. Starr

Figure 1: Schematic representation of island subsistence (normal sea level)

(Source: Climate Change and Sea Level) (86)

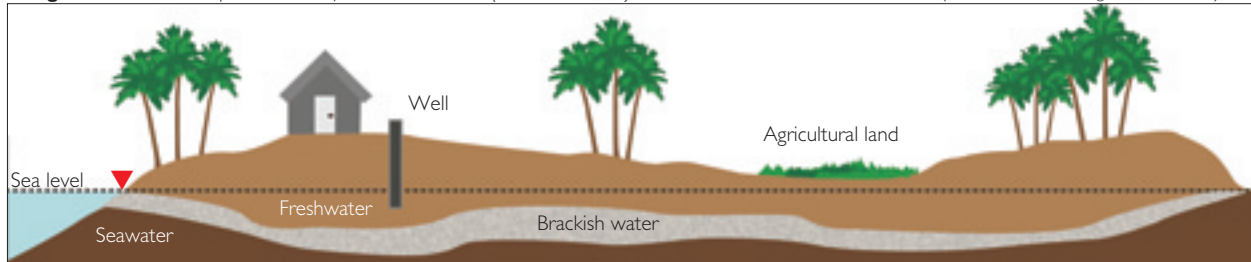
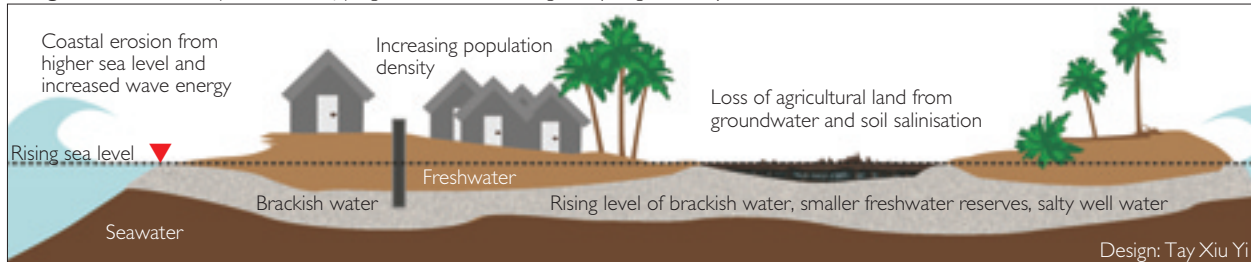


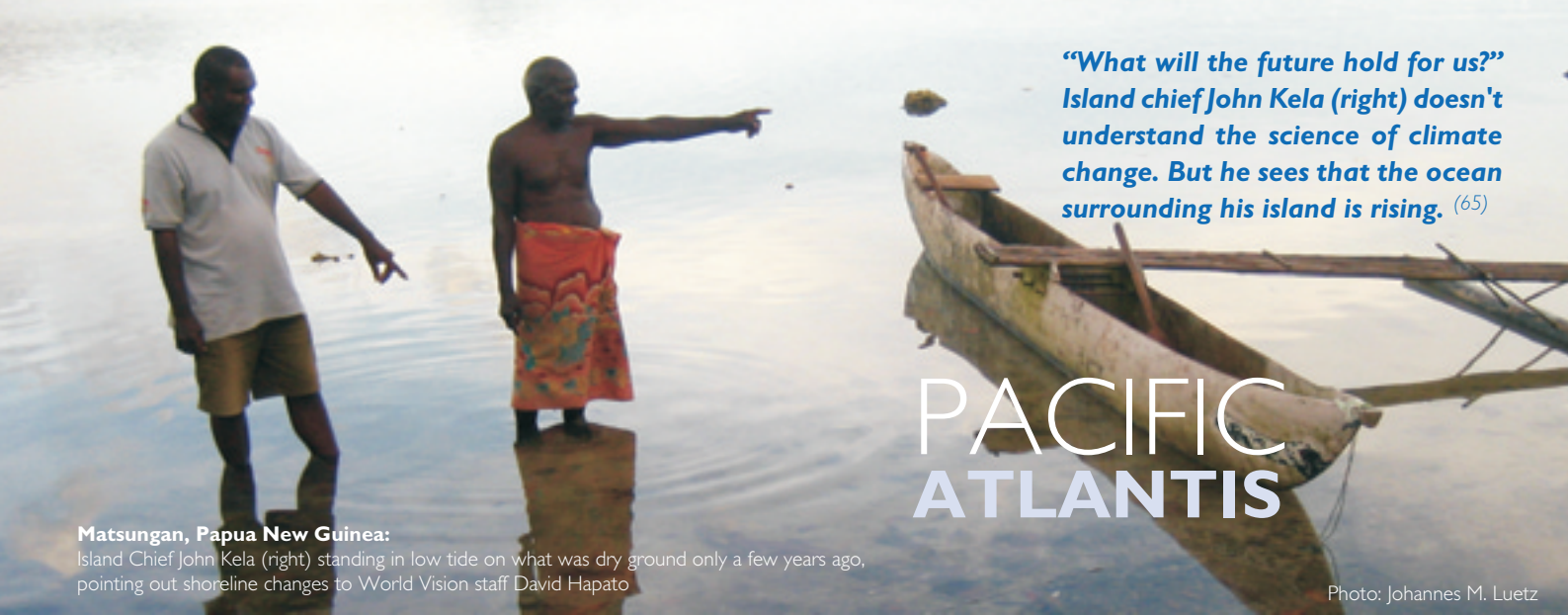
Figure 2: Schematic representation of progressive island submergence (rising sea level)



