Last but not least:
Resettlement as a climate change adaptation strategy in Metro Manila, Philippines

by

Anne Tadgell

A thesis
presented to the University of Waterloo
in fulfilment of the
thesis requirement for the degree of
Master of Arts
in
Geography

Waterloo, Ontario, Canada, 2015

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Statement of Contributions

This thesis is written in the manuscript format. Two chapters are written as independent manuscripts with the intent of publishing them in academic journals. While I am the single or principle author of all chapters in the dissertation, other individuals made contributions to one of the two manuscripts. Co-authorship of one chapter recognizes these contributions.

Chapter 2, titled "Principles for climate-related resettlement of informal settlement in less developed nations: A review of resettlement literature and institutional guidelines" is coauthored with Brent Doberstein (15%: idea development and organization; sectioning; structure and editing throughout) and Linda Mortsch (10%: introduction, structure and editing throughout, Figure 2.2). The manuscript has been submitted for publication to *Climate and Development*.

I am the sole author of Chapter 4, titled "Assessing the feasibility of resettlement as climate change adaptation for informal settlements in Metro Manila, Philippines". The manuscript is ready for submission to *Global Environmental Change* subject to editing for length and style.

Abstract

The severity of climatic changes threatening urban coastal areas is introducing and intensifying environmental hazards that are endangering physical safety and livelihood security. The Philippines, and the capital Manila in particular, is at extreme risk from intensifying climate change impacts, such as sea level rise and the increased frequency and intensity of storms, leading to increased runoff that quickly overwhelms existing flood infrastructure. These exacerbated risks require drastic adaptation actions than past coping strategies. One possible adaptation strategy is managed retreat, the facilitated movement of populations away from at-risk areas. Managed retreat can be conducted through resettlement, suggesting that the existing resettlement infrastructure for informal settlements in Manila could be an avenue for conducting future climate change adaptation in the city.

This thesis assesses the feasibility of employing resettlement as a climate change adaptation strategy for low-income communities in less developed nations, using the case study of Manila, Philippines. It is written as two manuscripts, with linking pieces for clarity. The research first develops defining Principles for climate-related resettlement, and then applies them to Manila's resettlement landscape to identify if resettlement is an appropriate climate change adaptation (CCA) strategy for the megacity. The study uses multiple research methods, including secondary data collection and analysis, and key informant interviews (n=27) with actors involved in resettlement, disaster risk reduction (DRR), and CCA Manila.

The first manuscript outlines the concept of resettlement as climate change adaptation. The review considers three literature themes surrounding resettlement: (1) climate change, (2) hazard and natural disasters (i.e. floods, hurricanes, earthquakes) and (3) economic development (i.e. dam construction, natural resource extraction). Successful resettlement planning, approaches, and lessons learned are extracted to identify 5 Principles for resettlement in a climate change context: Proactivity, Communication and Participation, Permanence, Compensation, and Livelihood Protection. The results of the analysis suggest these 5 Principles are appropriate as a guideline for implementing resettlement as climate change adaptation for low-income and informal communities in less developed nations. Ultimately, these recommendations can be used to assess the feasibility of employing resettlement as managed retreat in less developed nations.

The second manuscript assesses the feasibility of using resettlement as structured by the 5 Principles as CCA in Manila, Philippines. Using data from key informant interviews (KII)

with resettlement, CCA, and DRR professionals, this research addresses the topic in three phases. First, it investigates the role of resettlement in existing CCA and DRR priorities and projects to understand if movement from environmental hazards is already occurring. Next, the research gathers interviewee perspectives on the applicability of the 5 Principles in relation to Manila's existing resettlement landscape, and identifies any amendments or foreseen challenges to them. Finally, it explores the perceptions of resettlement, DRR, and CCA actors on the feasibility of employing resettlement as CCA in Manila, including any challenges that may impede the strategy.

The findings suggest that there are some existing infrastructure that could be enhanced to include CCA planning as identified by the 5 Principles, such as in-city relocation sites and vertical housing. Poverty is the greatest challenge to implementing any successful adaptation strategy, including resettlement. Thus, poverty reduction may be the foundation of CCA planning for some urban poor communities in Manila. Further research is needed investigating the Principles identified as challenging to fully implement in Manila, including Communication, Compensation, and Livelihood Protection.

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List of Abbreviations

AusAid: Australian Aid
BRACE: Building the Resilience and Awareness of Metro Manila Communities to Natural Disasters and Climate Change Impacts
CBO: Community-Based Organization
CCA: Climate Change Adaptation
CCC: Climate Change Commission
CMP: Community Mortgage Program
DOST: Department of Science and Technology
DPWH: Department of Public Works and Highways
DRR: Disaster Risk Reduction
IFBI: International Funding Body Interviewee
ISF: Informal Settler Family
LGU: Local Government Unit
MMDA: Metro Manila Development Authority
NGI: National Government Interviewee
NGO: Non-Government Organization
NGOI: Non-Governmental Organization Interviewee
NHA: National Housing Authority
OI: Other Interviewee
PAGASA: Philippine Atmospheric, Geophysical and Astronomical Services Administration
PHP: Philippines Pesos
PI: Private Sector Interviewee
PMRCIP: Pasig-Marikina River Channel Improvement Project
RA: Republic Act
SHFC: Social Housing Finance Corporation
SSISF: Securing the Safety of Informal Settler Families in Metro Manila Project

Chapter 1: Thesis Introduction

1. THE RESEARCH PROBLEM

Climatic changes are altering human experiences with their environments. In the context of coastal areas, the impacts of sea level rise, erosion, and intensified precipitation events and storm surges are altering how populations behave by changing the timing, exposure, and magnitude of familiar weather events (Intergovernmental Panel on Climate Change, 2014). The severity of these climatic changes threatening urban coastal areas is introducing and intensifying environmental hazards that are endangering physical safety and livelihood security of vulnerable populations.

According to the Climate Change Vulnerability Index, the top 10 most vulnerable nations are scattered across tropical and sub-tropical regions, where most developing countries are situated (Maplecroft, 2013; Schipper & Pelling, 2006). Less developed nations are the most vulnerable to climate change impacts because climate-sensitive sectors, such as agriculture and fisheries, are more important economically, and climate change is likely to alter or strain existing resources, including water, agriculture, health, and natural ecosystems (United Nations Framework Convention on Climate Change, 2007). Less developed nations also may lack the social, financial and material resources required to adapt, and need international support to facilitate adaptation strategies, through planning, capacity building, and the sharing of technology and funds (Thomalla, Downing, Spanger-Siegfried, Han & Rockström, 2006; UNFCCC, 2007).

The impacts of climate change will likely compound the existing vulnerabilities and poverty of the poor, arguably making the poor of less developed nations one of the most vulnerable populations to climate change (Norwegian Refugee Council, 2011). Climate change further reduces the poor's access to drinking water and food (e.g. crops and fishing), affects their health, and threatens their physical safety with intensified storms, sea level rise, and erosion (OECD, n.d.). The poor, specifically those living in informal settlements/slums defined by the United Nations Human Settlements Programme (UNHABITAT) as "an urban area with a lack of basic services (sanitation, potable water, electricity), substandard housing, overcrowding, unhealthy and hazardous locations, insecure tenure and social exclusion", are acutely vulnerable

to climate change (Ramin, 2009). Essentially, the poor face double the risk, as they are more vulnerable to disasters, but less able to move away from them (Black, Arnell, Adger, Thomas & Geddes, 2013).

As climate change impacts intensify, landscapes will be altered and the past coping strategies of vulnerable populations will no longer suffice. There is a need to act. Climate change adaptation (CCA) is defined in the climate literature as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (United Nations High Commissioner for Refugees, 2014). Anticipatory adaptation, then, is action taken to protect vulnerable areas and populations before climate change impacts become severe (IPCC, 2007).

This thesis explores one option for anticipatory adaptation: resettlement, and seeks to help address climate change threats before thresholds are exceeded. Resettlement, the planned relocation and reestablishment of communities living in areas threatened by climate change impacts to areas that are safer physically, goes beyond the 'hardware' of new homes and infrastructure to include deep political and social changes (Arnall, 2014). When planning resettlement, it is critical to learn from past experience to understand what approaches work so they can be replicated, and what can be improved to best address the needs of the resettled population (ADB, 2013). This research aims to further this thinking.

1.1 Research Gap, Purpose, and Questions

Despite the presence of existing research on development and disaster-induced resettlement, there remains a lack of empirical research that looks more specifically at how resettlement is defined and facilitated in a climate change adaptation context, specifically for informal settlements in less developed nations. Also, while there is existing research on resettlement and climate change as separate topics in the context of Manila, Philippines, there remains a gap in exploring resettlement as CCA for the megacity and country.

This thesis explores one adaptation strategy for the most vulnerable populations to climate change globally, identified earlier as informal settlers in less developed nations. The research will focus on defining climate-related resettlement, and then determining how to facilitate resettlement as a climate change adaptation strategy for informal settler communities in less developed nations.

This research seeks to understand if resettlement is a feasible adaptation strategy for highly vulnerable populations by addressing two compound research questions:

1. ***How is 'resettlement as CCA' understood in the literature and how can it be facilitated for low-income communities in less developed nations?***

The first question is explored in Manuscript 1 with the following objectives:

   a) To identify patterns amongst resettlement literature in various realms on the most effective approaches to conducting resettlement for vulnerable populations.

   b) To understand common challenges in facilitating resettlement and draw out the lessons learned from practice

Thinking on resettlement as a climate change adaptation strategy is only emerging. So, literature from the climate change realm is supplemented with literature from the disasters and economic development domains to assemble a collection of resettlement literature for review in my first manuscript. These three bodies of literature were chosen because environmental factors are amongst the driving forces for relocation[1]. The first manuscript distills knowledge from the three realms into five principles that collectively outline one promising approach to designing and implementing resettlement as CCA. These principles are hereby referred to as: Proactive Resettlement, Communication and Participation, Permanent Resettlement, Compensation and Incentive, and Protection of Livelihoods.

The analysis of literature in manuscript one was completed through an interpretative reading of 64 pieces of literature. The literature was sorted into four categories: CCA, Disaster Risk Reduction (DRR), Development, or Resettlement Guidelines. I created charts for each category, with references on the y-axis and key topics for analysis on the x-axis (e.g. "terminology", "main content re: retreat", "anticipated risks with retreat"). In the analysis of each column (i.e. the same topic across every article), I coded for patterns that emerged within priorities, approaches, and lessons learned. These patterns became the 5 Principles.

2. ***What is the feasibility of implementing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila, Philippines?***

The second question is explored in Manuscript two with the following objectives:

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[1] Literature on resettlement due to social upheaval and conflict was excluded in this paper because environmental considerations rarely influenced the planning, policy, or practice of

a) What are the current disaster risk reduction and climate change adaptation priorities in Metro Manila and what is the role of resettlement in these priorities, if any?

b) What are the views of Manila's resettlement actors on the applicability of the 5 principles for climate-related resettlement (2015) for Metro Manila's existing resettlement landscape?

c) What are the perceptions of Manila's resettlement actors' on the feasibility of employing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila?

In order to understand if the 5 Principles are appropriate constructs for climate-related resettlement, they need to be evaluated in the field. The second manuscript assesses the 5 Principles in Manila, a city familiar with resettlement practice for informal settlers, using key informant interviews with resettlement actors from national and local government, Non-Government Organizations (NGOs), international funding bodies, academics, and the private sector. The objectives were the basis of interview questions.

2. THE CLIMATE CHANGE ADAPTATION-DISASTER RISK REDUCTION-DEVELOPMENT NEXUS

Adaptation does not need to be based on entirely new concepts and practices, but instead build upon established knowledge, practice, and learning. The research presented in this thesis draws upon issues, constructs and advancements from the more established fields of DRR and Development to contribute to the CCA realm.

Past research has identified relationships and overlaps between these three disciplines. Natural disasters and climate change impacts affect natural, economic, political and social processes (Thomalla et al., 2006), while the political, economic and social development status of populations can influence the consequences of climate change and disasters (Shipper & Pelling, 2006). Thus, while climate change is exacerbating disaster risk, efforts to alleviate the risk need to focus on reducing vulnerability through development efforts (Schipper & Pelling, 2006). Over time, efforts to manage climate change and disasters have evolved from 'prevention and control' to 'mitigation' to 'adaptation and transformation' (Lei & Wang, 2014).

Figure 1.1 demonstrates the interrelation between these three topics. The foundation is the well-established knowledge within Development and Disaster Risk Reduction disciplines. On

their shoulders stands the emerging field of Climate Change Adaptation. While each realm has its own qualities, many of the major functions (e.g. theory, challenges, approaches, results, lessons learned) of each topic overlap with one or both of the other topics.
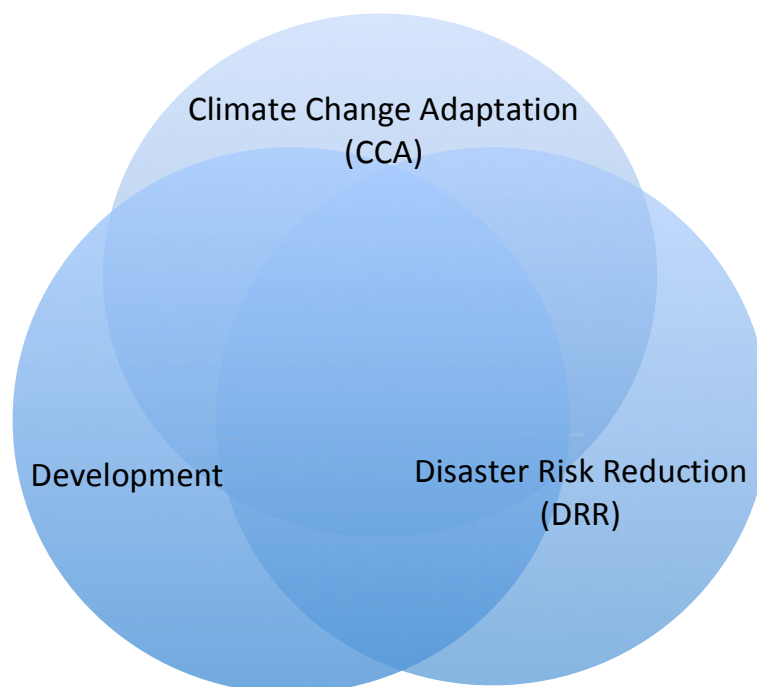
Figure 1.1: The climate change adaptation-disaster risk reduction-development nexus

3. RESETTLEMENT AS ADAPTATION

This project explores the use of resettlement as a climate change adaptation and disaster risk reduction strategy. Resettlement is considered a strategy of last resort for climate change, hazard, and development planning because it is often disruptive to communities and their livelihoods. Every community has unique tolerances of risk and environmental damages. Most resettlement literature argues resettlement should only be employed if all other means of adaptation are unavailable (Correa, 2011; Norwegian Refugee Council, 2011; Displacement Solutions, 2013). However, some guidelines are recognizing that relocation is a natural and rational adaptation option that can be considered in situations when people are living in areas prone to sudden onset hazards or livelihoods or settlements are threatened by slow-onset climate change impacts (UNHCR, 2014).

While resettlement is well documented as having negative effects on relocated communities, there is growing confidence amongst institutions that resettlement as CCA can succeed if it is appropriately planned, financed, and implemented. However, the literature on resettlement in a climate change context in less developed nations is limited, as the adaptation strategy is relatively new. The remainder of this section outlines what is known about the concept of resettlement as adaptation.

The Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report proposed three response strategies to sea level rise: *protect*, *retreat*, and *accommodate*, which stand as the foundation for retreat research today (Bijlsma et al., 1995). One retreat-based option is migration, an effective strategy for at risk populations to lessen their climate-related vulnerabilities. Climate-induced migration is a contentious issue that sparks many ethics and citizen rights debates (Johnson, 2012). Proponents appreciate both the one-time costs and potential long-term benefits, while opponents dispute the need to separate populations from culturally significant areas (Locke, 2009).

In the past, retreat has been facilitated through realignment or resettlement projects. *Realignment* is often used in the developed world context, focused on pushing human settlement away from risk zones and restricting or forbidding further construction in these areas (Mycoo & Chadwick, 2012; Roca & Villares, 2012). Several government strategies are employed to achieve this, including changing land use from residential to conservation areas for public use, designating a buffer zone between coast, or eliminating insurance for new construction in at-risk areas (Mycoo & Chadwick, 2012; Niven & Bardsley, 2013; Klein, Nicholls & Mimura, 1999). The greatest challenge to implementing realignment lies in requiring homeowners to relinquish their lands decades before projected consequences take effect (Alexander, Ryan & Measham, 2011; Apine, 2011; Roca & Villares, 2012). Examples are in Byron Bay, Australia (Niven & Bardsley, 2013) and Ebro Delta, Spain (Roca & Villares, 2012).

In less developed nation contexts, retreat can be facilitated through resettlement. *Resettlement* is considered a part planned relocation, defined by the United Nations High Commissioner for Refugees (UNHCR) (2014, pg 10) Report *Planned relocation, disasters and climate change* as "a solutions-oriented measure, involving the State, in which a community (as distinct from an individual/household) is physically moved to another location *and* resettled there." *Resettlement* is then defined as "the process of enabling persons to establish themselves permanently in a new location, with access to habitable housing, resources and services,

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measures to restore/recover assets, livelihoods, land, and living standards, and to enjoy rights in a non-discriminatory manner" (UNHCR, 2014, pg 10). In the literature resettlement as CCA is focused on Pacific small island developing states, such as Tuvalu and Kiribati (Locke, 2009; Mortreux & Barnett, 2009).

From the literature, it can be concluded that realignment is used in developed contexts and 'resettlement', often coupled with the words 'forced' or 'involuntary', is employed in less developed contexts because of the amount of power held by communities at risk. In developed nations, where homeowners with coastal properties are often wealthy and have access to lawyers and political support, the retreat process is usually a smaller distance from at-risk areas (5-10km), and communities may maintain access to the land in a different capacity (Alexander, Ryan & Measham, 2011; Apine, 2011; Mycoo & Chadwick, 2012). In less developed nations, those living at risk are often poor and lack access to political support, the retreat process can become more aggressive, moving populations significant distances from at-risk areas with or without their consent.

4. THE PHILIPPINES

The primary research for this project was conducted in Metro Manila, Philippines. The Philippines is an island nation in Southeast Asia (Map 1.1a) ranked 114 of 187 countries on the Human Development Index in 2012 (UNDP, 2013). As of 2012, the life expectancy at birth is 69 years, and the average income is $3752 USD per capita (UNDP, 2013). According to the Climate Change Vulnerability Index (Maplecroft, 2013), the Philippines is the 9th most at-risk country to climate change impacts, such as sea level rise and changes to temperature, precipitation and humidity. Each year during Typhoon season (July – September), approximately 20 typhoons affect the Philippines (Bankoff, 2003). These rankings indicate that the Philippines align with the less developed nation target group for this research, and are in great need of climate adaptation options due to its' high vulnerability.

Metro Manila (aka National Capital Region (NCR)) is the capital city of the Philippines, composed of 16 cities and 1 municipality (See Map 1.1b), and home to 11.8 million people (National Statistics Office, 2010). The megacity is surrounded by three flood risks: Manila Bay to the West, Laguna de Bay Lake in the South, and the Pasig-Marikina water basin to the East, which drains runoff from the hilly Rizal province into Manila Bay through multiple rivers which intersect the city (Department of Public Works and Highways, 2011; Porio, 2011). Due to this inter-city riverine flooding, the focus of this thesis is on the whole of Metro Manila rather than one of the 16 cities in particular. A capital-wide threat commands capital-wide solutions.

In 2009, Typhoons Ondoy (September) and Pepeng (October) brought severe winds and record rainfall to Manila, resulting in floods and landslides that killed 956 people and caused $4.38B USD in damage and losses (equivalent to 2.7% of the nation's GDP) (World Bank, 2011).

The majority of the flooding was riverine (World Bank, 2011), where many of Manila's informal settlements are found (Sales Jr, 2009) (See Figure 1.2). These recent extreme events demonstrate the urgent need for CCA and DRR strategies to prevent damage and death due to riverine flooding, particularly for the vulnerable settlements along the riverbanks.

Figure 1.2: Informal settlements extending out over a river in Pasig city, Metro Manila
Source: http://tacapamasshousing.com/the-project/site-study/

Informal settlements are those communities that do not have security of tenure in their housing, jobs, and livelihood sources (Porio, 2011). Types of housing vary between temporary shelters made of salvaged materials to semi-permanent shelters, to permanent shelters (Ragragio, 2003). They are often located in low-lying areas near water sources, which are usually the only areas with both space and livelihood opportunities in the dense city. It is common for these settlements to lack sufficient access to basic services, including electricity, water, and drainage (Porio, 2011). Informal settler families (ISFs) are those living within these settlements. Many ISFs work in the informal economy, often providing services like pedicab or jeepney (a form of taxi) drivers, vendors, and other informal urban services (Shatkin, 2004). ISF communities living along or overtop of Manila's rivers are frequently blamed for dumping household waste into the rivers, reducing the width and clogging the flow of rivers and

increasing the risk of flooding (Shatkin, 2004). These households face environmental threats from storm surges and high tides, only to be exacerbated by future climate changes (Porio, 2011). They are also highly vulnerable to high winds and floodwaters during Typhoons (Hodal, 2013), due to both their physical location and their social vulnerabilities.