Design: Tay Xiu Yi

Eroding Islands: Islands have large coastal areas compared to their total land area. Storm surges and island "overtopping" cause erosion and freshwater lens contamination.

Uninhabitable Islands: Both population growth and decreasing land area exacerbate water stress, rendering low-lying islands uninhabitable long before their submersion.



“What will the future hold for us?” Island chief John Kela (right) doesn't understand the science of climate change. But he sees that the ocean surrounding his island is rising. ⁽⁶⁵⁾

Matsungan, Papua New Guinea:

Island Chief John Kela (right) standing in low tide on what was dry ground only a few years ago, pointing out shoreline changes to World Vision staff David Hapato

PACIFIC ATLANTIS

Photo: Johannes M. Luetz

Sinking Feeling

Island chief John Kela doesn't know his age – when he was born there were no birth certificates. He can only guess at it from the childhood memory of playing on the island of Matsungan as a young boy sometime during World War II. But while Chief Kela can never know his date of birth, what he has seen over his lifetime is that the island on which he grew up is undergoing a “strange transformation” – the sea is creeping up. ⁽⁶⁵⁾

Island of Matsungan: There are no roads on Matsungan, no cars, no telephones, no electricity, no running water. If islanders want to traverse their island they cross it on foot, a journey that only takes 10 minutes. The footpath is mostly moist or muddy and leads between tin huts, water tanks, coconut trees and vegetable gardens, where islanders grow sweet potato, cassava, taro, breadfruit, banana and sugar cane, through increasingly dense brush forest – until the sudden appearance of vast oceanic horizon on the other side.

Matsungan abounds with paradisiac peace and tranquility – and a throng of lively, giggling children who are happy to walk visiting strangers all over their island home. But their peaceful and isolated life is now under threat. Everywhere on Matsungan there are signs of severe erosion. Waves can be seen lapping at the roots of giant callophylum trees

which – as John Kela points out – stood at a safe distance from the shore only a few years ago. In a matter of months they will be uprooted and washed out to sea. He says ocean currents and storm surges have become much stronger than in the past and big waves routinely spill over the sea walls that the islanders have built, driving saltwater deep into the huts of the small village.

John Kela doesn't understand the causes driving the decay of his island, but the effects have become impossible to miss: The oceanic water is rising, and the shoreline is progressively inching upward, little by little. His island is going down – slowly, but perceptibly. Although Island Chief Kela never formulates the words, his face cannot hide a worrying question: What will the future hold for our children and grandchildren? – What will happen to our little community of islanders?



PACIFIC PORTENT

“Storm surges regularly overtop our islands – then the sea and low-lying land become ‘level.’ My home island – the Island of Huene – was sliced in two. The time for adaptation and mitigation has run out. The time for migration and relocation has come. Resettlement is underway. It is so sad to leave.” ⁽⁶⁹⁾

—Ursula Rakova, Carteret Islander and Director of Tulele Peisa NGO

Carteret Atoll, Papua New Guinea: "After Huene was sliced in two, my family settled on Huene One (right). There are three houses there. On Huene Two (left) there are only gardens. The 'channel' keeps widening." (Ursula Rakova)

Photo: Tulele Peisa, courtesy Pip Starr

Climate Change Migration

“Just as you do not tell a person staring at their blazing house that it is not burning because science has not yet agreed on the cause of the fire, so you cannot tell Pacific island countries that they should ignore the changes they are now experiencing.” (Tamari'i Tutangata, former Director of the South Pacific Regional Environment Programme, SPREP) ⁽⁷⁰⁾