Resettlement is common in Manila, employed in the past to relocate communities due to insecure land tenure, private interests in occupied land, and for small-scale environmental concerns (e.g. settlements disposing of household waste which obstructs river flow) (Shatkin, 2004). Oftentimes, these relocations are abrupt extractions (sometimes by physical force) that push ISFs outside the city borders of Metro Manila, without proper transition, adaptation or integration for ISFs at new sites (Murphy & Anana, 1994). Resettlement outside of Manila devastates the income-earning potential of ISFs because new jobs are seldom provided at new sites while the commuting time and cost to their city jobs is exponentially greater (Murphy & Anana, 1994). These large moves also separate ISFs from family and neighbours, social networks that often act as safety nets for those in poverty or after a disaster event (Murphy & Anana, 1994). This crippling of social and economic livelihoods leads resettled ISFs to return to past settlement sites in the city (Murphy & Anana, 1994).

There are multiple resettlement actors in Manila considered in this research. Both International Funding Bodies and National government departments plan frequent engineering projects throughout the city that require resettlement of informal settler families (ISFs) living on land needed for the projects. The National Housing Authority (NHA) is the sole national agency mandated to engage in housing production for low-income families (National Housing Authority, 2014). Local Government Units (LGUs) are often responsible for the actual act of relocation, including finding new sites, transferring ISFs, and providing compensation. The Private Sector is a new player to resettlement in Manila, but occasionally provides materials, technical assistance, or other resources to resettlement projects. Non-government and community-based organizations (NGOs and CBOs) often assist ISFs with their resettlement process and reestablishing themselves at new sites, occasionally participating in building design and location scouting. Other resettlement actors include academics and technical assistant to government projects whom are familiar or involved with ISF experiences with resettlement.

Although a blemished past, the megacity's experience with resettlement means that Manila has well-established resettlement infrastructure, both hard (resettlement sites, materials, and services) and soft (policy, planning, resettlement professionals). This

infrastructure makes Manila an ideal megacity to test the potential of using resettlement as climate change adaptation, because the strategy would not be built from scratch, but can instead be folded in to the existing policy, experience, and lessons learned.

5. ORGANIZATION OF THE THESIS

I completed my thesis using the 'manuscript' approach, in which my research is presented as a compilation of completed manuscripts submitted or ready for submission in academic journals. The manuscripts are meant to stand alone, but when read together work to answer the initial research question. For this thesis, two manuscripts are presented as Chapters 2 and 4, followed by a Conclusions section. The first manuscript was submitted to *Climate and Development* in mid-June, 2015 and is currently under review (Tadgell, Doberstein & Mortsch, 2015 (anticipated)). The second manuscript is ready for submission subject to final editing to reduce length to *Global Environmental Change*. Chapter 3 links the findings from the literature in Manuscript 1 to the empirical research conducted in Manuscript 2. The final section of my thesis synthesizes the findings from both manuscripts and highlights the main conslusions reached in my research.

Chapter 2: Principles for climate-related resettlement of informal settlements in less-developed nations: A review of resettlement literature and institutional guidelines

1. INTRODUCTION

Climate change is exacerbating environmental hazards in urban coastal areas, with impacts including sea level rise and more intense and frequent precipitation events (IPCC, 2014). These impacts amplify risk for low-income communities in less-developed nations that lack the essential infrastructure and services for living in exposed areas (ADB, 2013; IPCC, 2014). Of the three broad adaptation approaches identified by the Intergovernmental Panel on Climate Change (IPCC): protect, accommodate, and retreat (Bijlsma et al., 1995), poorer communities may not have the time, resources, or infrastructure to implement and maintain protection or accommodation options. Thus, retreat is becoming a more appropriate adaptation option for impoverished communities at high physical risk and warrants further exploration and development.

The literature on managed retreat as an adaptation measure divides the concept into two practices: realignment and resettlement. Managed realignment is concentrated in developed nations, and involves withdrawing human settlements away from threatened zones, restricting construction and controlling the environmental degradation of these areas (Mycoo & Chadwick, 2012; Roca & Villares, 2012). In less developed nations, managed retreat is often facilitated through resettlement (Johnson, 2012; McDowell, 2013). This paper discusses managed retreat only in the context of resettlement in less developed nations.

This paper reviews resettlement literature in order to develop a series of principles that can be used to guide the implementation of resettlement as climate change adaptation for low-income and informal communities in less developed nations. It synthesizes existing resettlement literature relating to climate change, hazards and disasters, and development, as well as institutional climate-related resettlement guidelines as explored in Doberstein and Tadgell (2015). The five principles, *Proactivity*, *Communication and Participation*, *Permanence,*

Compensation, and *Livelihood Protection,* are distilled from the literature and deconstructed into key components. These principles can be used to assess the appropriateness and feasibility of employing resettlement as managed retreat in less developed nations. Discussion of each principle will proceed as the literature review progresses.

It should be noted that the principles presented in this review are not applicable to relocation across international borders, for example to Small Island Developing Nations (SIDS) in the Pacific, as international laws vary and further complicate relocation processes. These principles were written to guide relations between in-country communities and authorities, and not necessarily to guide relations amongst all authorities. For more information on cooperation between authorities, see the Nansen Principles (2011).

1.1 Resettlement as Climate Change Adaptation

Resettlement has proven a disruptive process to communities and their livelihoods, making it a last resort in climate change, hazard, and development planning. There are many components to consider before identifying resettlement as appropriate adaptation for a community, including group and individual tolerances of risk and the effectiveness of other protection or accommodation adaptation options. The United Nations High Commissioner for Refugees' (UNHCR) climate change resettlement guidelines *Planned Relocation, Disasters and Climate Change* stresses that resettlement *"…should only be implemented when no other means of adaptation are available to enhance the population's resilience and ability to remain in their original settlements, or when adequate alternatives that enable people to rebuild their lives in their communities of origin are unavailable."* (UNHCR, 2014, pg 20)

Regardless, migration remains a natural and rational adaptation response for climate change threats. In *Planned Relocation, Disasters, and Climate Change* (UNHCR, 2014), resettlement may be considered in situations when:

- people are living in areas prone to sudden onset hazards
- livelihoods or settlements are threatened by slow-onset climate change impacts
- parts of the state face destruction due to climate change impacts
- climate change mitigation and adaptation projects (e.g. dams, coastal defenses) require land that communities are currently inhabiting.

While resettlement is well documented as having negative effects on relocated communities, there is confidence amongst institutions that resettlement as adaptation can succeed if it is appropriately planned, financed, and implemented (UNHCR, 2014). In fact, internationally-recognized climate change and resettlement guidelines are encouraging states to anticipate and plan for migration in their adaptation strategies (Norwegian Refugee Council, 2011; UNHCR, 2014), and migration is now acknowledged in the United Nations Framework Convention on Climate Change (UNFCCC) Cancun Adaptation Framework list of adaptation strategies (Arnall, Thomas, Twyman & Liverman, 2013). However, the literature on resettlement in a climate change context in less developed nations is limited, as the adaptation strategy is relatively new.

Traditional resettlement research has been based in three fields: hazard and natural disasters (e.g. floods, hurricanes, earthquakes), social upheaval (e.g. land appropriation, conflict), and economic development (e.g. dam construction, natural resource extraction) related to environmental influences for resettlement in less developed nations (Badri, Asgary, Eftekhari & Levi, 2006). Literature relating to social upheaval and conflict were excluded in this paper because environmental considerations rarely influenced the planning, policy, or practice of resettlement. As a result, the research presented here is an amalgamation of climate change-, hazard and disasters-, and development-related resettlement literature. These resettlement themes have been practiced and amended for decades, offering case studies and hindsight learning that recent climate change-related resettlement literature lacks.

2. PROACTIVE RESETTLEMENT

Much current resettlement practice is implemented reactively – in the aftermath of disasters, with little time to plan appropriate movements or consult with communities (Badri et al., 2006; Menoni & Pesaro, 2008). Yet, the earliest practices of managed retreat schemes were initiated as remedies to erosion and flooding (Klein, Nicholls & Mimura, 1999; Mycoo & Chadwick, 2012). The goal was to limit the potential effects of environmental threats by removing communities from risk areas and allowing natural processes to reclaim the high-risk land (McGlashan, 2003; Mycoo & Chadwick, 2012). To facilitate this, proactive management was required to remove populations and physical infrastructure at risk and ensure no new development took place (McGlashan, 2003; Reisinger et al., n.d.). This strategy was seen to

promote the resilience of impacted communities and add flexibility to response options when completed before the environmental risks become reality (Reisinger et al., n.d.). Climate-related resettlement can offer this proactive approach to addressing emerging climate change threats.

Bardsley and Hugo (2010) advocate for any population movements to be conducted with the primary goal of enhancing community well-being and maximizing social and economic development. Proactive climate-related resettlement, when conducted appropriately and justly, can achieve this by protecting livelihoods threatened by intensifying climate change impacts, such as flooding, erosion and drought. In its guidelines for climate change relocation, the World Bank highlights that moving away from high-risk areas before an event offers many benefits, including reductions in the loss of life, household assets, and costs of emergency response and reconstruction (Correa, Ramirez & Sanahuja, 2011). While the infrastructure costs will remain, as houses and other facilities still must be built at new sites, early relocation spares the costs of temporary shelter after disaster, and service provision is not disrupted (Correa, Ramirez & Sanahuja, 2011).

Resettlement academics and interested institutions are starting to explore how proactive resettlement may manifest. The main purpose of climate-related resettlement is to remove populations away from areas considered high risk due to increasingly unpredictable or dangerous climate impacts (Arnall, 2014; McDowell, 2013). The move is initiated proactively, before a disaster or other trigger event occurs (Campbell, 2010). The UNHCR guideline (2014) suggests proactive relocation must include the early identification of people exposed to climate change impacts, and a legal and scientific basis to assist authorities in determining when relocation is necessary.

A key strategy for proactivity is communicating with affected populations to persuade them that an early move is best (Campbell, 2010; Few, Brown & Tompkins, 2007). If people understand the risk climate change poses to their lives and livelihoods, they are more likely to consider, or even embrace, relocation (Ferris, 2012). However, this is also the challenge of initiating early resettlement. A proactive move can mean that the social, political, and economic costs of relocation to the community will arise earlier, especially in the absence of adequate planning and funding by authorities (Ferris, 2012; McDowell, 2013). This is likely to frustrate individuals whom do not believe current environmental threats are significant enough to merit relocation, and may create resettlement resistance (Campbell, 2010; Reisinger et al., n.d.). Community support will also depend on how the relocation will impact their rights, who will

bear the costs of the move, how loss of assets will be managed, and who is understood to benefit from the move (Reisinger et al., n.d.).

Regardless of backlash and challenges, proactive resettlement is being considered as a future adaptation option. In *Protection and Planned Relocations in the Context of Climate Change* guidelines (Ferris, 2012), the UNHCR calls for governments of countries likely to be affected by climate change to begin thinking about incorporating proactive relocations into adaptation planning. Several National Adaptation Plans of Action (NAPAs), which are country-specific plans for climate change adaptation created as part of the UNFCCC, identify the need for proactive resettlement (McDowell, 2013). These countries include Bhutan, Mozambique, Samoa, São Tomé and Principe, Tanzania, Uganda, and Vanuatu (McDowell, 2013). Proactive resettlement has already been practiced in Papua New Guinea, where coastal communities are under threat from sea level rise (ADB, 2013). Inhabitants from the Carteret atoll area were relocated to the island of Bougainville before sea level rise impacts could destroy property or life (ADB, 2013). This type of planning not only acknowledges that proactive resettlement is a valid climate change adaptation option, but that it is recognized as necessary in multiple country contexts.

The need for climate-related resettlement that is proactive in nature is becoming increasingly recognized in academic literature. As it develops, early climate resettlement researchers have made clear that proactive resettlement strategies need to identify populations at risk early, construct scientific and legal justifications for relocation, educate at-risk communities that relocation is in their best interests, and facilitate early negotiations and planning with the community.

3. COMMUNICATION AND PARTICIPATION

Communities that must be relocated because their land is no longer safe due to climate change should have the right to participate in their relocation process (Ferris, 2012). Participation of and communication with all persons affected by the planning, implementation and evaluation process is crucial (Hong, Singh & Ramic, 2009; Maitra, 2009). These processes give resettlees, or the populations that are moving in a resettlement project, an opportunity to contribute their interests, concerns, and suggestions in the planning process (Raleigh, Jordan & Salehyan, n.d.; WB, 2004). Resettlement stakeholders, or anyone involved or invested in the

resettlement process - from households to non-government organizations to all levels of government, are encouraged to initiate communication processes in the earliest planning stages and maintain it throughout the project (ADB, 1998; Agyeman, Devine-Wright & Prange, 2009; de Wet, 2001).

Communication initiatives need to employ community participation practices. Participative actions can range from 'passive', where individuals are recipients of information about decisions that have already been made, to 'self-mobilization', where people take action outside of external agencies (Pretty in Few, Brown & Tompkins, 2007). Participation needs to go beyond 'passive' consultation, seeking instead to be an interactive experience in which communities can play an active role in shaping resettlement planning (Pretty in Few, Brown & Tompkins, 2007). This section will demonstrate that, while the literature uniformly stressed the need to incorporate both communication and participation into project planning, the suggested approaches varied based on community and context.

3.1 Communication and Participation Techniques

Resettlement practitioners urge the use of communication with relocating populations for project success, and the literature presented here provides several effective communication techniques. Gathering community-wide data through socioeconomic surveys and censuses, and following up with public meetings, is a good way to reach the entire community (ADB, 1998). Focus groups with representatives from the community can provide more in depth information on public concerns, as active participation is best fostered by working in small groups (ADB, 1998; Few, Brown & Tompkins, 2007). Holding different types of information exchange events to reach the broadest audience possible is recommended (Correa, Ramirez & Sanahuja, 2011), including household surveys and participatory problem-solving methods (in meeting settings) (Few, Brown & Tompkins, 2007). Topics of communication should include: evidence that all viable adaptation alternatives to resettlement have been considered, details on the project and its impacts, compensation, possible relocation sites, planned efforts to assist in relocation; project timelines, and the community's rights as resettlees (ADB, 1998; Asif, 2000; Displacement Solutions, 2013; Ferris , 2012; Usamah & Hayes, 2012).

The World Bank (2004) suggests focusing more resources on hosting high quality meetings with more content, interaction, and impact, verses hosting a greater number of meetings overall. Issues of representation often complicate participation, as communities are

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rarely homogeneous groups. Different actors have different social, economic, and political power in the community, thus, care must be taken that the representatives who are selected to participate in consultations are a fair representation of the community as a whole (Few, Brown, & Tompkins, 2007). At its very essence, participation should provide a genuine opportunity to construct, discuss and promote all adaptation options available (Few, Brown, & Tompkins, 2007). Ultimately, participation requires an investment in time, attention, and responsibility on behalf of authorities and planners.

Climate change and resettlement information that is shared with relocatees needs to be understandable, applicable, and culturally appropriate to allow communities to make informed choices regarding their adaptation options (Norwegian Refugee Council, 2011; UNHCR, 2014). Along this thinking, communities also need assistance in acquiring the tools, capacities and resources to act in response to their situations (Norwegian Refugee Council, 2011).

The most appropriate communication and participation strategies will vary in each case depending on an area's unique context, meaning what works for one community may not be best for others, and some situations may require a combination of strategies. That said, the social, financial, and planning benefits of using context-appropriate communication techniques, explored here, are demonstrated throughout the literature.

3.1.1 Prevents Fear and Misinformation: Honest and accessible information regarding resettlement processes, costs, and benefits can quell communities' apprehension and resistance bred from misunderstanding (ADB, 1998; Asif, 2000; WB, 2004). It may take years for authorities to persuade communities of the suitability of relocation, and for populations to fully appreciate the potential benefits of moving (Apine, 2011; Roca & Villares, 2012). However, if projects begin with and maintain initiatives for communication and education, and allow adequate time for participatory planning, then it is expected that community acceptance of and involvement in the resettlement planning process will increase (Apine, 2012; Barnett & Webber,2009). With regards to climate change, the literature generally suggests that communities are more likely to take action if the seriousness of projected environmental threats to current settlement areas were explained (Agyeman, Devine-Wright & Prange, 2009). Through open and frequent community discussion, fear and mistrust can be overcome and project support fostered.

3.1.2 Gives Details to Planners: Research has demonstrated that community consultation can clarify important community-related resettlement details to planners, such as sources of vulnerabilities, anticipated project impacts and specific groups likely to be adversely affected by the move (Oliver-Smith, 1991; WB, 2004). As stated previously, including the appropriate community representatives from the outset can aid in preventing the domination of discussions by any one group (Few, Brown & Tompkins, 2007). To obtain optimal insights, local and traditional knowledge should be sought out and employed, with due sensitivity to varied resources and abilities throughout the population (Norwegian Refugee Council, 2011).

While some authorities may avoid communication in an attempt to save time, finances, or credibility (Alexander, Ryan & Measham, 2011; Apine, 2011), the rewards of stakeholder communication throughout resettlement are clear throughout the literature. One example is Shishmaref, a native Northern Alaska fishing community that was resettled 18 kilometers inland due to environmental threats without community resistance or complaint (Agyeman, Devine-Wright & Prange, 2009). The success of the project is credited to the incorporation of local knowledge and ideas from the 650 villagers into project planning, and a democratic vote for approval on final resettlement plans (Agyeman, Devine-Wright & Prange, 2009). Authorities are advised to invest time, resources, and enthusiasm into quality consultation with resettlement populations to ensure the principle standards are met.

3.1.3 Builds Transparency and Trust: Communication and participation involve two-way interactions between stakeholders, where plans, concerns, and feedback about resettlement are discussed and incorporated into plans when possible, fostering an environment of trust. Transparency from open information flows starting at the outset of a resettlement project is shown to create a sense amongst communities that the scheme is fair and just (Alexander, Ryan & Measham, 2011). Sustained early communication from authorities combined with transparency offers local stakeholders some guarantee that their interests are being considered, further developing trust between the resettlement actors (Edwards, 2013; Roca & Villares, 2012). With trust, communities feel more comfortable involving themselves in the project, which leads to an unshakable feeling of ownership, connection, and pride for the new sites (Cronin & Guthrie, 2011).

While communication can be feigned and easily dismissed, investment in meaningful communication and participation practices are shown to pay off for both resettling communities and authorities. To conclude, communication and participation needs to provide clear, accessible information on climate change and resettlement planning; stakeholder dialogues need to begin early; stakeholder time, resources and interest should be committed to the process; and balanced representation from different interest groups is needed in participation activities.

4. PERMANENT RESETTLEMENT

Permanent resettlement refers to long-term movement away from areas considered to be at high risk or which are no longer viable as settlement areas due to intensifying environmental threats from climate change (Arnall et al., 2013; Barnett & Webber, 2009). Generally, much of the resettlement literature surveyed in this paper is not supportive of permanent resettlement. For example, Chapter 17 of the IPCC Fourth Assessment Report explicitly states "migration resulting in the permanent abandonment of land and livelihood is not a desirable adaptation option" (In Johnson, 2012, p 310). Thus, adaptation initiatives should involve policies that allow communities to adapt without relocating permanently, such as the 'framework of return' in the Peninsula Principles, which calls on states to assist climate-displaced residents to return to old sites (Displacement Solutions, 2013). In this framework, states are encouraged to provide complete, up-to-date information on anticipated climate impacts and associated physical and legal safety issues with old sites, to allow communities to make informed decisions about their movement (Displacement Solutions, 2013). Although formal institutions continue to resist proactive resettlement, climate change is altering local conditions and resettlement is becoming seen as more necessary in some locations.

As stated at the outset of this paper, resettlement as climate change adaptation is a last option, chosen when all other adaptation options have been considered and the area is still deemed too dangerous to continue habitation. Examples include communities facing the loss of coastal or island territory from sea level rise or those vulnerable to dangerous floods, storm surges or landslides (Bardsley & Hugo, 2010). When an area is deemed unfit for habitation through a democratic and inclusive assessment there should be no option to return to the old sites post-resettlement. Johnson argues that relocation in the face of climate change is

justifiable if it can be shown that communities are being moved 'out of harm's way' (2012, p. 315). In regards to impoverished communities and informal settlements – some of the most vulnerable groups – permanent movement offers the opportunity to significantly reduce their vulnerability to climate change in the span of one project (Johnson, 2012).

While the literature continues to debate *whether* resettlement should be permanent, this research instead asks *'how* can resettlement be made permanent'? Migration and resettlement literatures use the concept of 'push' and 'pull' factors, the former driving people from their current areas and the latter attracting them to new areas (Asthana, 1996). 'Pull' factors relate to the destination and offer what may not be available at traditional locations, including employment, socio-economic development, land availability, and political freedoms (McLeman & Smit, 2006; Warner, Hamza, Oliver-Smith, Renaud & Julca, 2010). Alternately, 'push' forces are linked to the source area, such as poverty, unequal access to services or resources, unemployment, natural and man-made disasters, and most recently, climate change (Mortreux & Barnett, 2009; Warner et al., 2010). In regards to resettlement, forced movement is only caused by 'push' factors (Asthana, 1996), but both 'push' and 'pull' factors can be engineered in resettlement planning to help facilitate a permanent move.

4.1 Intensifying the 'Push' Factors

One strategy for facilitating permanent resettlement is to transform the areas in which communities once resided so significantly, be it physically, socially, economically, or otherwise, that communities will not be interested or able to return (de Wet, 2001). For example, a resettlement project in Laos, labeled as voluntary by the government, coerced villagers to relocate to low lands after significant restrictions were placed on land use and crop production in the original site (Baird & Shoemaker, 2007). Eventually, farmers were not able to survive in their current location and came to believe that moving to the new sites could only improve their lives (Baird & Shoemaker, 2007). Social shaming was employed in Mozambique to prevent families from returning to old locations after resettlement, using labels like 'irresponsible' and 'ignorant' for those who returned (Arnall et al., 2013). The government also eliminated all disaster response at the old settlement sites, insisting that resettlees whom returned were doing so at their own risk (Arnall et al., 2013). Neither of these scenarios is presented as examples of good practice, but more as warnings of failed techniques. Instead of increasing the negative forces of resettlement for communities, the majority of resettlement literature

encourages the creation and enhancement of new site benefits, or the 'pull' factors.

4.2 Enhancing the 'Pull' Factors

A more accepted approach to facilitating permanent resettlement is to make the new settlement site more desirable than the old community. As discussed below, this can be accomplished through long-term planning and monitoring of the project, site design and construction, and through stakeholders taking responsibility for their roles in the project.

4.2.1 *Planning For the Long-Term:* The resettlement process begins long before a resettlee enters a new site, and continues long after all families are moved in. Authorities should approach a resettlement project with the intention to plan for both the short- and long-term success of the community. In the short-term, an authority's continuous presence and support after relocation can give the community confidence to build and invest in their income-generating pursuits (Usamah & Hayes, 2012). Objectives for community development and reconstruction should be ever evolving, continuously striving to integrate communities into their new locations (Viratkapan & Perera, 2006). In a case from the Three Gorges Dam in China, government planners ran a trial resettlement that included moving factories and establishing orchard farms as a run-through of the resettlement plans to come, demonstrating the planners' commitment to immediate productivity after relocation and, ultimately, the long-term success of the community (Kwai-cheong, 1995).

Once the planning for long-term resettlement sites is executed, the monitoring of new site progress becomes priority. Qualified, neutral experts should monitor project progress, project quality, and community satisfaction at an appropriate frequency (Badri, et al., 2006; Hong, Singh & Ramic, 2009; WB, 2004). This produces ongoing feedback and improvements, and gives opportunity for issues to be addressed quickly and adequately (Usamah & Hayes, 2012; WB, 2004). Monitoring should continue until there is a strong likelihood that all resettlement objectives will be achieved (UNHCR, 2014; WB, 2004).

4.2.2 *Site Design*: The physical structures and layout within the new sites can impact a community's desire to stay. Replicating traditional architecture and building design aids acceptance of new sites (Oliver-Smith, 1991; Usamah & Hayes, 2012). For example, the organization Shelter Associates advocates for low-rise, high-density residential buildings for

resettled poor, as homes often double as shops or other income generating ventures (Cronin & Guthrie, 2011). Experience dictates that when structures are culturally and architecturally appropriate (i.e. providing enough space for extended families, use traditional materials, and are well lit and ventilated), communities begin to invest in their new location (Usamah & Hayes, 2012). If layouts are too uniform, lack privacy, or do not allow sufficient space for living or outdoor livelihoods, then communities disengage from the new site, often to the point of abandonment (Cronin & Guthrie, 2011; Oliver-Smith, 1991). Designs that foster good health and safety, such as watertight frames to keep out pests, private toilets for improved safety and sanitation, or climate-proof designs and materials, are credited as contributing to relocation success (Cronin & Guthrie, 2011).

Both structural integrity and quality of construction materials affect community acceptance of new sites. Oliver-Smith (1991) noted how lower quality materials can make living conditions difficult and are often blamed for site rejection. Cheap construction using inferior materials is disappointing for residents from a maintenance standpoint, but also discredits the argument for a 'safer' residence through resettlement (Cronin & Guthrie, 2011; Oliver-Smith, 1991). Resettlement must assure and deliver quality designed and constructed buildings to foster long-term acceptance of the new site.

Providing public services, ideally in a greater capacity or quality than previously offered, can make new sites more acceptable to settlers (Chan, 1995). In New Gediz, Turkey, Oliver-Smith (1991) noted the attraction communities had towards services not available at their old sites. In-home services such as electricity, clean water, and sanitation, along with community services like education and healthcare facilities, roads, and transportation are all credited with encouraging people to live permanently at the resettlement site (Kurshitashvili, 2012; Hong, Singh & Ramic, 2009; Usamah & Hayes, 2012). Hong, Singh and Ramic (2009) acknowledged that the provision of services could not only entice communities to new sites, but also improve the quality of life for those being resettled.

Site location is a critical component in maintaining long-term retention at new sites. Communities generally prefer to be relocated as close as possible to their former settlements, which are usually in close proximity to services, arable land, and markets (Cernea, 2000; Maitra, 2009; Oliver-Smith, 1991). A well-documented pattern, then, is for communities to return to their past settlements for work despite the environmental hazards nearby if new sites fail to recreate productive livelihoods (Arnell, et al., 2013; Oliver-Smith, 1991).

The success or failure of a resettlement site can be judged by the community's ability to become self-reliant, and can be measured by the number of houses occupied, the degree of maintenance and repair, investments in green spaces, and structural expansion and construction (Oliver-Smith, 1991). Projects that create sites designed, laid out, and serviced to the community's needs are more likely to encourage these long-stay behaviours and quickly instill in residents a sense of pride in the new sites.

4.2.3 Project Organization and Roles of Actors: Authorities, and governments in particular, have a responsibility to follow through on all project plans and promises. It is of utmost importance that the essential components of resettlement be provided without delay, including road construction, completion of all new buildings, installation of all services, and distribution of compensation (Bang & Few, 2012). The maintenance of physical infrastructure is the responsibility of all authorities (Cronin & Guthrie, 2011). Long-term community development is the responsibility of the governmental authorities that planned the move (Birkmann, 2011; Karimi & Taifur, 2013), and includes ensuring that communities do not become dependent on state or civil society aid at new sites (Asif, 2000; Warner et al., 2010). Additionally, every stakeholder of authority should adhere to the same internationally accepted resettlement guidelines and make sure that actual living conditions are consistent with what was planned (de Wet, 2001; Evrard & Goudineau, 2004). Most importantly, authorities have a responsibility to be consistent in their planning, meaning when an area is deemed uninhabitable due to climate threats then all occupants must be held to that ruling regardless of wealth or status (Chan, 1995). It may be of benefit to establish mechanisms to ensure accountability of authorities in their responsibilities to relocatees (UNHCR, 2014).

In summary, as academics and international aid organizations debate the value to designing permanent resettlement, the impacts of climate change are intensifying globally. The literature shows that permanent resettlement is best facilitated by enhancing the social, economic, and civic 'pull' factors to a new site. The key principles for permanent resettlement planning are to plan for long-term success and monitoring, design and layout new settlements according to community needs, and ensure authorities are accountable for site quality and welfare.

5. COMPENSATION & INCENTIVES

Community support for resettlement is influenced by who bears the costs, how assets and rights are accommodated, and who is benefitting from the move (Reisinger, Lawrence, Hart & Chapman, n.d.). The provision of compensation allows resettlement facilitators to reinstate a minimum standard of living and amend for personal and community losses experienced in the move (ADB, 2013; WB, 2004). Incentives, distinct from compensation, may be offered in addition to compensation in an effort to entice communities to new resettlement sites, and are often considered 'pull' factors themselves (ADB, 2013; WB, 2004). For most communities, fair and holistic compensation and incentives do more than make amends for relocation, it gives them dignity, hope, and an opportunity to rebuild stronger than before.

5.1 Forms of Compensation and Incentives

Compensation has taken many forms throughout resettlement practice, but the most common strategies include payments of cash, land, employment, public services, and intangibles. This section explores the benefits, shortcomings and past practices of each compensation strategy.

5.1.1 Cash: The simplest form of compensation is cash; however, the effectiveness and appropriateness of this popular compensation practice is debated amongst the development, climate change, and disaster risk reduction literatures. Cash can be paid as a one-time payment or in small amounts over time, but in all cases it is recomended that payments be made in their entirety and in a timely manner (Al Atahar, 2014; DaCosta & Turner, 2007; IADB, 1998).

Some affected community members prefer cash compensation because they see it as an opportunity to update or change their income sources. The World Bank (2004) in the Involuntary Resettlement Sourcebook suggests that cash can enable an individual to start or improve a business, update skills, or even retire. In other cases, cash was seen by a community members to be a 'lesser evil' than what was being offered by authorities at new resettlement sites. In India, Asif (2000) found that some communities preferred to take cash compensation instead of accepting residence at government project sites because they perceived the sites to be an expression of government power over their lives and free will. Similarly, 78% of a Turkish community preparing for relocation opted for a one-time cash compensation payment so they

could resettle themselves on their own terms, instead of accepting the government-mandated resettlement plans (Morvaridi, 2004). These responses could suggest that communities may interpret the risk of impoverishment to be greater within government-mandated resettlement plans.

Cash can be empowering and full of opportunity for some; however, various authors warn that it often fails the communities it was meant to help. Many resettlement projects have determined cash to be 'inappropriate' and insufficient compensation for the severity and types of losses experienced. More often than not, community members being relocated are impoverished and unfamiliar with money management, making them unlikely to have the skills or experience needed to manage larger sums of money provided through cash compensation (ADB, 1998). In an example from Bangladesh, a community unfamiliar with the resettlement process spent their cash compensation quickly on weddings or gambling, leaving them without resources to rebuild and in a worse financial situation than before the relocation (Al Atahar, 2014). In other examples, male heads of households have neglected the needs of women and children when spending their compensation payout (ADB, 1998). Financial guidance, training, or a payment scheme may address concerns of inappropriate spending.

The same 'appropriateness' debate is mirrored in conversations of 'replacement values' for items being compensated. Currently, standard replacement values for lost assets during resettlement are awarded at market value, limiting what can be compensated to physical and measurable items only (i.e. land, farm equipment, furniture) (Al Atahar, 2014; Badri et al., 2006). While some believe this is a fair valuation method (Badri et al., 2006), others state this system provides inadequate repayment, as it does not provide the necessary means to restore income nor reconstruct social networks that provide mutual assistance (Al Atahar, 2014; IADB, 1998). Assigning a numeric value to losses is a complex and sensitive task that is unlikely to satisfy all actors.

5.1.2 Intangibles: Cash payouts cover losses incurred from physical assets and employment interruption, which is only part of the burden resettlement poses for communities (Al Atahar, 2014; Hong, Singh, & Ramic, 2009). Often overlooked in the compensation process are intangible assets, such as non-monetary social and cultural resources hampered by resettlement. Intangible suffering that communities endure during resettlement encompasses: loss of socio-cultural life (i.e. loss of mutual supports, increased marginalization), mental stress

(i.e. psychological dissatisfaction due to loss of ancestral land, sentimental attachments, loss of aesthetic qualities such as 'the view' from their location), and physical hardship (i.e. food insecurity, landlessness) experienced during relocation (Al Atahar, 2014; Hong, Singh & Ramic, 2009; IADB, 1998; WB, 2004). These assets are vital to a functioning society, and must be protected during relocation and restored alongside other physical components after relocation.

Place attachment, or the psychological, symbolic, and cultural significance that a community assigns to land, is a challenge for resettlement, especially in the climate change literature (Mortreux & Barnett, 2009; Roca & Villares, 2012). The intangible connection to an area of land – feelings of belonging, lifestyle, family connections, and culture – can tether populations to their land, to the point that one respondent replied that she would rather "go down with it" than resettle should her Pacific island nation became submerged by sea level rise (Mortreux & Barnett, 2012, p 110). Place attachment, and the associated identity it supports, demonstrates the complexity and ambiguity challenges that intangible assets and climate change can present to compensation schemes.

Naturally then, a significant challenge for authorities determining compensation values is assigning values to the intangible. Furthermore, the appropriateness of offering cash as restitution for these hardships has been called into question (Hong, Singh, & Ramic, 2009; WB, 2004). What is the dollar value of a family gravesite? How much will it cost to create trust and social interactions between new neighbours? Can these losses be compensated for, with cash or otherwise? The overall recommendation, according to the World Bank (2004), is to assess each project on an individual basis to understand the intangible losses experienced and the social values associated with them, so appropriate compensation can be provided.

5.1.3 Land and Employment: One compensation option that directly addresses the interruption in income-generating activities is the provision of employment or land to resettlees at new sites. Lessons from past practice suggest that it is best if land offerings are large enough to sustain multiple generations of communities over time (DaCosta & Turner, 2007). It is also important to ensure market access for the sale of produced goods (Cronin & Guthrie, 2011; Rashid, Hunt & Haider, 2007). For fishing villages, access to the coast is important for both survival and livelihood, and maintaining that connection where possible is shown to ease resettlement concerns (Edwards, 2013). Climate change impacts will push larger numbers of threatened people away from risk areas, meaning there may not be enough low-risk land

available to promise as compensation (Ferris, 2012). If only limited safe land is available, reasonable employment opportunities should be provided (ADB, 1998). Providing established income opportunities in new resettlement sites can ease the uncertainties of moving, especially for families living hand to mouth.

   5.1.4 Services: An effective strategy to attract communities to new resettlement sites is to provide incentives in the form of services that are not offered in their current locations (Oliver-Smith, 1991; Usamah & Hayes, 2012). Examples include healthcare facilities, sanitation, potable water, education facilities, and electricity (Hong, Singh & Ramic, 2009; Oliver-Smith, 1991; UN OCHA, 2004). These services, and the livelihood and health benefits that accompany them, can encourage populations to relocate and remain at new sites long-term (Usamah & Hayes, 2012). It is important for authorities providing these services to follow through with their commitments. Providing public services to impoverished communities is a duel strategy to encourage movement and implement development initiatives simultaneously.

	Up-front Cash Compen-sation	New Housing	Job Opport-unities	Skills Develop-ent and Training	Land	Services and Infrastru-cture	Other
Badri et al., 2006	✔		✔ (Temporary & permanent project employment)		✔	✔	Small business grants
Karimi & Taifur, 2013	✔	✔			✔	✔	A plantation; social infrastructure
Morvaridi, 2004 : *"Gov't-assisted resettle-ment"*	✔	✔			✔		Loans or lending opportunities
Al Atahar, 2014	✔		✔ (within the project)	✔			Business (non-agriculture) investments

Table 2.1: Survey of compensation combinations from the literature

5.1.5 Compensation Packages: The most effective compensation approaches are those that combine several of the above strategies. Detailed outlines of compensation packages that have been proposed or employed in past resettlement projects in less developed nations are summarized in Table 2.1 (Al Atahar, 2014; Badri et al., 2006; Karimi & Taifur, 2013; Morvaridi, 2004). From the table, it is clear that all of the compensation packages discussed by the authors are economic-focused. The two most common forms of compensations are *cash* and *land* – both beneficial strategies for rebuilding incomes quickly, while *skills development and training* are only included in one package. This suggests that resettlement compensation thinking has yet to embrace long-term resettlement planning, where skills development and training would contribute greatly. This analysis suggests that recreating and sustaining economic incomes is the first priority of most compensation schemes (Al Atahar, 2014; Badri et al., 2006; Karimi & Taifur, 2013), followed later by social networks and other intangible concerns.

5.2 Failures and Challenges

As demonstrated above, while compensation can address some concerns, it often fails to convince every community that relocation is best. Poverty presents a unique challenge, as communities struggling with economic hardships may refuse resettlement plans out of fear of exacerbating existing poverty (Rashid, Hunt & Haider, 2007). Landlessness, another form of poverty, should not prevent a community from receiving compensation of all losses at a fair replacement rate (ADB, 1998; Badri et al., 2006; Oliver-Smith, 1991). Another challenge arises when authorities cannot afford to provide all of the services promised to or expected by a community due to strict budgeting or unplanned setbacks (Asif, 2000). Other times, authorities may make promises as incentives for communities to move, then renege on their commitments (Baird & Shoemaker, 2007). Lastly, efforts to compensate can also fail when communities refuse to accept what is being offered in any form. In the climate change context specifically, communities often feel that the short-term benefits of compensation contrast significantly with the long-term losses of relocating, especially if the environmental threat under current conditions is perceived as minor (Roca & Vollares, 2012). Ultimately, if populations believe resettlement will cost them more than can be gained by moving, they will fight to remain in situ (Rashid, Hunt & Haider, 2007).

The key concept when examining compensation is 'adequate'. As demonstrated in the discussion of compensation failure, if the offer is seen as unfair or not worth the trouble of relocating, communities may refuse the package and further delay the project. Thus, it is vital that compensation be fair and beneficial to all stakeholders. Based on experiences, compensation needs to combine several strategies to address community concerns, acknowledge and remunerate for intangible losses including place attachment, and authorities should ensure compensation payments are made in full and on time.

6. PROTECTION OF LIVELIHOODS

Resettlement researchers and practitioners view the significant disruption to services and infrastructure that resettlement causes as an opportunity to improve the circumstances of the community (ADB, 2013; Evrard & Goudineau, 2004; Hong, Singh, & Ramic, 2009; McDowell, 2013; WB, 2004). Resettlement can provide employment opportunities and new forms of income diversification, which are unthreatened by climate change impacts, and were not present at old locations (de Wet, 2001). There is also opportunity to improve and modernize physical infrastructure and services to meet current and future needs, such as larger residential units, higher quality building materials, larger service access, and improved sanitation (Cernea, 2000; WB, 2004). The resettlement-as-development literature focuses on two main livelihood components: income-generating activities and social networks, both examined here.

6.1 Economic Livelihoods

Financial earnings are consistently interrupted during resettlement. In resettlement guidelines and academic literature, income restoration, employment, and environmental management are discussed as strategies for reestablishing income (ADB 1998; WB, 2004).

6.1.1 Income Restoration: Research has shown that the need to develop and secure livelihoods following resettlement is equally as important as the need to provide housing (Arnell et al., 2013; Kurshitashvili, 2012). Strategies for reviving livelihoods include micro-finance schemes (Usamah & Hayes, 2012) and income diversification to better secure food sources and standards of living (DaCosta & Turner, 2007). Cernea (2000) suggests bringing new lands into

production for agriculture and crop intensification, stressing that reemployment is the key to protecting livelihoods during resettlement.

The ADB (1998) recommends developing both short- and long-term livelihood revival strategies, as part of the larger plans for permanent resettlement. Short-term income restoration initiatives can include compensation for lost assets (paid in full before relocation), house construction grants, and subsidies for agriculture, fisheries, and livestock for a set amount of time (ADB, 1998). To ensure the initiatives remain viable long-term, any income restoration and employment generated for the resettlement project should be supported for three to five years after relocating (ADB, 1998; WB, 2004).

6.1.2 Job Creation, Skills, and Training: Resettlement guidelines suggest authorities design a job creation plan with strategies for recreating economic activities from old settlements or creating new jobs (ADB ,1998). Often, *recreated jobs* are in the agricultural sector, requiring only land, tools and water access for experienced farmers to restart their incomes (Cernea, 2000). *Job creation* is focused in developing new industries, avoiding agricultural and other climatically threatened livelihoods like fishing to allow for a greater diversification of income (Al Atahar, 2014; Badri et al., 2006). New or old, job and skills training is essential to ensure these jobs are long-lasting (Al Atahar, 2014; Birkmann, 2011; Usamah & Hayes, 2012).

One form of job creation at resettlement sites is through 'benefit sharing', which involves a mutual benefit to authorities and communities from the process and investments of resettlement through the use of labour (Cernea, 2007). Through this system, authorities gain additional workers to speed up construction of the site, while communities gain wages, new skills, and diversified incomes (Cernea, 2007; de Wet, 2001). Both sides also benefit from decreased tensions relating to the resettlement process, as community involvement in construction improves acceptance of the new site (Cernea, 2007).

Another form of benefit sharing is permanent land renting instead of land seizure, meaning authorities can use the land from a community's previous settlement site for other projects, and pay rent to the communities from the new profits (Al Atahar, 2014). This system will give communities a sense of security knowing that their previous land will be a long-term source of income (Al Atahar, 2014). Allowing communities to share in the benefits of their relocation through opportunities for employment and income diversification goes on to foster better relationships between authorities and communities while reassembling livelihoods.

6.1.3 Environmental Risks: The environmental effects of resettlement can be significant, including deforestation, soil erosion, and land degradation due to agriculture and other land alteration (Kwai-cheong, 1995). In response, the ADB has made it a priority to identify, manage, and monitor any environmental concerns regarding use of resources and sustainability in new settlement sites (1998). To protect livelihoods, authorities should make every effort to ensure a balanced approach to the use of local natural resources (Badri et al., 2006), for example by diverting jobs from resource-dependent sectors such as agriculture to industry during resettlement (Kwai-cheong, 1995). Not only would this create more job opportunities, but it would shift livelihoods from potentially climate-threatened jobs (i.e. farming, fishing) to safer, long-term roles. Without natural resources, recovering livelihoods is incredibly difficult, making environmental management a vital part of resettlement.