Carteret Islands: On the remote Carterets, a tiny and flat Pacific atoll, things are dire. Surrounded by nothing but open ocean, its six inhabited islands are extremely vulnerable to the rising sea – the highest point of the Carterets lies no more than 1.2 metres above sea level. In 2005, a political decision was reached to evacuate the Carteret Islands and resettle its tiny population (the official figure stands at 2,502) on larger Bougainville island, a four-hour boat ride to the southwest. Over the course of seven to ten years, ten families at a time are being moved under the resettlement scheme, until the whole island population is fully evacuated. There has been reluctance to leave, especially among older islanders, but after fighting a losing battle against the ocean for more than 20 years (building sea walls and planting mangroves), it appears the islanders have given up hope, resigned to be among the world's first "climate change refugees." ^(a) Ursula Rakova, founding direc-

tor of the locally registered NGO Tulele Peisa ("Sailing the Waves On Our Own"), says that during storm surges the sea and land become "level." Her island – Huene – was sliced in two by the sea. In places the ocean water is now seeping up through the ground, creating swampy breeding grounds for malaria-carrying mosquitoes. ⁽⁶⁹⁾ Paul Tobasi (58), Executive Manager of the Atolls District in Buka, has managed the affairs of the four atolls under his jurisdiction for 13 years. As an islander from the largest atoll island – the Island of Han – he knows that everywhere on the Carterets the story is the same – strong currents and powerful sea surges carry mangrove and other seedlings away while causing severe saltwater contamination. The results are rotting roots, degraded arable land and tiny taros. Even as the last veneers of organic matter are pushed out to the ocean, Tobasi prays daily for his island. He knows that life on the atoll is coming to an end. ⁽⁷¹⁾

OCEANS of OPPORTUNITY

Climate Change Migration –
Resettling Island Communities
Displaced By Sea Level Rises

“ **No 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.** ”

—Dr. Sujatha Byravan and Dr. Sudhir Chella Rajan,
Providing New Homes for Climate Change Exiles ⁽⁴¹⁶⁾

Papua New Guinea: Thousands of low-lying islands in Oceania are under growing pressure from sea level rises.

Photo: Tammy Peluso

SUMMARY

PHD PROPOSAL

While the causes and symptoms of climate change are rapidly gaining international prominence in macro policy dialogue, the imminent implications for small island communities are only just starting to be realised. Even if greenhouse gases were reduced to zero tomorrow, an unstoppable pattern of environmental degradation and negative climatic change has been set in motion that is already severely eroding the security and livelihoods of thousands of islanders across the Pacific. Given the inertia of the Earth's climate system and the longevity of CO₂ in the atmosphere – 1/3 remains in the air after a century and 1/5 after a millennium ⁽³⁵⁶⁾ – much unavoidable warming is already locked into the climate pipeline from past emissions. According to the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4), "Both past and future anthropogenic CO₂ emissions will continue to contribute to warming and sea level rise for more than a millennium, due to the time scales required for the removal of this gas from the atmosphere." ⁽²¹⁴⁾ No matter how aggressive future greenhouse gas stabilisation efforts may be, the coming decades will see the climate crisis exacerbate to the detriment of Small Island States. Islanders squeezed from their islands by rising sea levels are both a portent of a wider catastrophe coming on coast dwellers and a "live" learning lab for the study of pertinent opportunities and success factors.



MAKING READY to RESETTLE

“We do not want to leave the Maldives, but we also do not want to be climate refugees living in tents for decades.”

—Mohamed Nasheed, President-Elect of the Maldives

(Photo: Shahee Ilyas)

Malé, Maldives: As the country with the lowest "highest point" on Earth the Maldives is extremely vulnerable to rising sea levels. The 2007/2008 UN Human Development Report warns: "For 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." (72)

Summary PhD Study

“In the event of mitigation efforts failing, climate-induced security risks will begin to manifest themselves in various regions of the world from around 2025-2040. The key challenge is to take resolute climate policy action within the next 10-15 years, in order to avert the socioeconomic distortions and implications for international security that will otherwise intensify in subsequent decades.” (German Advisory Council on Global Change) (255)

Migrating The Maldives? On 10 November 2008, Mohamed Nasheed, President-Elect of the Maldives, 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 rushed resettlement of his country's 400,000 citizens sprinkled across 1,200 islets (NY Times, BBC). Considering locations in Sri Lanka and India for reasons of cultural affinities and as far away as Australia, the President explained his rationale, saying: "We do not want to leave the Maldives, but we also do not want to be climate refugees living in tents for decades." (Guardian) Both the Maldives and Tuvalu are the two countries with the lowest "highest points" in the world. Both the Maldives and Tuvalu are Small Island States whose survival as sovereign nations is now at stake. Their present fight and looming fate are seen by many as portents of bigger things to come.