In sum, there is a great need to reestablish income opportunities, employment, skills, and environmental awareness quickly after resettlement; however, economic impoverishment is not the only impact of relocation.

6.2 Social Networks

Climate-related resettlement is more than logistical and economic processes. It ripples through individual and community identities, culture, and bonds, and is well documented as disrupting community functionality and unity (Badri et al., 2006; McDowell, 2013; Rashid, Hunt & Haider, 2007; Warner et al., 2010). This disruption dismantles social structures and interpersonal ties, creating significant psychological trauma for community members (Locke, 2009; McDowell, 2013). The reconstruction of social networks occurs on multiple scales (Warner et al., 2010), and should seek to support affected people in the process of rebuilding networks and identities (UNHCR, 2014).

The resettlement process can protect social networks with careful planning. The UNHCR's climate resettlement guidelines (2014) incorporate plans for communal public spaces to facilitate social interactions, gender- and ability-sensitive mechanisms that enable community inclusion, and other plans that preserve relocatee's dignity. Sites designed with public facilities that allow for the coming together of neighbours and groups, such as meeting halls, childrens play areas, and public gardens, are known to have higher resettlee retention rates (Cronin & Guthrie, 2011; Oliver-Smith, 1991). The Peninsula Principles (Displacement Solutions, 2013)

stress the importance of providing accessible basic services to reduce tensions over resources, and more social services, such as education, to facilitate collaboration and development.

Vulnerable groups within communities, including single mothers, the disabled, the elderly, and ethnic minorities, have additional needs to address with sensitive resettlement plans (Badri et al., 2006; Raleigh, Jordan & Salehyan, n.d.). With indigenous persons, pastoralists and other communities with attachment to their land, extra care is needed to preserve group identities and ways of life (UNHCR, 2014). To ensure vulnerable group voices are heard, the ADB (1998) recommends consulting these groups and involving them specifically in the resettlement planning, including site layout, services, cultural sites and other civic resources. Alternately, authorities could increase available financial support and compensation (Badri et al., 2006).

Host communities, or the existing communities at a resettlement site, add another layer of complexity to resettlement planning (Edwards, 2013; Cernea, 1997). Whenever possible, the rights, dignity, and needs of host communities need to be respected and accommodated (UNHCR, 2014). Climate-related resettlement may increase tensions over available land and resources (Ferris, 2012), so encouraging host community consultation, participation, and communication with authorities is important for meaningful integration and acceptance between the two groups (UNHCR, 2014). Recognizing host community rights and concerns is a critical element to fostering social networks and easing tensions during resettlement.

Religion can be a large component of social networks, yet its role in climate-related resettlement remains unclear. In some literature, religious sites and practices are viewed as 'cultural property', and the failure to accommodate these will unravel any initiatives to rebuild social capital in new locations (Vanden Berg, 1999). Alternately, other literature demonstrated how religious interference in state resettlement planning actually delayed service delivery and ignited disagreements amongst project stakeholders (Quetulio-Navarra, Neihof, Van der Horst & van der Vaart, 2014). Whether positive or negative, religion plays a role in the rebuilding of social networks after resettlement, and principles for resettlement should acknowledge traditional religious practice and its influences.

For climate-related resettlement, it is critical to remember that livelihoods are comprised of both an economic and social element, each requiring equal accommodation during resettlement. The literature review has revealed how important functioning livelihoods are to the long-term success of resettlement projects, demonstrating the urgency in reestablishing

both income and community bonds at new sites. Accumulating what is known, livelihood reestablishment requires both short- and long-term income opportunities and a commitment to reconstructing both intra- and inter-community social networks.

7. USING THE PRINCIPLES

Resettlement is a valid adaptation option for communities facing significant loss of life, livelihood, and resources due to intensifying climate change threats. Past resettlement practice in resettlement from the fields of climate change, disasters, and development, combined with resettlement guidelines developed by international aid institutions, offer insights and lessons to build upon from when planning climate change-related resettlement. Abiding by the five principles discussed, which are summarized in Table 2.2, governments, international institutions, and local authorities can stand on the shoulders of existing resettlement knowledge to implement strong managed retreat projects in the face of intensifying climate threats.

The collection of journal articles, case studies, international policies and guidelines examined in this literature review has been synthesized into a series of Principles that can be used to inform resettlement planners responding to future climate change threats in impoverished communities. These principles provide a starting point for thinking on how to best plan and implement resettlement as an adaptation option, but will require significant testing, debate, and perhaps refinement. This synthesis of resettlement literature from development, hazard and disaster, and climate change literature should be considered as one piece of the larger body of literature on climate-related resettlement literature and guidelines, including those guidelines outlined in Doberstein & Tadgell (2015). From here, there are opportunities to implement and evolve the guidelines through case studies and fieldwork, enriching the literature on climate change and resettlement of impoverished communities specifically. The five principles are an effort to bring more attention to an often-overlooked adaptation option, and stimulate thinking on how to employ the strategy appropriately and effectively for communities threatened by intensifying climate change.

Climate-Related Resettlement Principles	Pre /Planning	During	Post (Short)	Post (Long)
PROACTIVE				
Identify the populations at risk of climate change impacts as early as possible	✓			
Construct both scientific and legal justifications for the need for relocation	✓			
Educate and inform the public that proactive resettlement is in their best interests	✓			
Begin negotiation and planning processes early, before environmental risks emerge	✓			
COMMUNICATION AND PARTICIPATION				
Ensure climate change and resettlement planning information provided to communities is clear, educational, and accessible to different audiences	✓	✓	✓	✓
Begin stakeholder dialogues from the outset of the project and continue throughout process	✓	✓	✓	✓
Commit time, resources, and genuine interest into communication efforts, with the intention to incorporate community perspectives into plans	✓	✓		
Make every effort to obtain a balance of representatives from community interest groups	✓	✓	✓	✓
PERMANENT RESETTLEMENT				
Plan resettlement projects for long-term success and ensure neutral monitoring of settlement progress after the initial move	✓	✓	✓	✓
Design and layout new settlements with community needs, present and future, as priority	✓			
Authority-holding stakeholders are accountable for community welfare, and must act accordingly and responsibly throughout project planning, execution, and monitoring	✓	✓	✓	✓
COMPENSATION AND INCENTIVE				
Combine many compensation strategies into one package appropriate for community needs	✓			
Acknowledge and remunerate for intangible losses experienced during resettlement projects.		✓	✓	
Ensure the entire compensation payment is made in full through responsible schemes		✓	✓	✓
PROTECTION OF LIVELIHOODS				
Opportunities created, both short- and long-term, to earn an income. This includes new or recreated employment outside of traditional climate-threatened livelihoods, and benefit sharing			✓	✓
Considerations for environment and resource sustainability, working to reduce future hazards		✓	✓	✓
Equal concern for the reconstruction of both intra- and inter-community social networks.	✓	✓	✓	✓

Table 2.2: Summary of the 5 climate-related resettlement Principles and time horizon for each element

Chapter 3: Connecting Manuscript 1 and Manuscript 2

My first manuscript has distilled a series of principles into an outline of resettlement as a form of climate change adaptation. The review of key studies, and the synthesis of debates and lessons learned, has allowed for an assessment of the current state of knowledge from three separate but overlapping bodies of literature that has solidified my understanding of resettlement as retreat. It stands as the foundation of my knowledge of effective and poor resettlement practice and has helped me to comprehend the significant opposition to the use of resettlement for any purpose and the reasoning behind this sentiment.

This outline will be the framework upon which resettlement is assessed as a feasible adaptation strategy for informal settlements in Manuscript 2. I used the 5 Principles to introduce the climate-related resettlement concept during interviews with key informants in resettlement, CCA, and DRR roles in Manila, Philippines. Other ideas and knowledge from the research conducted in Manuscript 1 also helped structure interview questions and analyze data in my second Manuscript.

Chapter 4: Assessing the feasibility of resettlement as climate change adaptation for informal settlements in Metro Manila, Philippines

1. Introduction

Coastal areas across Asia are vulnerable to the impacts of climate change, including increased riverine, coastal, and urban flooding due to sea level rise and intensified extreme weather (Hijioka et al., 2014). Paired with rapid urbanization and dense city design, these climate risks will likely cause widespread damage to urban infrastructure, livelihoods, and settlements located in risk areas (Hijioka et al., 2014). Most vulnerable to these impacts are groups of urban poor that erect their homes on any available land in the city, which is often at high-risk to environmental threats. These informal settlements commonly lack the necessary infrastructure, resources, and services for coping with environmental hazards and disasters in the exposed areas. To protect these vulnerable communities, various forms of climate change adaptation (CCA) must be explored.

CCA is very much related to the practice of managing disaster risks and environmental hazards, known in the literature as Disaster Risk Reduction (DRR). Climate change increases the occurrence and intensity of extreme events, and disasters undermine populations' coping abilities, thus increasing vulnerabilities to climate change (Lei & Wang, 2014). As the two themes overlap significantly in approaches and desired outcomes, research on disaster management is often very useful in understanding the options available to those attempting to adapt successfully to the risks of a changing climate. For this reason, this research examines the feasibility of employing resettlement as both a CCA and DRR strategy for informal settler families (ISFs) in Manila.

The literature on resettlement conclusively demonstrated that the resettlement process can be a profoundly disruptive process to communities and their livelihoods, making the strategy a last resort for climate change, hazard, and development planning (Agyeman, Devine-Wright & Prange, 2009; Correa, 2011; de Sherbinin et al., 2011; Displacement Solutions, 2013; Norwegian Refugee Council, 2011; Oliver-Smith, 1991; Reisinger, Lawrence, Hart & Chapman, n.d.; Warner, Hamza, Oliver-Smith, Renaud & Julca, 2010). However, as climate change

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intensifies, at-risk populations have fewer adaptation options that are affordable and can protect them effectively. Tolerances for environmental disasters, and their economic and emotional effects, will be more frequently exceeded, leading many to seek more drastic adaptation options.

Retreat as a survival strategy has been practiced for centuries (Artur & Hilhorst, 2012), and remains a valid adaptation option that deserves exploration and methodical planning. In fact, the IPCC AR5 report has proposed "exposure reduction via structural and non-structural measures, effective land-use planning, and selective resettlement" as a valid adaptation option (Hijioka et al., 2014, p 1336), suggesting that the time to examine the feasibility of resettlement as a form of CCA is dawning.

The 5 Principles for climate-related resettlement, developed by Tadgell, Doberstein & Mortsch (2015)[1], provide useful guidance on how resettlement can be enhanced for CCA purposes. This research reviews climate change, hazard and natural disaster, and economic development literature related to resettlement to distill 5 Principles for climate-related resettlement (hereby referred to as the 5 Principles): Proactivity, Communication and Participation, Permanence, Compensation, and Livelihood Protection.

1.1 Research Objectives

The main objective of this paper is to assess the feasibility of implementing resettlement as climate change adaptation for informal settlement communities in Manila, Philippines using the 5 Principles for climate-related resettlement as a framework for assessment. As these principles have yet to be tested in the field, this research will also assess the acceptability of these principles in determining if resettlement is an appropriate adaptation strategy for informal settler communities. This research seeks to understand:

> *What is the feasibility of implementing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila, Philippines?*

To address this question, the research is divided into 3 sub-questions:

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[1] For more details on the literature consulted, and the 5 principles, please see Chapter 2 in this thesis or Tadgell, A., Doberstein, B., and Morstch, L. (in review). Principles for climate-related resettlement of informal settlements in less-developed nations: A review of resettlement literature and institutional guidelines. *Climate and Development*.

1. *What are the current disaster risk reduction and climate change adaptation priorities in Metro Manila and what is the role of resettlement in these priorities, if any?*

2. *What are the views of Manila's resettlement actors on the applicability of Tadgell, Doberstein and Mortsch's 5 principles for climate-related resettlement (2015) for Metro Manila's existing resettlement landscape?*

3. *What are the perceptions of Manila's resettlement actors' on the feasibility of employing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila?*

2. STUDY AREA

2.1 Geographic Characteristics

Metropolitan (Metro) Manila, also known as the National Capital Region (NCR), is bordered by three flood risks: rivers, coast (Manila Bay), and lake (Laguna de Bay) (see Figure 4.1a and 4.1b) (Bankoff, 2003). According to the World Bank (2011), the megacity faces many environmental hazards, including typhoons, flooding, landslides, and earthquakes. Impeding the flow of riverways is solid waste disposed most frequently by informal settlers living along or overtop of rivers and creeks (Bankoff, 2003). These blockages prove most problematic during severe storm events when excess runoff and rainwater surge through the city's riverways, as seen in the city's more recent disaster events. For example, during Typhoon Ondoy (internationally known as Ketsana) Metro Manila received 450 mm of rain in 12 hours, a forty-year record for the city (Abon, David & Pellejera, 2011). The extreme rainfall overtopped flood control structures, resulting in overland and riverine flooding that caused $43.5 billion USD in damage and left more than 1 million homeless (Abon, David & Pellejera, 2011). Subsequent studies of the storm identified informal settlements along riverways (creating clogs), poor urban planning, and a lack of community preparedness as enhancing the damages of the flood (Abon, David & Pellejera, 2011).

Figure 4.1b shows the areas prone to flooding in Metro Manila, with the yellow (lighter shading) showing 2-10 year flood event affected areas (more frequent), and purple (darker shading) showing 50-100 year flood event affected areas (less frequent). From the map it is clear that the most flood-prone areas are along the rivers, and the reality is that these rivers are where many of Manila's informal settler families (ISFs) build their homes (Sales Jr, 2009).
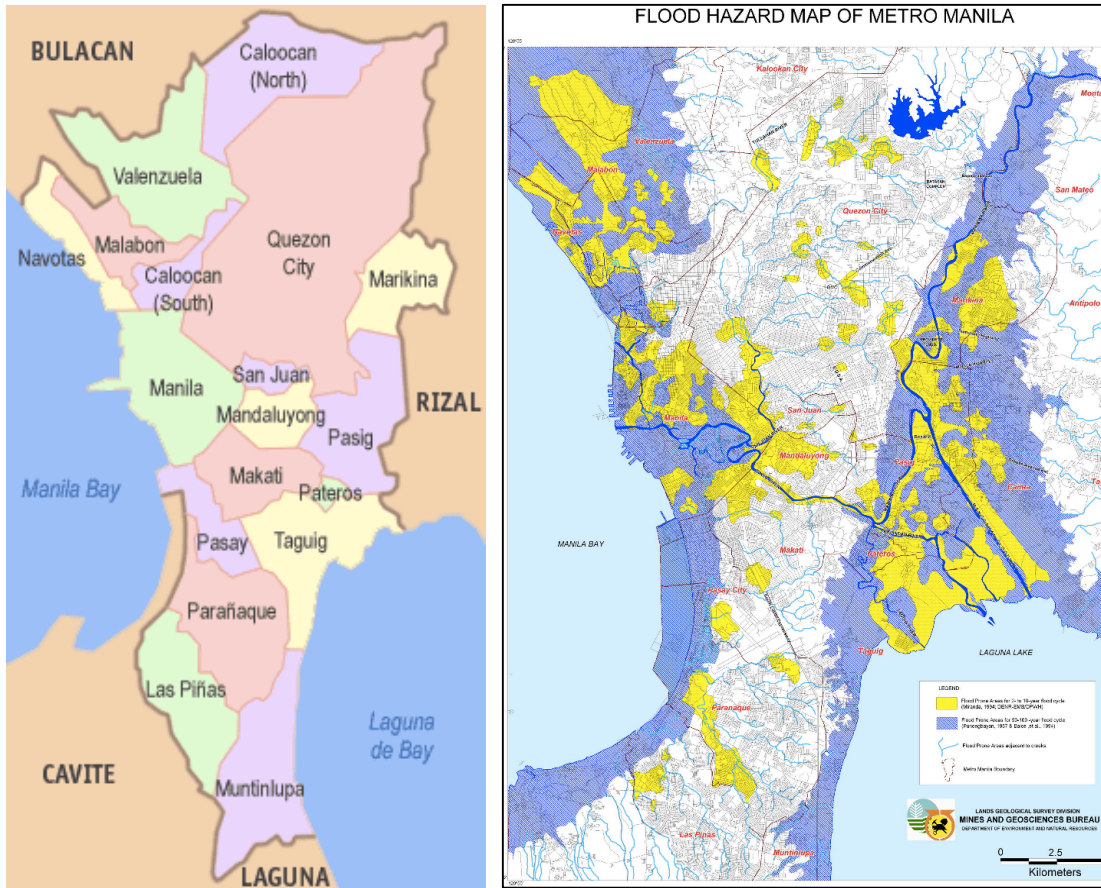
Map 4.1a: The 16 Cities and 1 Municipality that comprise Metro Manila
Map 4.1b: Flood hazard map of Metro Manila
Source: Department of Environment and Natural Resources (DENR), Philippines, 2009 (flood Hazard);
http://mapssite.blogspot.ca/2008/06/map-manila.html (city map)

2.2 Social Characteristics

According to the Philippine Statistic Authority (2012), the population of Metro Manila
was over 12 million people as of May 2007, but can expand to a 16 million daytime population
with provincial workers coming to the city for work (Porio, 2011). Metro Manila is home to
roughly 700 000 squatters (Gilles & Tomeldan, 2012), the majority of which do not have security
of tenure for their homes or jobs, and lack access to basic services such as water, electricity and
sewage (Porio, 2011). In densely urbanized Metro Manila, often the only available land for these
squatters to construct their illegal homes is in high-risk areas, such along coastal land and
riverways (World Bank, 2011). A recent report on housing in the megacity referred to Manila's
informal settlement developments as "a sort of cardboard-and-corrugated-iron version of

Venice" (Hodal, 2013). These settlements are highly vulnerable to high winds and floodwaters during typhoons (Hodal, 2013), due to both their physical location and their social vulnerabilities.

2.3 Resettlement History

In the past, Manila's governments have employed resettlement for a number of reasons, including insecure land tenure, private interest in occupied land, and small-scale environmental concerns (e.g. settlements dumping household waste which obstructs river flow) (Shatkin, 2004). These efforts often involved relocation to rural provinces, far from familiar livelihoods and social networks. Manila's policies and politicians have been criticized in the past for conducting abrupt extraction of informal settlers from their settlements, without proper transition or integration support (Gilles & Tomeldan, 2012). However, resettlement in response to flooding and anticipated climate threats has been conducted in or near Metro Manila on a small scale, for example in Cavite City (Sales Jr., 2009) and Marikina City (Porio, 2011), and there have been calls for a wider consideration of retreat across the megacity (Sales Jr., 2009). Climate change adaptation components could be incorporated into existing resettlement infrastructure to enhance existing resources.

3. METHODS

3.1 Participants

The research chose to focus on the 'implementers' of resettlement, consciously omitting ISFs themselves for logistical challenges associated with researching in these communities. The interviewees were drawn from resettlement, DRR, and CCA professionals operating in Manila. As interviews were conducted, patterns emerged amongst participants initially grouped into six professional 'sectors': international funding bodies, national government, local government, private sector, non-governmental and community organizations, and 'other' knowledgeable actors. These six sectors were then grouped into 2 levels of involvement with resettlement: administrative level and community-level. As interviews continued, efforts were made to speak with an equal number of interviewees from each level. It was anticipated that there may be a difference of opinion regarding resettlement between the two groups, that of the project implementers and that of the communities' (through actors who work closely with them).

Interviewees classified as administrative-level are often the planners and funders of resettlement projects that set resettlement policy and undertake high-level planning, including international funding banks and agencies, national government offices, city government officials (labeled 'local government'), and the private sector. The community-level sector consists of actors that work closely with resettling ISF communities, focusing on conducting local resettlement in practice. Community-level actors include staff of international, national, and community-based Non-Government Organizations (NGOs) and Community-Based Organizations (CBOs), as well as an 'other' category of technical assistants and academics whom are in direct contact with informal settler communities throughout resettlement (see Figure 4.1).

Figure 4.1: The administrative and community level breakdown of interviewees

3.2 Data Collection

Primary data were collected in July and August 2014 in Metro Manila using semi-structured interviews (n=27), which were audio-recorded with participant permission. An initial list of potential key informant interviews was generated from an Internet search, and informants were contacted by email if the researcher felt their position was appropriate and senior enough to comment on resettlement. This list was augmented through subsequent snowball sampling. The initial contact email introduced the researcher and project, explained what expertise the contact possessed that was of interest to the research, and include supplemental information on the interview process (see appendices A, B, and C). Interviews occurred at participants' offices, or occasionally at an agreed upon public meeting spot. Participants signed a confidentiality agreement that assured them anonymity in the project, permitted or declined the use of quotations, and gave consent for audio recording (see

appendix D). Interviews lasted from 30 – 90 minutes, comprised of a mix of consistent key questions and additional topics that emerged from conversation (See Appendix E). As illustrated in Figure 4.2, question themes followed chronological order, first exploring current DRR and CCA priorities for the city, then introducing the 5 principles and discussing their potential application, followed by the exploration of using resettlement as proposed by the 5 principles in Manila and any anticipated challenges to implementing them. Each interviewee was sent a follow up email within 48 hours of the interview, thanking them for their time and asking permission to contact them with any future questions (see appendix F).
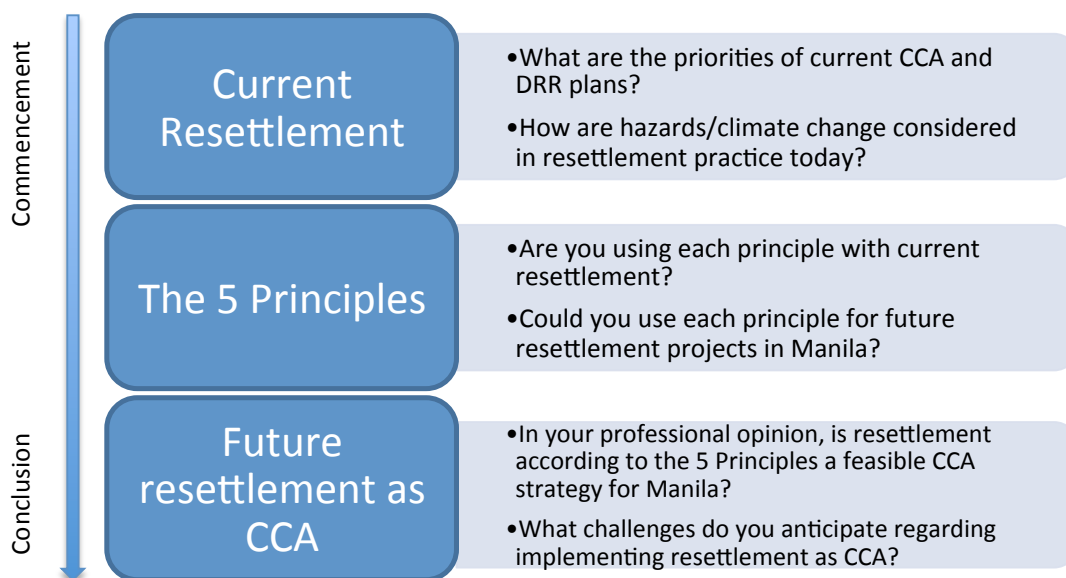
Figure 4.2: A visualization of the interview process, including the order of discussion, question themes, and sample questions

3.3 Data Analysis

The researcher and research assistants transcribed the audio-recordings. Research assistants were required to sign a confidentiality form to ensure assistants would maintain participant anonymity and would not use any data as their own (see appendix G). Analysis was conducted using the NVIVO program, where interviews were coded into common themes, such as 'Proactive' (referring to interview sections discussing the Proactive Principle), 'Challenges', and 'Solutions'. Frequency counts of responses to key questions asked of every interviewee were compiled in Microsoft Excel by the researcher, including yes/no responses to the feasibility of resettlement as CCA and the list of challenges identified for the adaptation strategy.

A notation will be used to identify each interviewee will be identified by their sector, abbreviated as follows:

- International Funding Body Interviewee = IFBI
- National Government Interviewee = NGI
- Local Government Interviewee = LGI
- Private Sector = PI
- Other Interviewee = OI
- Non Governmental Organization Interviewee = NGOI

In order to maintain anonymity, each interviewee was assigned a unique number in order to reference their insights in the findings and discussion. This number will follow the abbreviated sector (e.g. 'IFBI 1' refers to Interviewee #1, who is an International Funding Body Interviewee).

4. CURRENT CCA AND DRR PRIORITIES

The CCA and DRR projects in Manila often work towards the same goals: protecting populations from environmental hazards and events while preparing the city to cope with extreme conditions. For this reason, the investigation was expanded from investigating only resettlement as CCA to explore the feasibility of using resettlement as possible CCA *and* DRR for Manila's vulnerable ISF communities. This expansion allowed interviewees less familiar with CCA topics to contextualize later research questions into the more familiar DRR context and still give answers relevant to the research objectives.

Before the potential for resettlement to be used as CCA and DRR in Manila can be explored, it first must be understood what the current CCA and DRR priorities are for the city, and how resettlement plays a role in these priorities, if at all. This section will address objective 1, discussing the current CCA and DRR priorities in Manila and how resettlement is used to accomplish them.

4.1 Current CCA Priorities

At this time, CCA in Manila is comprised of knowledge development and information sharing amongst stakeholders. The Philippine Atmospheric, Geological, Astronomical Services Administration (PAGASA) and the Department of Science and Technology (DOST) provide climate information to National Government offices, including anticipated weather changes (i.e. el Niño), which some participants use to construct a base knowledge of climate change (NGI 7;

NGI 9). Several interviewees also pinpoint the Climate Change Act of 2009 (RA 9729) (see Box 4.1) as creating awareness of climate change threats for projects (NGI 6; LGI 10; NGOI 22). The Climate Change Commission (CCC), created as a part of the RA 9729, coordinates several adaptation and mitigation projects throughout the Philippines (Climate Change Commission, n.d.), but has faced challenges with its task:

> *"Now the problem of the [Climate Change] Commission is that it doesn't have much room for funding for projects that actually has effect for CCA. So it creates the [CCA] plans and everything but it's still dependent on the different departments for the implementation. It, as a commission, lacks the funding for it to solely implement climate change plans" (NGOI 22)*

The Act itself is an excellent step forward for climate change adaptation in the Philippines; however, the CCC will need more funding and power to ensure what has been planned is actually implemented.

Interviewees discussed how the future impacts of climate change are considered when selecting new construction sites and architectural designs for housing (IFBI 2; PI 12; PI 13). In some cases, this means planners are now considering the future flood return periods for an area and designing engineering safety measures, including upstream retention basins and raised embankments (IFBI 2; IFBI 3; IFBI 4). A housing NGO is changing the materials (i.e. using more bamboo) and designs of homes at new resettlement sites in preparation for "stronger typhoons and earthquakes" (NGOI 27). Respondents shared their belief that incorporating climate concerns into new developments is investing in the long-term success of projects:

> *"We embrace it because it affects your sustainable development agenda … because it makes business sense to do so. Like, if you build a bridge or … road, if you don't integrate climate change then that means maybe sometime in the future they will all just be washed away. So it doesn't make sense to invest money if you don't take into account climate change" (IFBI 4)*

There is excellent awareness of climate change and how it may impact Manila amongst the interviewees. No participants were unaware of the phenomenon. Adaptation priorities at this time are focused on engineering and planning changes for cities, or on education for ISFs. Other researchers have concluded that information, education, and communication are critical for enhancing adaptive capacities of ISFs in Manila (Sales Jr, 2009). Resettlement is not a primary

CCA strategy at this time, but is included as a component in CCA projects such as the BRACE Project.

4.1.1 Building the Resilience and Awareness of Metro Manila Communities to Natural Disasters and Climate Change Impacts (BRACE)

The BRACE Project is an example of how resettlement has been used for CCA projects in Manila. Australian Aid initiated the project in response to Typhoon Ondoy in 2009 to strengthen the resilience of vulnerable communities in Manila to the risks of natural disasters and climate change (AusAid, 2011b). One component of the program is 'building safer settlements' for disaster-resilient planning, with the goal of developing a social housing model that uses in-city resettlement as much as possible (AusAid, 2011b). An affiliated interviewee elaborated on the goals of using resettlement in the DRR and CCA project:

> "[W]e wanted [the government] to realize that you just don't move [ISFs] away just because they are [in the way of a project], you need to implement a development project but you want to protect them. Remove them from harms way … So, we wanted to encourage [the government] that you should also look at disaster preparedness and building resilience element of your relocation and resettlement work" (IFBI 1).

Taguig city was selected as the test site for BRACE because it experienced significant flooding during Ondoy but did not receive direct donor assistance, and because it had strong political leadership regarding resettlement (AusAid, 2011b; IFBI 1). The focus of the BRACE project shifted in 2013 to a new DRR project for ISF communities with similar goals to the BRACE initiative (discussed in Section 4.3). AusAid now supports Taguig city and others with this new project instead.

Box 4.1: Key DRR, CCA, and Resettlement Legislation

RA 10121 – An outcome of Typhoon Ondoy, this law (aka *Disaster Risk Reduction and Management Act)* works to address the root causes of vulnerabilities to disasters and strengthen the DRR capacity of the nation. It aims to mainstream DRR into development, and for Local Government Units (LGUs) to create their own disaster management plans. It also established the National Disaster Risk Reduction and Management Council (NDRRMC), responsible for creating a framework for comprehensive, all-hazard, multi-sectoral, inter-agency approach to DRRM, among other responsibilities (Congress of the Philippines, 2009b).

RA 9297 – Also called *The Climate Change Act of 2009*, it requires climate change considerations

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to be incorporated into national and subnational policies, plans, programs and projects. LGUs specifically are tasked with creating Local Climate Change Action Plans that educate and prepare communities on climate-related threats. The Act also created the Climate Change Commission, tasked with coordinating, monitoring, and evaluating government climate change initiatives (Congress of the Philippines, 2009a).

RA 7279 – The *Urban Housing Act* outlines criteria for responsible resettlement and eviction. The responsibilities of all actors in resettlement include mandatory public service provisions, livelihood protection and development, and community participation guidelines. It also established the Community Mortgage Program, which assists organized groups of the urban poor in purchasing land for community ownership (Congress of the Philippines, 1992).

4.2 Current DRR Priorities

Current DRR in Manila focuses on capacity building and preparedness within all communities, including ISF communities. Under the Disaster Risk Reduction and Management (DRRM) Law (see Box 1) LGUs are mandated to create a local Disaster Risk Reduction and Management Plan to outline and improve community disaster preparedness and response (NGI 6). In some plans, communities are being taught to conduct hazard and risk assessments for their areas, learning how to identify hazards and how to plan and respond to future threats (IFBI 1; NGOI 22; NGOI 23; NGOI 24; NGOI 25). Disaster preparedness committees are being formed within communities and trained in first aid, water rescue, and evacuation procedures (IFBI 1; NGOI 21). Training the communities to recognize and understand the environmental threats in their area can benefit them for years to come:

> *"…so we think that whether they would still stay in the city or they would be relocated elsewhere, the skill set that they get from the capacity building, they would still carry that, because [it is] at the household level, the community level." (IFBI 1)*

Disaster preparedness is practiced with several techniques, including flood drills (IFBI 1; LGI 11). Community-based early warning systems that complement the national system are also used, for example using markers on the river banks indicating dangerous water levels, or using horns to warn communities of dangerous conditions (IFBI 1; OI 15). This commitment to developing community skills and knowledge is a long-term investment in ISF safety, regardless of location.

At a policy level, the largest priority is to mainstream DRR into planning documents to encourage more proactive actions (IFBI 1; NGOI 22; NGOI 23; NGOI 24; NGOI 25). For example,

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three interviewees from one NGO described working with local governments to enhance the LGU's government-mandated Barangay DRR Management Plan:

> "Because usually when we ask them [Local Government] 'do you have [a contingency plan]?' They say 'yes, yes' but it's a one-page procurement. It's more of emergency planning: rubber boats, helmets…" (NGOI 23)
> "…still response oriented. It's still very reactive." (NGOI 24)

Another policy-level priority is organizing multi-sectoral partnerships between communities, NGOs, local governments and the private sector for preparedness and relief, in order to outline the responsibilities of all actors before and after a disaster (LGI 10; PI 13).

Current DRR is focused on developing the capacity of ISF communities to manage environmental threats in situ, and to give them tools and training to cope with disasters. Resettlement is only used as a component of broader, often engineered DRR plans in Manila at this time, as evidenced in the PMRCIP project.

4.2.1 Pasig-Marikina River Channel Improvement Project (PMRCIP)

The PMRCIP is an example of how resettlement is currently employed in DRR projects in Manila. The Pasig-Marikina River System flows through the center of the city into Manila Bay, and is frequently overtopped by floodwaters during heavy storms and rain (DPWH, 2011). Overtopping frequently causes flooding across Quezon City, Marikina, Pasig, and Taguig (United Nations Institute for Planning and Research, 2009), as recently witnessed during Typhoon Ondoy (aka Ketsana) in 2009 (DPWH, 2011). To increase the flow capacity of the rivers, the Japan International Cooperation Agency (JICA) teamed with the National Government to execute the PMRCIP (DPWH, 2011). "[T]he project is designed…[for]a thirty year flood period" (NGI 9), and will involve constructing concrete river walls and a dyke, and dredging over 5km of river over three phases (DPWH 2011). Although some ISFs along the river ways will be resettled, such resettlement will be done in order to accommodate project infrastructure rather than to reduce flood risk to these communities. The focus of this project is engineering and improving river flow throughout the city, meaning resettlement is an incidental factor in the DRR planning of the city.

4.3 Resettlement as direct DRR in Manila: Securing the Safety of Informal Settler Families in Metro Manila (SSISF) Project

The SSISF project is the most recent and well-funded project in the city that employs resettlement as direct DRR for river-dwelling ISFs in the city. It is one component of a 2008 Supreme Court Mandate to clean up Manila Bay and the rivers that feed into it (Supreme Court of Philippines, 2008; NGI 6; LGI 11; OI 15; OI 17).

Map 4.2: The 8 major waterways in Manila as targeted by the SSISF Project, and a list of the cities each river intersects.
Source: DPWH, in (Vallarta, 2013)

The national government has committed 50 billion PHP (~$1.1 Billion USD), managed by the Department of Interior and Local Governments (DILG) (IFBI 1; NGI 7; NGOI 22) to provide safer housing options (medium-rise buildings) for ISFs living within three meters of the eight major waterways in the city (Map 4.2) (IFBI 1; NGI 5; NGI 6; LGI 10; OI 15; OI 16; OI 17; OI 18;

NGOI 22; NGOI 23; NGOI 24; NGOI 27). The compensation is 18 000 PHP ($400 USD) per family, intended as rent for a temporary unit while new sites are constructed (IFBI 1; LGI 11; NGOI 22; NGOI 23; NGOI 24).

To access the funds, communities prepare and submit a "People's Plan", or a community-designed resettlement plan, to the DILG for funding:

> "So, when the president said that 'ok, I'm giving 50B pesos' to provide safer housing options for these ISFs along the waterways', they [the ISF communities] said that, 'but we would want to be consultative in doing this'. So, it means that the ISF communities would have to be part, or strongly engaged in developing, or identifying and developing the relocation sites. So they call it the People's Planning process." (IFBI 1)

There are enormous responsibilities the community must shoulder, such as finding the land to resettle, and negotiating site design and cost with builders (OI 14). To assist with these responsibilities, multiple NGOs provide technical assistance to communities (IFBI 1; NGI 5), including "engineering design, conceptual plan[ning], [and conducting] environmental assessment[s], geotechnical stud[ies], traffic stud[ies], site development plan[s], [and] resettlement action plan[s]" (IFBI 1), and finding land and construction companies (OI 14). CCA are incorporated into this planning as well (IFBI 1; OI 15; OI 16; OI 17; OI 18; NGOI 27). Box 4.2 explains how two NGOs are assisting a community with their People's Plan.

Box 4.2: Creating a People's Plan

TAO-Pilipinas, a female-led non-profit group of architects, planners and engineers (TAO Philipinas, n.d.), and UP Planades, a group of environmentally-sensitive planning and design professionals, are technical assistants (TAs) aiding an ISF community in Malabon City with their People's Plan for resettlement (UP Planades, n.d.). When deciding on the layout of the medium-rise buildings, an architect visited and worked directly with the ISFs to create a floor plan: "[The architect] explained how to plan and then [the community] made their own plans, even the layout…" (OI 15). Once an apartment layout was decided, the architect used chalk to sketch a blueprint on the ground so the ISFs could 'walk through' their new homes and understand what they were proposing:

> "That's why we asked them to draw it on the ground, so they could see the actual size in meters, how big the toilet or the kitchen is. So they would feel how, if they really want - for example, if they want a 20m^2 house," (OI 16)

This practice can be seen in Figure 5. The communities also had a say in their neighbourhood layout, requesting recreational space (i.e. basketball court), storefronts, and space to park tricycles or jeepneys.

Both Tao-Pilipinas and UP Planades are incorporating DRR and CCA into their designs by assessing sites for hazards and including mitigation measures where possible. Buildings are also designed to withstand certain earthquake intensities during extreme events:

> "[W]hat you don't like is to have a building collapse. We need – the designs can sustain some kind of damage, but should afford the residents there enough time to get out and be safe and not have the slab fall on them." (OI 15)

Community safety is the primary concern for these TAs and with the People's Plan.

This example of a People's Plan demonstrates the inclusivity of this resettlement approach, and how beneficial this participation is to the success of resettlement projects. The ISFs embraced the new community design, thus ensuring a longer-term resettlement. The People's Plan approach to resettlement is a possible approach to employing resettlement as CCA.

Figure 4.3a: Drawing a proposed resettlement unit blueprint for a People's Plan
Figure 4.3b: Chalk drawings by communities for their People's Plan
Image source: UP Planades, 2014.

5. FUNCTIONALITY OF THE 5 PRINCIPLES IN MANILA

Resettlement as climate change adaptation is an emerging concept, and different actors may have varying interpretations of the concept and how to implement it in Manila. Addressing objective 2, this section details participant understandings of climate-related resettlement, teases out interviewee perspectives on the 5 Principles of climate-related resettlement (summarized in Table 4.1), and explores how interviewees think the Principles apply to Manila's current resettlement landscape.

Climate Related Resettlement Principle	Summary
Proactive Resettlement	• Identify the populations at risk of climate change impacts early • Construct both scientific and legal justifications for the need for relocation • Educate and inform the public that proactive resettlement is in their best interests • Begin negotiation and planning before environmental risks emerge
Communication and Participation	• Ensure climate change information provided to communities is clear, educational, and accessible to different audiences • Begin stakeholder dialogues from the outset of the project and continue throughout process • Commit time, resources, and interest to communication efforts, with the intention of incorporating community perspectives into plans • Make every effort to obtain a balance of representatives from community interest groups
Permanent Resettlement	• Plan resettlement projects for long-term success and ensure neutral monitoring of settlement progress after the initial move • Design and layout new settlements with community needs, present and future, as priority • Authority-holding stakeholders are accountable for community welfare, and must act accordingly and responsibly throughout project planning, execution, and monitoring
Compensation and Incentive	• Combine many compensation strategies into one package appropriate for community needs • Acknowledge and remunerate for intangible losses experienced during resettlement projects • Ensure the entire compensation payment is made in full through responsible schemes
Protection of Livelihoods	• Opportunities created, both short- and long-term, to earn an income. This includes new or recreated employment outside of traditional climate-threatened livelihoods, and benefit sharing • Considerations for environment and resource sustainability, working to reduce future hazards • Equal concern for the reconstruction of both intra- and inter-community social networks.

Table 4.1: Summary of the 5 Principles for climate-related resettlement
Source: Tadgell, Doberstein and Mortsch, 2015

5.1 Principle 1: Proactive Resettlement

Vacating a high-risk location before a disaster, known as proactive movement, can allow vulnerable populations, such as informal settlements, to preserve their physical safety while stimulating social and economic development (Tadgell, Doberstein & Mortsch, 2015). In Manila, this principle has become relevant due to the devastation caused by Typhoon Ondoy (see Section 2.1). The insights that emerged from this event have influenced Manila's approach to DRR and CCA. Before Ondoy, many ISFs accustomed to knee-high flooding believed they could

withstand seasonal typhoons in their homes (OI 14; NGI 8). Also, government action to help ISFs with extreme storms was largely reactive, in the form of rescue and temporary shelter (NGI 6). After experiencing the incredibly powerful impacts of the 2009 typhoon, ISFs are now much less resistant to, and are even volunteering for, resettlement from high-risk areas (IFBI 1; LGI 10; OI 14). Overall interviewees suggested that there is more acceptance of climate change as a threat and more motivation to take adaptive action in Manila since Ondoy.

The results are divergent amongst interviewees on the willingness of ISFs to resettle early and voluntarily. Two interviewees (LGI 10; NGOI 27) insisted some ISFs have been requesting relocation since Ondoy, "[b]ecause every typhoon, every flood they are victimized. They know there is a program [to relocate]…They're willing to pay [for new land] as long as it is affordable …[and] it's not so far from where they are now" (NGOI 27). Another interviewee suggested that some ISFs are more willing to leave if they know they can resettle within the city (IFBI 1). A third interviewee contradicts these claims: "I don't recall an experience where the people contacted the government and said they wanted to leave. It doesn't happen. [ISFs] just leave on [their] own." (NGI 6). While not every case is as simple as voluntary resettlement, some ISF requests for relocation are being heard and assisted.

Manila's resettlement landscape features several components of the Proactive Resettlement Principle. The Principle encourages the use of simplified scientific knowledge and language in climate change public awareness campaigns so that communities understand the risk climate change poses to them. In Manila, some organizations are using extreme events like Ondoy, and the sense of urgency and fear experienced in the aftermath, to explain climate threats to ISFs and encourage anticipatory movement:

> *"We are so hyped when the typhoon is occurring. But when we talk about moving people out of disaster areas, months before the disasters or the typhoons, or months after the disaster, people tend to be very lukewarm."*
> (NGOI 25)

> *"Culturally, and I think human nature dictates that, if you feel that nothing's going to happen, you're not going to do anything. So voluntary relocation, it's only happening now because they know there's a possibility that another Yolanda [aka Typhoon Haiyan in 2013] might happen."* (PI 13)

The Proactive Principle also highlights that community resettlement before an event saves emergency response time and money. In Manila, several resettlement actors agreed,

stating that resettlement from high-risk areas before a disaster occurs is the "cheapest approach" to disaster preparedness (NGOI 27). If more people are moved away from flood-prone areas before a disaster, there are fewer people to rescue, shelter, and feed after the event (PSI 12; NGOI 25). This demonstrates that some resettlement actors in Manila understand certain co-benefits of a proactive move.