21st Century Resettlements: Over recent years, numerous researchers have drawn attention to the looming likelihood of sea level rise-related people movements dominating the international political landscape of the 21st century. James Hansen, Director of the NASA Goddard Institute for Space Studies and Adjunct Professor at the Columbia University Earth Institute recently warned: "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." (199) Daring to "think the unthinkable" is the kind of proactive preparedness planning which reputable researchers are increasingly propagating. A recent World Bank study of 84 developing countries concluded: "... 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. ... Our results reveal that hundreds of millions of people in the developing world are likely to be displaced by SLR within this century; and accompanying economic and ecological damage will be severe ... 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." (93) A recent study by researchers Sujatha Byravan and Sudhir Chella Rajan concludes: "No 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." (416) "Under international law, refugees are strictly considered to be those who have been forced to flee their homes as a result of war or persecution and have the possibility of return when things get better in the future ... But when a person's home, land or indeed entire country is wiped out by a phenomenon such as rising seas there is no hope or chance that the person will ever be able to return home. Such individuals will therefore essentially have become 'climate exiles' who will have no legal status ... unless the international community develops early strategies to address their legal needs." (417) Their research shows that possible sea level rises of 1, 3, or 5 metres will displace 65, 92, or 128 million people respectively, this century, in South Asia alone. (100) On a global scale, the 2007/2008 UN Human Development Report projects numbers of future "climate change refugees" (a) that are nearly inconceivable: "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." (4) Such realities call for the development of a new international framework to enshrine the rights of 21st century "climate refugees." The obvious onus is on countries with high levels of emissions to show high levels of solidarity. There is agreement that states must make a "commitment to assume responsibility for these people in line with their greenhouse gas emissions." (418)

PhD Study Opportunity: Both current and imminent resettlement efforts of island communities can offer useful case studies which can inform the international community to prepare for future mass movements of environmental "refugees" (a) the likes of which the world has not known. Resettlement of the first island communities is now underway and more evacuations of island communities are a mere matter of time. In this "live" lab lessons, opportunities and success factors for future massive-scale resettlements can be studied. (The study's scope remains to be defined.)

PhD Research Method: This prospective PhD study endeavours to make a pertinent contribution towards the pioneering of equitably managed retreat and resettlement patterns. Empirical research in the form of grassroots interviews can be carried out in three areas:

1. Selected island communities which have already initiated evacuation procedures (Carterets and associated atolls in Bougainville, Papua New Guinea: Nissan, Nuguria, etc.).
2. Selected island communities increasingly threatened by rising sea levels (Tuvalu, Kiribati, Solomon Islands, Vanuatu, Maldives, Marshall Islands, Tonga, Samoa, Cook Islands, etc.)
3. Selected mainland coastal communities in Asia where mega-migration is forecast to displace the largest number of "climate change refugees" (a) during the second half of the 21st century (Bangladesh, India, China, Vietnam, etc.)

"The climate change that the world is already locked into has the potential to result in large-scale development setbacks, first slowing, then stalling and reversing progress in poverty reduction, nutrition, health, education and other areas ... Hoping – and working – for the best while preparing for the worst, serves as a useful first principle for adaptation planning." (2007/2008 UN Human Development Report) (401)

■ **Research Rationale:** This draft PhD Research Proposal is based on a one-year study on climate change preparedness carried out for the international humanitarian organisation World Vision. The published findings are available online and provide the context and *research rationale* for the study (see links below). The publication "Planet Prepare" also explains the underlying climate science and references all used *secondary literature* (Endnotes, pages 108-121). This PhD study seeks to build upon that research and literature while seeking to make a unique quantitative and qualitative contribution. Feedback and involvement is appreciated. World Vision has indicated interest to co-sponsor the study.

■ **Planet Prepare** (124 pages):
http://wvasiapacific.org/downloads/PlanetPrepare_LowRes.pdf

Johannes M. Luetz

Dovestr. 11
10587 Berlin
Germany

planetprepare@gmail.com

PREPARE FOR

PEOPLE MOVEMENTS

"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." (199)

—Dr. James Hansen, Director NASA Goddard Institute for Space Studies and Adjunct Professor Columbia University Earth Institute

Carteret Atoll, Papua New Guinea: "After Huene was sliced in two, my family settled on Huene One (right). There are three houses there. On Huene Two (left) there are only gardens. The 'channel' keeps widening." (Ursula Rakova)

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