In Philippine policy, Republic Act (RA) 10121 requires city governments to incorporate proactive planning into DRR and CCA plans. Section 2D of the Act reads:

> *"[It shall be the policy of the state to] Adopt a disaster risk reduction and management approach that is holistic, comprehensive, integrated, and proactive in lessening the socio-economic and environmental impacts of disasters including climate change…"* (Congress of the Philippines, 2009b)

The BRACE Project is a good example of relocating ISFs for safety, rather that in reaction to disaster events.

The research suggests that resettlement for ISFs in Manila is moving towards proactive planning and relocation. In terms of climate change, some supporters of proactive resettlement see it as an opportunity to also better prepare the city as a whole for projected climate impacts. Relocating informal settlers from dangerous riverbanks, where their dumped household waste clogs rivers and hampers drainage, is in fact climate change adaptation for the entire city (PI 12; PI 13). Other interviewees see proactive resettlement motivated by the desire to avoid the devastation experienced during past events (OI 14). Overall, be it for climate change or other environmental motivators, the Proactive Principle is embraced by and incorporated into Manila's resettlement landscape.

5.2 Principle 2: Communication and Participation

The second of the 5 Principles states that climate change and resettlement planning information needs to be provided in a clear, educational, and accessible manner with opportunity for community participation. In Manila, the need to break down complex concepts, (e.g. the links between climate change and hazards) and to clarify and popularize terms (e.g. 'vulnerabilities', 'capacities', and 'adaptation') is recognized but not yet happening on the ground (NGOI 25). Instead, what is delivered is raw data and complicated research tools that prove more entertaining than informative for communities:

> *"So, sometimes … they have seen scientists take out an array of gadgets for people to see 'oh, this is happening!' 'This is my 3D map of your area and this is the flooding'. They have nice pictures and graphics. Communities, they look at that, but it's more amusing for them looking at that picture rather than them understanding what that means."* (NGOI 25)

In Manila, there is often a barrier between climate change professionals and communities at risk that must be overcome before adaptation strategies can be introduced and appreciated.

To address this communication gap, some interviewees are putting climate change information into more relatable and understandable contexts when working with locals:

> *"[T]he context really is flooding. So we use that as [an] entry point. So we tell them that 'this is a disaster and given that our environment is really changing, we would be experiencing more of this. So we need to make sure that you won't be affected eventually, or your future families won't be affected by extreme events …"* (IFBI 1)

One passionate interviewee proposed the use of graphic "footage of people floating in the river [during flooding] and eventually dying" to communicate to every ISF the need to move (NGOI 25). The interviewee explained why this shock factor might be more effective when communicating with Filipinos:

> *"We Filipinos tend to beat around the bush. We like to sanitize things that we say so that people will not be offended. But that is one of the major [cultural] limitations. If you want to get the message across to the individuals, it has to be very graphic, it has to hurt people for them to be convinced to move out ... I think the more graphic, the more morbid it is, you put it out in the open and people … decide 'do I want to face that consequence?'"* (NGOI 25)

Just as past disasters can be used to promote proactive relocation, they can be used to communicate climate change risks as well.

Only national government interviewees discussed specific communication techniques. They explained communication techniques with ISFs through negotiations, community dialogues and media (NGI 6, NGI8, OI 20). However, these 'negotiations' merely involve handing over the responsibility of talks and information sharing to the National Housing Authority (NHA) (NGI 6, NGI 8), the sole national agency mandated to engage in housing production for low-income

families (National Housing Authority, 2014)[2]. This situation implies that many resettlement authorities are not communicating or negotiating with ISFs directly.

For community dialogues, resettlement authorities may come to communities and host talks (NGI 9). Topics of discussion identified by interviewees that align with topics suggested by the Communication Principle include: details about the project, where danger zones are and why ISFs cannot remain there, details on preparations and compensation, and the legal basis for the move (NGI 6; NGI 9). Other communication topics suggested by the Principle, such as evidence that other adaptation options have been considered, possible relocation sites, and the community's rights as resettlees, were not identified by interviewees.

Past practice has used various techniques to communicate resettlement plans. The PMRCIP Project communicated initial project details through television, radio, Internet, and 'broadsheets' (local newspapers) (NGI 9). Community meetings and leaflets were also used to share topics such as the calculations of market value for compensation, compensation packages, and how to register complaints about the process, (DPWH, 2011). The BRACE Project was communicated through bulletins posted in public areas and pamphlets available at city halls, communicating project designs, resettlement policies, livelihood support strategies, and compensation payment schedules (AusAid, 2011a).

In other communication discussions, the overall voice of ISF community members does not appear to be strong in resettlement negotiations (OI 20; NGI 8). One national government interviewee shared:

> "But once we [allow ISFs to negotiate staying in place or staying in-city,] you need a lot of money, you need a lot of planning, … [and] a lot of time. So we have to force them to agree with [government-developed resettlement plans]. If they don't want, that's the time that the government will forc[ibly] remove them." (NGI 8)

Of course, ISF involvement in resettlement discussions can only have power if the government is truly interested in having ISFs influence resettlement decision-making. This suggests that current government processes for resettlement allow for only limited ISF input, sometimes with the decision to move, the new location, and how to facilitate the move already decided before discussions begin (NGI 6). These findings are unlike the Communication Principle's

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[2] The NHA did not participate in this research

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recommendation that authorities to commit time and resources to communication and participation.

While interviewees described at times discouraging communication methods, Manila's existing resettlement policy (e.g. Section 23 of RA 10121) actually encourages community participation with LGUs in resettlement planning. The new People's Plans (attributed with the SSISF Project) employ ISF participation, placing resettlement planning directly into the hands of the communities. With this initiative the communities decide critical components such as settlement location, building and unit design, and neighbourhood layout. This participation also encourages ownership of new sites and fosters permanent resettlement.

 In summary, communication for resettlement projects in Manila, while identified in formal policy, has been neglectful of ISF perspectives in practice. The new People's Plans of the SSISF Project are a promising improvement to incorporating ISF perspectives into resettlement design.

5.3 Principle 3: Permanent Resettlement

> *"[T]he biggest challenge now on our part in [government agency] … is 'how are we going to sustain this cleared area and translate and transform this particular area to a better place, a better environment …?' [It] is one of … the greatest challenge that we are facing"* (LGI 11)

Planning for permanent resettlement, which does not allow nor encourage resettlees to return to their former, high-risk sites, is controversial in the resettlement literature (See Johnson, 2012; Displacement Solutions, 2013). The argument is that resettlement can deny historical rights and freedoms of settlement and livelihood, especially when conducted for a threat deemed too great by an *outside* authority (Johnson, 2012). Manila's resettlement actors shared this moral dilemma, and discussed several reasons why permanent resettlement may or may not be possible for Manila.

The third Principle recommends planning for long-term community success at new sites, yet current resettlement activities in Manila sometimes fail to heed this council: "[The government] build[s] hundreds of houses, thousands. But [they] don't think about what will be the [environmental] impact in maybe ten years time. So in ten years time [they]'ll do the same again" (IFBI 3). Although long-term thinking is not a priority for some resettlement actors, an

NGO interviewee detailed how their work is aiming to incorporate ISF needs, both present and future, into site planning:

> " [We ask ISFs] 'Do you like this design?' In our project in Malabon I think we changed the design four or five times…based on their inputs, because they will have their wish list, and then we will convert their wish list into a structure and then [an estimate of] how much it would cost." (NGOI 27)

This recognition that community needs should be accommodated as much as possible at new sites is a positive step towards facilitating permanent resettlement.

To make a resettlement project permanent is to ensure ISFs do not return to the original high-risk site (Correa, Ramirez & Sanahuja, 2011). Eight interviewees said it was common to assign responsibility for keeping sites clear of ISFs to local government units and barangay captains (NGI 6; NGI 7; NGI 8; LGI 10; LGI 11; OI 14; OI 17; NGOI 25). The status of the captain is valued highly within a barangay: "informal settlements will not prosper without the blessing of these barangay captains" (NGI 6), so this approach has been successful in keeping areas clear in some cases (NGI 6; LGI 10). However, several interviewees suggested this strategy frequently failed due to local government corruption (See Section 7.3.1.2) (NGI 7, NGI 8, NGI 9). It seems fruitless to enforce permanent resettlement if other actors are willing to overlook the rules for personal gain.

Another approach to keeping at-risk sites clear is to assign new use to the land that may benefit neighbouring communities socially (Correa, Ramirez & Sanahuja, 2011). In Manila, this is happening by constructing government flood control structures on high-risk land, such as dyke improvements or drainage (NGI 9; LGI 10; OI 15), or by transforming danger areas into public parks, playgrounds, or other recreational space (LGI 10; OI 20). One example is Estero de Paco in the City of Manila, where walkways and new vegetation were erected where ISFs once lived along a creek (See Figure 4.4) (Kwak, 2015). The ISFs were relocated outside of Metro Manila (Kwak, 2015), suggesting there is still opportunity for improvement with the strategy.

Figure 4.4: Walkways and vegetation line a creek, preventing new informal settlement construction at the site
Source: Kwak, 2015

Not all initiatives to keep sites clear advance social development agendas. One interviewee explained how they have used violence and property destruction to discourage returning ISFs, by burning the ISF's housing materials before they could rebuild for a third time (NGI 8). They recalled:

> *"I gave them twice relocation, I have moved them twice. Now I got a [court] case because the third time that they build that house I burned it…[t]he materials. I removed it and burned it so they will not build it again, you know."*
> *[Interviewer] "Did that work?"*
> *"Yes, but the what they did is they filed a case against me now. [The ISFS are alleging that] [i]t's arson."* (NGI 8)

The interviewee continued to describe altercations between government forces and ISFs during resettlement in which both sides used weapons, including grenades, booby-trapped shanties, and slingshots with arrows (NGI 8; NGI 9; OI 19). These types of altercations over high-risk sites can be prevented with resettlement projects that consider ISF needs at new sites.

Permanent resettlement may not be possible for Manila. When asked to reflect on the Permanent Principle, several interviewees raised the concern that ISFs would not remain at new sites because there might be fewer opportunities for a livelihood (IFBI 4; LGI 11; OI 14; NGOI 21;

NGOI 24; NGOI 25). It is not uncommon for families to sell their new property and return to the city after relocation to maintain their income (NGI 8; OI 14).

> *"It depends on whether they can improve their livelihood in the new settlements. It's not about whether they should be allowed [to return]; they will go back to their original place if they cannot make it [at the new site]." (IFBI 4)*

Many ISFs live hand-to-mouth, where the daily earnings are used to feed the family for the day, and this poverty amongst the urban poor is a challenge to many aspects of resettlement in the city.

In sum, resettlement actors in Manila are divided on the possibility of maintaining permanent resettlement. Those that believe it possible have several ideas to ensure high-risk sites remain clear, and there are some encouraging actions that align with the Permanent Resettlement Principle (e.g. using flood control measures to occupy vacated land). Other guidance from the Principle, such as ensuring all ISF needs are provided for at new sites, does not seem a priority in current resettlement in Manila.

5.4 Principle 4: Compensation and Incentives

If poverty is a significant concern preventing permanent resettlement, it is critical to provide an appropriate resettlement compensation package to address the challenge. Note that some interviewees spoke of compensation in the specific context of the SSISF Project, and the responses presented here may reflect this bias.

The most common form of compensation for existing resettlement schemes in Manila is one-time cash payments (IFBI 1; NGI 6; NGI 8; OI 15; OI 17; NGOI 22; NGOI 25). Depending on the project, ISFs are given cash to find temporary homes before relocation, to return to their rural provinces (IFBI 1), or spend how they see fit (NGOI 25). Cash compensation is commonly offered at replacement cost, defined by law RA 8974 (which regulates land seizure) as the current market prices for materials, equipment, land, labour, contractor's profit, and all other costs associated with replacing a structure (Congress of the Philippines, 2000; AusAid, 2011a). Several respondents felt that what is currently offered as compensation is not enough, and used the SSISF Program compensation of PHP 18000 as an example (IFBI 1; LGI 11; OI 14; NGOI 24). This one-time cash payment is one year of rent for a transitional home (PHP 1500 ($32 USD) x 12 months) to house ISFs while new sites are prepared (NGI 8; OI 17; NGOI 24). Resettlement

actors were concerned that this amount is not enough to rent a room adequate for an individual, never mind a family (the average family size in the Philippines is 6) (LGI 11; OI 14; NGOI 23; NGOI 24). The concern is that ISFs will only be able to afford transitional accommodation in other high-risk areas:

> "[W]e think that what the government is providing is not really enough … [T]hey might end up … renting in another danger area, just because what they're getting [as compensation] is not enough for the transitional phase." (IFBI 1)

This potential transplantation of ISFs from one dangerous area to another defeats the purpose of resettling them for physical safety. This issue stresses the importance of fair and adequate compensation packages.

The provision of food over a period of time is also used as a form of compensation in Manila. In some cases, the local government provides a soup kitchen, or certificates for food, but only for one or two week periods (NGI 8). Others said that food was only provided for 1 to 2 days after moving (LGI 10), suggesting food is used as short-term compensation only while ISFs are physically relocating and perhaps restocking their homes with the essentials.

Essential and social services can be both compensation and incentive resources for resettlement (Tadgell, Doberstein & Mortsch, 2015). The Urban Housing and Development Act (RA 7279) (Congress of the Philippines, 1992) states that the authority facilitating resettlement is also responsible for providing potable water, electricity, sewage and waste disposal systems services, as well as road and transportation access. Public services, including education, health and recreation, are the responsibility of the receiving LGUs, the private sector, and the beneficiaries themselves (Congress of the Philippines, 1992). Interviewees noted, however, that some sites receive essential services long after relocating, or go without entirely (IFBI 1; NGOI 22; NGOI 23; NGOI 24).

Some resettlement actors thought that the qualities of the resettlement project (e.g. safety, the opportunity to participate in project design) were enough incentive for ISFs to move. An NGO staff member expressed that the opportunity to leave a high-risk area for safer homes and locations is enough incentive for ISFs to relocate (NGOI 27). A staff member of a second NGO views the opportunity to participate in the resettlement process as incentive: "The very idea of participation by itself is already an incentive for them to move" (NGOI 26). Another respondent suggested "another form of incentive would be to assure them that they would be

provided with alternative livelihood, where they would be located, and then if their livelihood is in Manila, to provide them with transportation allowances or shuttle services," (IFBI 1) (further discussed in Section 6.5).

To summarize, compensation is offered for most resettlement schemes in Manila, with cash being the most common form. The failure to compensate for intangible losses (recommended by the Principles) and the inadequacy of most compensation packages identify an opportunity to improve compensation for future climate-related resettlement.

5.5 Principle 5: Protection of Livelihoods

Resettlement projects are often seen as opportunities for economic and social development that can incorporate DRR and CCA planning (Tadgell, Doberstein & Mortsch, 2015). Resettlement policies, projects and actors in Metro Manila incorporate some livelihood considerations into projects, explored here as economic livelihood and social network components.

5.5.1 Economic Livelihoods

The fifth Principle calls for resettlement initiatives to protect financial earnings during relocation, through income restoration, job and skill creation, and through environmental protection (Tadgell, Doberstein & Mortsch, 2015). Current policy and planning work to preserve existing livelihoods by maintaining access to city employment. For example, section 22 of RA 7279 (The Urban Housing Act) states: "to the extent feasible, socialized housing and resettlement projects shall be located near areas where employment opportunities are accessible" (DPWH, 2011, p 23). In the BRACE project's resettlement guidelines (AusAid, 2011a), loss of income was compensated with "job placement or enterprise development", although it is not clear is this is offered to every relocatee (p. 6). The PMRCIP project surveyed the current occupations and skills of the communities to be relocated, such as computer operation, tailoring, and electrical work (note that the majority of households did not claim to have a skill), in an effort to align livelihood opportunities at new sites to existing community skills (DPWH, 2011). Unfortunately, interviewee responses did not reflect these policy and project plans. No interviewees described initiatives for providing livelihood opportunities at new sites in Manila's current resettlement projects.

There have been some small resettlements in collaboration with civil society organizations (CSOs) and NGOs that include income opportunities (LGI 11; NGOI 22; NGOI 23: NGOI 24; NGOI 26). A resettlement project with CSO Kilos Maralita included a savings scheme and employment opportunities at the resettlement site for those with construction skills (NGOI 26). Sometimes called 'sweat equity' or 'benefit-sharing', this approach is recommended in the Livelihood Principle and is also offered with the NGO Gawad Kalinga (GK). GK encourages ISFs to work on their new sites because it develops "a sense of ownership and unity … [and] leads to sustainability, because families build relationships with each another" (Gawad Kalinga, n.d.). Sweat equity jobs can include stone and gravel work or painting buildings (LGI 11).

Environmental concerns were addressed in existing project resettlement guidelines. Both the PMRCIP and BRACE Projects included environmental indicators in their monitoring processes (DPWH, 2011). The BRACE project acknowledged the potential impacts relocation can have on local environments, including deforestation, soil erosion, and pollution, and added "[i]f the likely impacts on the environment and the population are unacceptable, alternative and/or additional relocation sites should be found" (AusAid, 2011a, p 21). Climate change considerations were not included in these projects. Interviewees did not discuss environmental considerations.

In many resettlement schemes, ISFs are required to purchase their new homes and/or land in incremental payments (OI 14; OI 15; OI 16; OI 17; OI 18; NGOI 27). To help ISFs afford their new homes, the Socialized Housing Finance Corporation (SHFC), the agency responsible for providing funding and loans for socialized housing (Socialized Housing Financing Corporation, n.d b), offers affordable financing packages such as the Community Mortgage Program (CMP) (SHFC, n.d. a, NGI 6). ISFs must form into and apply as a community association for a loan of up to PHP 250,000 ($5500 USD) to purchase a tract of land for housing (Bureau of Internal Revenue, n.d.; OI 14). The loan bears 6% interest per year and is payable over a maximum term of 25 years (SHFC, n.d. a). The accessibility and affordability of loans such as the CMP provides security as ISFs move, allowing them to relocate to safer sites while continuing to use existing incomes for daily needs.

The acknowledgement by actors and policy that income generation is important, and that existing community skills and available jobs at new sites must align, offers a foundation for future resettlement projects to foster economic development. Current actions, however, do not

appear to ensure income-generation at new sites, resulting in the rejection of these sites and prompting populations to return to potentially vulnerable areas.

5.5.2 Social Networks

Resettlement can interrupt community functions and unity, thus the protection of social networks is vital to resettlement success (Tadgell, Doberstein & Mortsch, 2015). Several interviewees were confident that the social components of livelihoods were being protected, insisting that families and neighbours are usually kept together during resettlement (LGI 11; OI 14; NGOI 25; NGOI 26).

> *"[I]n terms of social protection… it's the entire community [moved at one time]: the friends that they're living with, their neighbours, they will be transferred to a new place. So there's no displacement insofar as their social relationship."* (NGOI 26)

In some projects, steps are also taken to develop a new neighbourhood or homeowner's association to facilitate new social bonds (NGOI 26; NGOI 27). This partially meets the guidance of the fifth Principle, which states authorities should have "equal concern for the reconstruction of both intra- and inter-community social networks" (Tadgell, Doberstein & Mortsch, 2015, p 23).

Place attachment, or "the psychological, symbolic, and cultural significance that a community assigns to land," is a component of the social fabric of ISF communities, and can present challenges to relocation (Tadgell, Doberstein & Mortsch, 2015, p 16). Although place attachment is discussed in the Compensation Principle in Tadgell, Doberstein, & Mortsch (2015), interviewees identified with it more in a social relationship context, thus it is discussed as part of social networks and livelihoods in this research. Place attachment is present in many of Manila's informal communities, and may be a challenge when facilitating resettlement:

> *"Some people … have this culture wherein they started in this place, 'we were able to raise a good family, earn something, decent, blah, blah, blah, so we need to keep this place'"* (OI 20)

An NGO described one possible approach, called "tripping", that may ease place attachment sentiments by introducing ISFs to new settlement sites before relocation: "[NGOs explain that] 'this will be your new house...' They will have orientation. 'This is the city that you will live in'"

(NGOI 23). A similar technique was used for relocation of the Carteret Islands, called 'two-way hosting' (Edwards, 2013). In this example, exchange programs allowed island residents to stay with mainland families to familiarize islanders with the new site's surroundings before final resettlement. Mainland residents also stayed with island families to understand island place attachment and culture, building understanding and relationships that can ease resettlement tensions (Edwards, 2013). Introducing communities to new sites early can ease ISF uncertainty and help them adjust to the idea of parting with treasured sites.

Vulnerable groups have additional needs to address with sensitive resettlement planning (Tadgell, Doberstein & Mortsch, 2015), and there is evidence that their needs are being considered in existing DRR and CCA projects with resettlement components (AusAid, 2011a; DPWH, 2011). Religion, another focus of the fifth Principle, is prominent in many ISF communities in Manila, and interviewees commented that it has proved both detrimental and beneficial in the past. In one example, communities turned to church-based organizations to guide them through the resettlement process (OI 20), while in a second case ISFs were faulted by an interviewee for turning to prayer as their only response to flooding in their homes (NGOI 25).

There is substantial awareness amongst the resettlement actors of the social challenges that resettlement poses to ISF communities, including place attachment, vulnerable groups, and the importance of relocating with family and neighbours. Further improvements could include other recommendations from the Livelihood Principle, including designing sites with more public meeting places to facilitate socialization, and giving greater consideration of host community needs.

5.6 Conclusions on the 5 Principles

Interviewees were generally receptive of the 5 Principles of climate-related resettlement. They already saw similarities between the 5 Principles and existing resettlement planning and facilitation, evidenced in the willingness of interviewees to act proactively and maintain social networks during resettlement. Other insights from the Principles highlight some of the shortcomings in existing resettlement practice, such as the top-down approach to communication, inadequate cash-only compensation offerings, and lack of job opportunities at new sites.

One interviewee identified a critical component missing from the 5 Principles:

"I think the 5 [Principles] are sound. They have to be considered in all disaster relief and planning, especially in Manila. But I think [it is also important] … to consider issues of poverty and how people place a value on their own welfare. It seems [that] being in a danger area for them is secondary to the income potential [of staying at that site]." (NGOI 25)

This concern about poverty is also evidenced in the Permanent, Livelihoods, and Compensation Principles discussions, and acts as a reminder that climate change is but one of many concerns for informal settlers in developing nations.

None of the Principles were seen as inappropriate or impossible for Manila. Instead, the Principles identified multiple gaps where more action is needed to enhance existing resettlement infrastructure, in order to facilitate adaptation through resettlement. Thus, this research can conclude that the 5 Principles are applicable to the resettlement landscape in Manila.

Many of the recommended components from the 5 Principles are seen in the city's pre-existing resettlement infrastructure (e.g. policies, projects and practices). Thus, because many of the standards set by the 5 Principles are already seen in Manila's resettlement, DRR or CCA processes, a thorough application of the Principles should be achievable. In other words, incremental change rather than complete transformation should be enough to achieve the standards set by the 5 Principles.

6. THE FEASIBILITY OF RESETTLEMENT AS CCA

After reflecting on each of the 5 Principles for climate-related resettlement, each interviewee was then asked: "In your professional opinion, is this type of resettlement [climate-related] a feasible CCA/DRR strategy for Manila?" Twenty-six interviewees who responded (one interview was interrupted before the question could be asked), the majority (n=16 or 62%) stated they believed resettlement as outlined by the 5 Principles was a feasible adaptation strategy for Manila. Of these, 7 (27%) were administrative-level actors and 9 (35%) were community-level actors in resettlement. The remaining 10 interviewees (38%) did not believe resettlement was a feasible adaptation strategy, 6 (23%) from administrative-level and 4 (15%) from community-level roles (Table 4.2).

	Yes/Feasible	No/Not feasible
Administrative-Level	7 (27%)	6 (23%)
Community-Level	9 (35%)	4 (15%)

Table 4.2: Administrative- and community-level responses for the feasibility of resettlement as CCA

Every national and local government interviewee viewed resettlement as a possible adaptation strategy for Manila (Figure 4.5). The international funding bodies and private sector interviewees were more skeptical of the strategy. Interviewees representing the community-level perspective were also divided: NGOs and CBOs thought resettlement was a possible adaptation for ISFs, while many in the 'Other' category did not believe it would be possible due to the immense number of ISFs living in vulnerable areas in the city.
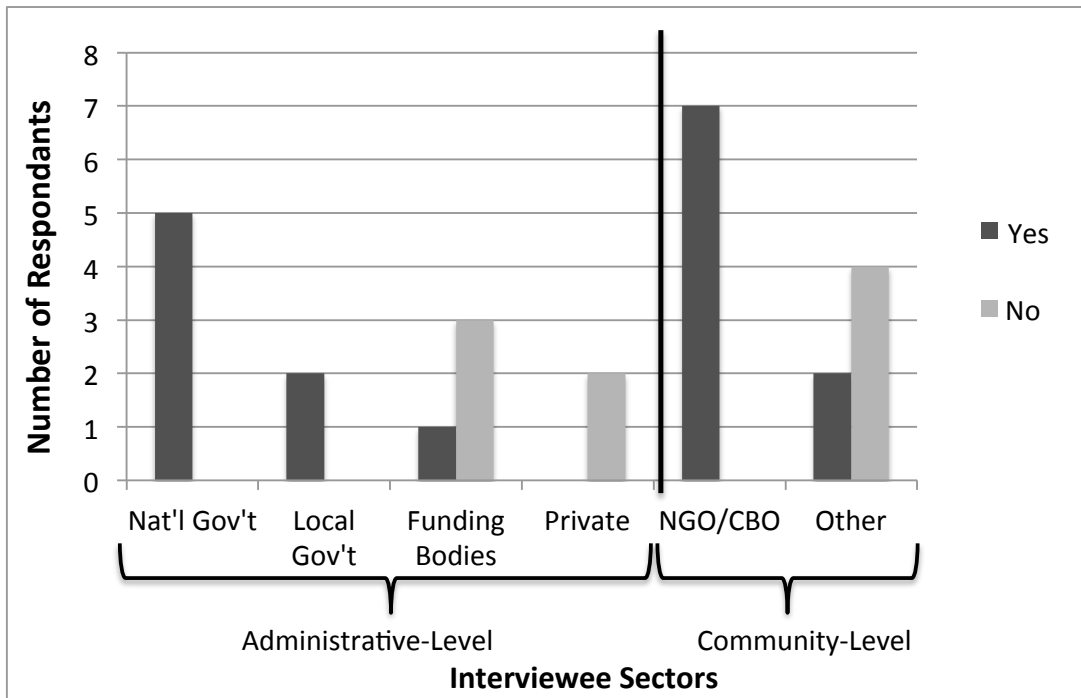
Figure 4.5: Breakdown by sector of responses to the question 'is resettlement a feasible CCA strategy in Manila?'

Interviewees who thought resettlement possible were unequivocal in their justifications:

> "In Metro Manila, we don't have to wait for a disaster of the magnitude of Yolanda to start resettlement. Right now, we have to do that already" (PI 12)

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[Interviewer] "[D]o you think that this kind of resettlement, for all of Metro Manila, is possible? Is it a feasible disaster preparedness option?"
"Yes, that's one of the best solutions" (LGI 10)

"Definitely we can, we can move people away from danger areas before disaster hit. Definitely there's a desire to do that … [w]ithin the [ISF] community, within the government, within the business sector. There is a desire to do that" (NGOI 27)

"Definitely because these are the very people … that we will always see in the papers, that are being evacuated now and then when there is a storm or flooding that happens. Because these people … are living beside the waterway or some of them are even on top of the waterways. So you can just imagine the danger that they are living in. So basically safe resettlement is part of the mitigation - in fact more of adaptation of climate change" (NGOI 26)

Other respondents went further to say that they believed resettlement as CCA and DRR was already occurring, referring to the SSISF Project (OI 14, NGI 7), or that CCA resettlement practices in Manila were imminent, but had not quite begun yet.

Those who felt resettlement was not a feasible DRR and CCA option voiced the common opinion that ISFs often desired to remain in-situ or return 'home' after disaster, despite the danger:

"'I would say, in Metro Manila, I'm not sure it's feasible at all… People just evacuate for a time, and then go back again to their places" (NGI 6)

"Because always our assumption is people don't want to leave where … they currently live now. So how do you encourage them to do so? Of course you address all of the socio-economic issues and not physically move them from here to there but give them the incentive … and also [build] the capacity for them to transfer from … [a place] prone to flooding to a place that's safer. And you can only do that if you improve their livelihoods and you improve the education. It's a long-term complicated challenge ... [a]nd not simply just moving them from one place to another place" (IFBI 4)

For some international funding bodies resettlement is simply not an acceptable strategy, for adaptation or otherwise, as it is against their mandates or can slow engineered projects with the time and resources required to find new land, establish settlements, and conduct relocation (IFBI 2; IFBI 3; IFBI 4). Others did not believe the approach would be possible for all of Manila's ISF population facing climate-related hazards (IFBI 3; OI 15; OI 16; OI 17; OI 20).

In conclusion, in the professional opinions of the majority of interviewed resettlement actors in Manila, resettlement as described by the 5 Principles is a feasible adaptation strategy for ISF communities within the city, but there remains a minority of actors who are not convinced of the feasibility of resettlement regardless of the safeguards used.

7. CHALLENGES AND POSSIBLE SOLUTIONS

Every interviewee, regardless of whether they felt resettlement was feasible as CAA and DRR voiced some conditions and concerns for using resettlement as CCA. Some of the more commonly mentioned challenges to employing resettlement as CCA, as well as some of the solutions proposed are highlighted in this section. Each interviewee was asked "what are the challenges or barriers you anticipate regarding implementing resettlement as CCA/DRR?" and twenty-three interviewees provided various ideas, averaging 3.3 challenges each (Figure 4.6).
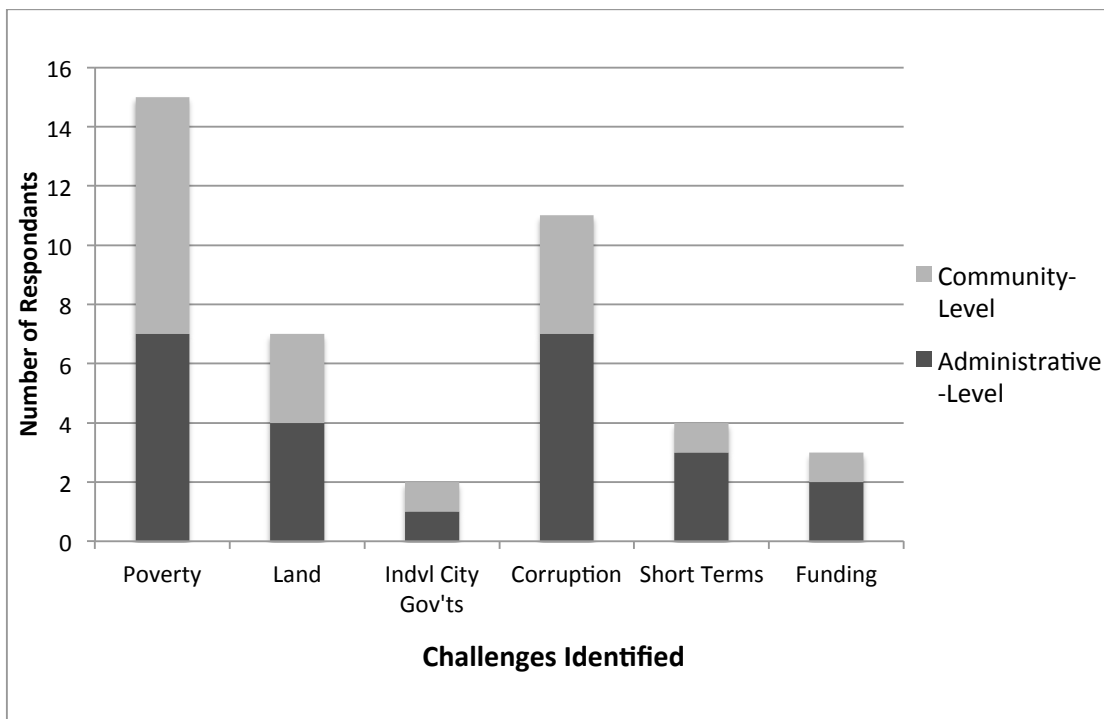
Figure 4.6: Challenges identified by interviewees, broken down into Administrative and Community-Level sectors.

While respondents were asked directly about anticipated challenges, the solutions discussed here were offered voluntarily. It should be noted that each challenge and solution were not matched by interviewees, but were paired together by the author after analysis.

7.1 Poverty

7.1.1 Challenges

Many ISFs in Manila work as part of the 'underground economy', which includes pedicab drivers, vendors, and other informal urban services (NGOI, 24). This creates an issue for resettlement projects that relocate ISFs outside the city: "how can you…relocate them to a place where their skills do not fit [and there is] no market for them if they are vendors" (NGOI 24). Working outside of the capital brings lower wages (NGOI 22), while keeping a city job means more expensive and timely commutes (PI 12; NGOI 22). Resettlement sites are often "in the middle of nowhere" (NGOI 22) and ISFs are "worried about … the thought of creating another community again, like a barangay" (NGOI 23), meaning ISFs must invest in rebuilding communities from scratch, both physically and socially (NGOI 22; NGOI 23; NGOI 24). The existing ISF poverty paired with the lack of job opportunities and services is increasing community vulnerability to climate change.

The most significant challenge to implementing resettlement as CCA in Manila is the issue of poverty. Interviewees consistently stated that ISFs would rather remain in known high-risk areas and maintain their livelihoods than relocate to safer areas and risk losing or changing their source of income[3] (IFBI 3; IFBI 4; NGI 5; NGI 6; LGI 11; PI 12; PI13; OI 15, OI 16; OI 17; OI 18; NGOI 22; NGOI 23; NGOI 24; NGOI 25).

> *"Because everything is better here [in the city]. Money is easier to be earned if you're in the city. That's number 1. [Number 2] [t]hey have better social services here. Number 3, they are voters here. For instance in Makati, even if there are informal settlers that have left Makati they still vote here. They are still considered residents of Makati because they have privileges here like free medical services that cannot be offered by poorer municipalities" (NGI 6)*

Higher daily incomes paired with the abundance of services available in the city are of significant importance to ISF communities.

Poverty is anchoring ISFs to the city and high-risk areas because the value of resettlement exchange is unfair in the ISFs' eyes:

> *"…forced or voluntary relocation means wherever they will transfer is [supposed to be] a much better place, but if the exchange, for example, you have a piece of*

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[3] Generally, ISFs understand resettlement to be off-site, meaning to another city within Metro Manila or to a province bordering the megacity.

land but you're so far from work you can't pay for this, even if it's going to be in your name, the exchange is not equal. It's still better for you to stay in an informal housing settlement that's near your job, near your work, and near health services and your schools than have a [land] title [but nothing else that allows you] to feed your family. So the exchange is not there." (PI 13)

With few reasons to remain in new sites, it is not uncommon for ISFs to sell their new land titles and return to their lives in Manila (NGI 6; PI 12). Until livelihoods and community viability are improved in new resettlement sites, ISFs will continue to reject resettlement regardless of physical safety:

"They eat at least here [in Manila]. Then they die. Then, there [off-city resettlement sites], they don't eat, they die. So which one? Eat and die, right."
(IFBI 3)

The 5 Principles for climate-related resettlement state that community support for resettlement is often influenced by who bears the cost and who is benefitting from the move (Tadgell, Doberstein & Mortsch, 2015). With current resettlement approaches, ISFs see few benefits to relocating because the cost rests heavily on their shoulders. Until this dynamic shifts, poverty will remain the greatest challenge to resettlement as CCA.

7.1.2 Possible Solutions

One heavily-favoured approach to lessening the challenges poverty has on resettlement initiatives is to resettle ISFs in-city, near livelihoods and family. Ten interviewees proposed this strategy (IFBI 1; NGI 5; NGI 6; OI 14; OI 15; OI 16; OI 17; OI 18; NGOI 24; NGOI 27). In-city resettlement is "the best option [to provide] a holistic package that will be acceptable to everybody" (NGI 5), referring to a package of tools ISFs can use to manage poverty, including access to work, education, basic social services, and physical safety.

The National Government, often with the most influence in resettlement planning, is particularly supportive of this initiative:

"[T]he government is considering that whenever [in-city relocation] is feasible, because … we really agree that's what will work. Because we wanted to avoid displacement of people, because this is where their social networks are, this is where the kids are going to school, and all opportunities, especially if you are used to living in the city, all the better opportunities are here in the city" (NGI 6)

Some drawbacks to this option include higher property loans and rent for ISFs (NGI 6; OI 18), and a lack of technical knowledge to plan for in-city sites (OI 14). The SSISF Project is currently implementing this strategy.

7.2 Land Availability and Affordability

7.2.1 Challenges

Both administrative-level and community-level interviewees expressed concern about the availability and affordability of land within the city for in-city resettlement (IFBI 1; NGI 5; NGI 6; LGI 10; OI 20; NGOI 24; NGOI 26). Land that is both environmentally safe and acceptable to the relocating community can be difficult to find in the dense urban sprawl of Metro Manila (IFBI 1; LGI 10; OI 20; NGOI 26). Even when plots are identified, there may not be "clean land titles" or a definitive owner to purchase from, and the land is often expensive (IFBI 1; NGI 6; OI 20), as described in a conversation amongst a group of interviewees:

> *"Actually, there's so many areas where we don't know who the land owners are or something like that. The agencies that are in charge of keeping records on the land don't have complete records" (OI 15)*
> *[Interviewer] "So it's not just finding an open space, it's untangling the trail behind it?"*
> *" Yes" (OI 15, OI 17)*
> *" Problems with ownership, land use. Titles…" (OI 17)*
> *"…duplications with titles… (OI 18)*
> *" …or untitled land…" (OI 17)*
> *" …land grabbers." (OI 15)*

One NGO interviewee explained how unaffordable land can hinder resettlement projects: "the unit should be 400 000 [PHP] per unit [apartment], … But if you were to factor in land, which is costing - some of them are even 20 000 [PHP] per square meter! Wow, that's really very expensive." (NGOI 26). Should in-city resettlement be considered as a strategy for climate change adaptation in Manila, finding appropriate and affordable land will be an issue.

7.2.2 Possible Solutions

Resettling informal settler communities within an already dense city will require innovative use of a limited area, leading many Interviewees to think vertically for the solution.

"Look at Metro Manila right now. Ninety percent [of the buildings are] not high – 95% is not high rise. Only maybe 5%, even less than that. In other words, think of every structure, think of every house … double all the heights. OK? You would end up with only half of Metro Manila … In other words, we still have a lot of space … So our solution now is don't move them away, let them stay here where this is livelihood, just build up, ok? That is what we are doing now." (NGOI 27)

Medium- and high-rise resettlement structures of 3-10 stories, also termed 'high-density housing', can reduce the cost of land for resettlement planners or communities while accommodating more ISFs near their livelihoods (NGI 5; NGI 6; NGOI 27). This approach is already being used with the People's Plans associated with the SSISF project.

One NGO involved with in-city ISF resettlement mentioned they are conducting environmental site assessments for new locations and are considering flood-proof architecture, such as leaving ground floors open to allow flooding to pass through with minimal damage (NGOI 27). Cost is a concern, for which interviewees prescribed more government subsidies for in-city housing (IFBI 1; NGOI 26; NGOI 27). In the long-term, however, costs for in- and off-city relocation may balance out:

"I think on-site and off-site resettlement is almost the same in terms of cost. If you're putting up high rise building, it'll be more expensive at the start, but over time, because … you have to have the community be sustainable for at least 5 years in off-site resettlement site, so over time the cost for putting up a high-rise building and off site resettlement is the same" (NGI 6).

With increased financial support, carefully designed vertical housing within the city may be one promising approach to employing resettlement as CCA in Manila.

7.3 Politics

7.3.1 Challenges

Politics at the national, city, and local levels were regarded as a significant challenge for resettlement as adaptation. There are three distinct challenges identified by interviewees that politics can present to resettlement: multiple city governments (n=2), corruption (n=11), and short terms for politicians (n=4).

Metro Manila is composed of 16 cities and 1 municipality each with its own government and policies (MMDA, n.d.). This decentralized form of city government results in significant confusion and disagreement on frameworks for resettlement and DRR (IFBI 1). Questions of

"how [do DRR officials] do a vulnerability assessment, [what] should be your triggers for undertaking [a vulnerability assessment], [and what are the] triggers for policy setting for land use" led one International Funding Body to express their frustration:

> *"For goodness gracious … there are several people that are saying 'this is the framework', 'this is the framework' 'this is the framework'. So there's no accepted, well standard vulnerability assessment framework for which you have to anchor your succeeding interventions" (IFBI 1).*

Several agencies have jurisdictions that span the cities, including the Metro Manila Development Authority (MMDA) and the Social Housing and Coordinating Council (SHFC), but have little influence on policy or on mandating coordinated action (NGOI 27). Each city allocates different budgets for DRR and resettlement, thus resettlement and DRR action varies throughout the capital (IFBI 1; NGOI 22; NGOI 23; NGOI 24). Some cities allocate money for the ISF-preferred in-city resettlement, including Taguig, Quezon, and Pasig, while others cannot afford or choose not to do the same (IFBI 1). Thus, while resettlement actors call for integrated frameworks across the city governments (IFBI 1; NGOI 27), there is not yet a comprehensive resettlement and DRR strategy for Metro Manila.

Local government corruption also hinders resettlement schemes by permitting ISFs to return to cleared areas in exchange for election votes (IFBI 3; NGI 6; NGI 8; OI 20; NGOI 24). Sadly, this is not the only scale of corruption that occurs in Manila to impede resettlement. There are also claims that the PHP 50 billion fund for the SSISF project is unconstitutional and may be illegal. The 50 Billion Fund is part of the Disbursement Acceleration Program (DAP) Fund, a stimulus package under the current Aquino administration which pooled government savings from other federal projects and directed them to high-impact budgetary programs in an effort to fast-track public spending (Fajardo, 2014). After a 2014 investigation, the government was found to be misallocating 'savings' from other government programs into the DAP fund (Hofileña, 2014). Two interviewees raised this corruption issue (IFBI 1; OI 14), with one explaining:

> *"[A]ll of a sudden we heard that there was this fund being given by the president and that 50 billion is part of that fund, questionable fund, that's why I think that's one of the reasons why the, the program is slow." (OI 14)*
> *[Interviewer] Slow because they don't know if there's money there or not?*
> *"Or if legally it can be released." (OI 14)*

The politics surrounding the PHP 50 Billion Fund remains uncertain, and threatens to significantly hinder the People's Plans initiative moving forward.

Finally, the short-term political agendas of politicians also pose a challenge to anticipatory planning for climate change (IFBI 1; IFBI 3; IFBI 4; NGOI 27). At the national level, a politician can hold office for six-year terms, while the local government holds three-year terms (IFBI 3; NGOI 27). Politicians' standpoints are "'why should I think about the next 50 years? I spend all the money now just to think about fifty years time?'" and "'why do I have to think about climate change, which is going to happen in 2050 and 2100, when my project is to be implemented now?'" (IFBI 4). So, changing agendas or approaches to include possibly controversial climate change adaptation planning, over timespans that vastly exceed political lifespans, may prove difficult (IFBI 1).

7.3.2 Proposed Solutions

No interviewee identified any possible solutions to the political challenges for resettlement in Manila.

7.4 Funding

Interestingly, financing of resettlement for adaptation was only a concern for three administrative-level respondents (NGI 8; NGI 9; NGOI 27). Others felt that the recent DRR and CCA acts (RA 101221 and RA 7279) (NGOI 22; NGOI 23; NGOI 24), and the 50 billion pesos fund set aside for the SSISF Project (IFBI 1; LGI 11; NGOI 27) would be adequate to fund future DRR and CCA initiatives, including resettlement. None of the respondents discussed applying for CCA-project funding from international sources. As funding was not identified as a significant issue for the adaptation option, no solutions or improvements were proposed.

7.5. Other Proposed Solutions: Satellite cities

Four interviewees suggested a different approach to off-city resettlement: the establishment of 'satellite cities' (PI 12; PI 13; OI 20; NGOI 27). This is based on the 'live-work-play' model that is popular in Manila now, where cities are designed to host a wealthy individual's home, work, and leisure activities within a contained area (NGOI 27). In this model, the urban poor live on the periphery, and provide services as drivers, vendors, waitresses, etc – "there's a role for everybody" (NGOI 27).

The satellite cities plan proposes the relocation of government offices, businesses, or other economic powerhouses outside of Manila, recreating these live-work-play enclaves where there is space for a poorer class to expand around the periphery (NGOI 27). By moving the source of income first, the assumption is that ISFs from Manila will voluntarily relocate to the satellite city, thus relieving Metro Manila of urbanization pressure and perhaps clearing some waterways at the same time (PI 12; PI 13; NGOI 27).

> *"So we just have to generate those activities, economic activities, outside of Metro Manila. But business will not move there unless there's something in there and it's a chicken and egg" (PI 12)*

Concerns remain, of course, about the effectiveness of this strategy. Interestingly, cost is not one of them, as interviewees explained that the money from selling old land and office buildings in the city or government assistance would help fund the shift (PI 12; PI 13; NGOI 27). Other questions include which government offices or business move first and how can they be persuaded to do so? Would ISFs from Manila leave to populate these new cities, or would a new influx of migrants from rural areas instead compete for the jobs? Will this strategy offer any opportunities for ISFs to escape poverty, or simply allow existing poverty to continue in a new geographic area? While this option was discussed seriously by a small group of respondents, the amount of uncertainty surrounding its effectiveness makes it an unlikely method for conducting resettlement as CCA at this time. It the future, as coastal lands are eroded or submerged, this strategy may be revisited.

8. DISCUSSION

Recalling the research question for this paper: *'What is the feasibility of implementing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila, Philippines?'*, this section synthesizes perspectives from interviewees presented above to explore this question. The main findings from the above sections are summarized in Figure 4.7.

Current Resettlement	• Community preparedness and education are the current CCA and DRR priorities
	• The PMRCIP, BRACE, and SSISF Projects use resettlement as a component of CCA/DRR initiatives
The 5 Principles	• There is some evidence of each principle in current resettlement
	• Interviewees were receptive to each Principle, but commitment is needed from all actors to enact each
Future resettlement as CCA	• The majority of respondents (62%) believe resettlement as CCA is feasible for Manila
	• Challenges to implementing climate-related resettlement include poverty, land availability, and politics

Figure 4.7: A summary of the findings organized by research subquestions.

There is a broad recognition across many of the actors interviewed that action must be taken in regards to climate change. The DRR and CCA laws develop the context for the Philippines to take action against these environmental challenges and allows for the possible implementation of many types of climate change adaptation initiatives. Whether these initiatives will be undertaken or not is the topic of another research project.

8.1 Commonality Across Sectors

As seen in Table 4.2, the majority of respondents (62%) believed it would be possible to use resettlement as CCA in Manila. While roughly a third did not think it feasible, it is important to observe that the response rates for the key questions were in roughly the same proportion between the sectors. For example, there were five administrative-level actors who did not believe resettlement as CCA to be feasible, and four community-level. Each of the challenges to resettlement were identified by both administrative-level and community-level actors at a similar rate. This suggests that attitudes, approaches, and concerns surrounding resettlement, are generally shared across sectors and scales. In other words, the divide between administrative-level and community-level resettlement actors is minimal, and unlikely to be a barrier to implementing resettlement as CCA in Manila. While there was not a consensus about feasibility, there is a sense of commonality across scales.

8.2 Poverty Reduction and Education as Early CCA

As stated at the outset, resettlement needs to be a carefully planned and implemented strategy because it has often proven to be a disruptive and damaging process for resettlees (UNHCR, 2014). Thus, while there is awareness of the environmental threats facing ISFs and the need for CCA in Manila, there are also gaps that must be addressed before any adaptation initiatives relative to resettlement can be implemented.

Analysis of the 5 Principles suggests that poverty is a major obstacle to resettlement success because the ISFs' need for income is often of greater priority than their physical safety. So, perhaps a practical approach to overcoming this obstacle is to make poverty reduction the starting point to any climate change adaptation for ISFs in Manila, and should be maintained as the foundation throughout all CCA projects. Economic development projects, including skills training and income diversification, can shift ISFs to a stronger financial position. As ISFs become more secure economically, other priorities, such as climate change, can be introduced. One example of this strategy is seen with the Sampan dwellers of Vietnam (DaCosta & Turner, 2007). This community, once dependent on high-risk coastal areas for their fishing livelihoods, was trained in aquaculture before their resettlement. This training allowed for a small shift in livelihood, yet one that diversified incomes and eased their dependence on coastal areas. Once the Sampan dwellers' were confident in their new livelihoods, they were resettled slightly further inland where aquaculture ponds were constructed. To assist ISFs with adaptation is to assist them with all of the daily challenges they face, thus it can be concluded that laying a foundation of poverty reduction initiatives to build up from is a core component to effective climate change adaptation.

When discussing early planning for resettlement, the UNHCR's report *Planned relocation, disasters, and climate change* highlights the importance of "laying the groundwork by raising awareness and beginning national conversations on the need for planned relocation" (2014, p.19). Using this thinking, an early step in introducing ISFs to climate change threats and the need for adaptation may be done through more education and advocacy about how climate change will impact ISF communities. As seen in the discussion on the Communication Principle, community awareness activities are present in Manila; however, these efforts need to be more accessible to ISFs by improving the language and tools used to disseminate information. As summarized by one interviewee:

> *"Relocation is the last option. It shouldn't be the first option. The immediate options should be capacitate, help teach them how to adjust, help them assess their risks, hazards and vulnerabilities. At the last of it, if it's really not possible [to capacitate ISFs in situ], then relocate." (NGOI 22).*

With an improved income and thorough education on the risk of living in hazardous areas, ISFs may be more receptive to adaptation initiatives including resettlement, or opt to remove themselves from unsafe areas without the need for resettlement projects.

8.3 Opportunities for CCA in Existing Resettlement Infrastructure

The existing resettlement infrastructure in Manila already provides the opportunity to enact the 5 Principles. A recent article labeled Manila as a "hotbed of progressive housing solutions", identifying the SSISF Project and in-city and medium-rise resettlement sites as possible solutions to Manila's "housing mess" (Hodal, 2013). This research sees similar potential in the 'in-city' and 'medium-rise building' approaches to resettlement, not only for improving housing, but also for incorporating DRR and CCA considerations into resettlement at the same time.

Relocating ISFs in-city and near the original sites aligns with the fifth Principle - Protection of Livelihoods. Communities and families are able to move together while remaining near jobs, schools, markets and other familiar services. Environmental and hazard assessments at new sites are being conducted to ensure they are safe from disaster risks and future climate threats. Using medium-rise buildings addresses the fourth Principle by offering an opportunity to remain near former neighbourhoods in a new structure, viewed by some as an incentive to move from high-risk areas. Most importantly, both initiatives are changing the relationship between resettlement authorities and resettling communities for the better, by encouraging communication, building trust, and addressing the needs of both groups. This improved relationship eases the implementation of each Principle within the megacity, and signals optimism for the future of resettlement as DRR and CCA in Manila.

There is an opportunity now to conduct resettlement according to the 5 Principles through the SSISF project. The project conforms to all of the principles in some capacity. It encourages *proactive* movement before hazard events, and provides some *compensation*. Communities are encouraged to *participate* through the People's Plans, which prevents fear and misinformation about relocation, while fostering a sense of ownership that supports a

permanent move. Finally, the SSISF project *protects livelihoods* by employing in-city or near-city relocation into medium-rise buildings, keeping social networks intact and preserving income sources. As it functions now, the project is a fine example of 'effective' resettlement currently underway in Manila; however, with some incremental changes to policies and practices, the SSISF project could be the foundation for resettlement for CCA as guided by the 5 Principles.

9. LIMITATIONS

Some key resettlement actors at both the administrative- and community-level are absent from this research, including the NHA, SHFC, CCC, JICA, and the MMDA. These actors did not respond to requests to participate in this research. Additionally, it was beyond the scope of this research to capture the perspectives of individuals in informal settler communities themselves. The ISF voice is important to understand if resettlement, or retreat in general, is to be considered a potential adaptation option amongst those whom it is intended to assist. A sister research project that investigates the individual ISF perspectives on resettlement as CCA as guided by the 5 Principles is important to further understand the feasibility of the adaption strategy in Manila.

The research was conducted 8-10 months after Typhoon Haiyan. Relocation and managed retreat was conducted in regions affected by the typhoon as a part of the recovery effort, and thus interviewee responses may be biased to reflect their experiences with and exposure to this recent event which is not necessarily relevant to Manila's resettlement landscape. Resettlement in Manila is complicated, involving multiple actors, policies, and projects. The research presented here is not a complete assessment of all the actors in the city's resettlement landscape, but rather focuses on administrative- and community-level implementers of resettlement and provides a narrative of their thinking on resettlement relating to DRR and CCA

10. CONCLUSIONS

Analysis of existing resettlement policy, projects, practice, and perceptions in Manila, using the 5 Principles as a guide, identified interest amongst Manila's resettlement, DRR, and

CCA actors in using the strategy to enhance CCA in the city. Several areas for improvement were also highlighted, including better communication, longer-term settlement planning, more appropriate and adequate compensation packages, and better job creation and opportunities at new sites. These were necessary to optimize the success of this adaptation option. Opportunities to implement the 5 Principles through existing policy and projects are apparent, and the research revealed that only incremental changes to existing resettlement approaches are needed. Using the 5 Principles to guide understanding of 'resettlement', two thirds of interviewees believed climate-related resettlement a feasible adaptation strategy for their city, provided that poverty considerations are thoroughly incorporated into projects and plans. The existing soft and hard resettlement infrastructure in Manila provides a promising model for resettlement in which the 5 Principles can 'value-add' to ensure DRR and CCA actions include significant considerations for ISF safety.

Chapter 5: Thesis Conclusions

Climate change is exacerbating environmental threats to vulnerable populations, requiring more drastic adaptation strategies. Resettlement, while contentious for its disruptive nature, is becoming a legitimate adaptation option for some of the most vulnerable populations. This thesis has identified and outlined resettlement as a CCA strategy for informal settlements in less developed nations and tested the applicability of the 5 Principles for climate-related resettlement in Manila, Philippines. Additionally, it assessed the feasibility of employing resettlement as a possible CCA strategy for the ISFs living along Manila's riverways. The findings show interest amongst actors in resettlement, CCA, and DRR for implementing the strategy, but there was concern that the poverty in informal settler communities and the complicated political arena will hinder its effectiveness.

1. THE CLIMATE CHANGE ADAPTATION-DISASTER RISK REDUCTION-DEVELOPMENT NEXUS

The CCA, DRR, and Development nexus was introduced at the outset of this thesis to detail the interconnectivity of the three disciplines (Figure 1.1). This interconnectivity has been best demonstrated in the research findings of Chapter 4, which detail the complexities between poverty reduction and CCA. It is concluded that poverty may be keeping ISFs focused on earning a daily income to survive, and pushing climate change and hazard priorities to the wayside. Yet, while this nexus creates a challenge to implementing effective CCA for vulnerable communities, it can also be part of the solution.

The nexus sets the foundation of Chapter 2, which distilled theory, practice, and lessons learned from each discipline to develop resettlement guidance for climate change. The link is throughout the institutional guidelines used to structure the 5 principles. The Nansen Principles call state that "real, transformative and sustainable solutions will come through long-term development … [This] require[s] policy frameworks, investments and capabilities that the humanitarian system alone cannot mobilize " (Norwegian Refugee Council, 2011). The UNHCR's *Planned Relocations, Disasters and Climate Change* guidelines (2014) dedicates a section to understanding lessons from development-induced displacement and resettlement (Section 4, p

15). A second UNHCR guideline *Protection and Planned Relocations in Climate Change* (Ferris, 2012) consulted the development safeguard policies of multilateral development banks to minimize the risks that accompany the use of resettlement for any purpose.

Chapter four suggests using the SSISF project, which has qualities from all three disciplines from the nexus, as a model for climate-related resettlement. The in-city, medium-rise buildings used in the People's Plans preserve ISF employment and maintain social and emotional ties at old settlement sites. These livelihood links are key components to development, and may assist those living in dangerous areas to improve their economic situation enough to begin to consider other threats, such as climate change and disasters. Similarly, the 'satellite cities' strategy of building economic activity away from areas of high-risk to draw ISFs to safer areas, is framed as economic development planning but simultaneously benefits the DRR and CCA agendas as well.

Some of Manila's resettlement actors also understand the challenges within the nexus, and are seeking solutions within it. As two interviewees summarized:

> *"Because we look at it in a broader perspective not only about the impact of climate change on where you live but how you live your life. So it includes health, [because] health is a major issue. We also think about education and sources of income. If you try to improve on those basic rights and needs of the people then you also try to improve their capacity to address climate change or the impacts of climate change." (IFBI 3)*

> *"[Discussing resettlement as DRR and CCA projects] Well it's a hand in hand … set of activities … [T]hey're not exclusive. They're actually all related." (OI 20)*

Just as the challenges of one realm can interfere with and complicate Development, DRR or CCA projects, represented by the centre of the diagram where the 3 realms intersect, the solutions prescribed for one realm can support initiatives across all three. It is in this intersection of the three realms that well planned and executed resettlement can act as a solution.

2. INFUSING POVERTY REDUCTION INTO THE 5 PRINCIPLES

There are two common narratives about poverty in the resettlement literature consulted for this thesis: that which results from resettlement projects, and that which exists before resettlement. The former narrative consists of concerns about loss of income and social

disarticulation, remedied with policies and planning around adequate compensation, and skills and job development (WB, 2004; McDowell, 2013; Hong, Singh & Ramic, 2009; Bang & Few, 2013). The latter narrative details how pre-existing poverty keeps communities in high-risk areas because they cannot afford to reestablish at new sites (DaCosta & Turner, 2007; Rashid, Hunt & Haider, 2007; Oliver-Smith, 1991).

The findings from this research align best with the latter narrative from the literature, identifying concerns about pre-existing poverty and how these issues could hamper resettlement success. The challenge of pre-existing poverty has been a hurdle to resettlement for decades. A conclusion from a 1982 study in the Peruvian Andes also summarizes the findings of this research: "people faced with a choice between ecological hazard and social hazards will accept the ecological risks because the odds, and perhaps even the consequences, of the alternative social risks may be much worse" (Oliver-Smith, 1982, in Oliver-Smith, 1991, p. 20). A more recent study investigating economic and environmental motivators for resettlement amongst slum dwellers in Bangladesh found in the cases where no compensation offerings were enough, communities were most concerned about poverty, the moving costs of relocation, and their social and economic networks than about environmental risks in their communities (Rashid, Hunt & Haider, 2007). These concerns were present in the Manila context as well.

Poverty is a significant concern amongst resettlement researchers, and the interviewees in this research also call for considerations of poverty within the 5 Principles. Poverty reduction methods discussed in the literature could be applied to address these concerns, such as offering supplemental compensation above the usual compensation (Al Atahar, 2014), compensation packages designed as multi-option packages to allow for the differing needs of ISFs (de Wet, 2001), livelihood diversification (DaCosta & Turner, 2007; Badri et al., 2006), plan to relocate and restore businesses (ADB, 1998), and providing access to loans (Kurshitashvili, 2012). These strategies all complement one or more of the existing Principles. For example, the multiple or increased compensations fit into the Compensation and Incentive Principle. The livelihood diversification, business relocation, and loan access plans slot into the Protection of Livelihoods Principle. The repercussions of these plans benefit the Permanent Principle by improving life at new sites, which encourages long-term habitation. Thus, instead of creating a sixth Principle for poverty reduction, perhaps each principle only needs to be infused with more opportunities for poverty reduction measures.

3. NEXT STEPS AND FUTURE RESEARCH

The research explored the perspectives of many of Manila's resettlement actors and it also provides insights for several next steps for this adaptation strategy. Further efforts for poverty reduction, either as stand-alone development initiatives or incorporated into other CCA and DRR projects, are important to develop ISFs to a level of livelihood security where they can begin to consider other threats, including climate change. Following the suggestions of interviewees, further efforts are also encouraged to communicate with ISFs about the projected impacts of climate change on their location, as well as all associated adaptation options. As outlined in Chapter 2, and by several interviewees, these talks are best conducted with information that is understandable, accessible, and culturally appropriate.

The SSISF Project shows promise for incorporating CCA into Manila's existing resettlement infrastructure. As the project is ongoing, the results of the People's Planning process should be monitored with careful attention to ISF welfare and physical safety regarding hazards and disasters. From these observations, it may be possible to determine if there are strategies to improve or advance the project with further CCA considerations (e.g. policies, services, infrastructure).

Findings and conclusions from this study invite many opportunities for future research. First and foremost, this research should be repeated with ISF communities living along Manila's riverways. The perspectives of these ISFs are a critical voice that must be juxtaposed with that of the 'implementers' of resettlement, DRR, and CCA presented here. Understanding the needs and preferences of those whom we seek to protect could invite new CCA methods to explore for Manila's ISFs.

The findings indicate that communication failures between actors, corruption that allows ISFs to return to danger areas, and insufficient compensation are among the key barriers to implementing the 5 Principles in Manila. Research that explores how to improve these issues is needed to advance the applicability of the CCA strategy in the city. This research could include assessing the effectiveness of strategies identified in this analysis, such as using graphic flood footage to communicate to ISFs. It could also be conducted as inductive research that tests new approaches presented in literature, including testing various compensation package options. Additionally, further research is needed regarding possible methods to incorporating poverty

alleviation and reduction measures into climate-related resettlement planning and practice, including the 5 Principles.

Other avenues for future research include evaluating the 5 Principles in other developing city contexts. Applying these Principles to informal settler communities exposed to riverine floods in other less developed nations will provide broader insights into the applicability of the 5 Principles for climate-related resettlement. Further insight on challenges and possible solutions to climate-related resettlement in Manila uncovered in this thesis (e.g. political issues, land affordability) is also needed. Each challenge poses a barrier to implementing effective and timely protection from climate threats.

Looking further ahead with respect to the adaptation strategy, conducting resettlement that is respectful and advantageous to communities can give more validation to the retreat option as a whole. Demonstrating how retreat can be beneficial to livelihoods as well as physical safety may encourage others to consider the option organically, without government direction and the potential for disruptions that come with it. In the words of one interviewee,

> *"But surely the grandest goal of all this - it would be really good if the communities themselves would offer relocation on their own rather than government initiated. That would be really the change of mindset." (NGOI 22)*

Appendices

Appendix A: Email Contact Script

Dear [Participant],

I am writing as a Masters student from the University of Waterloo, Canada to arrange a short meeting to discuss my research on how strategies for resettlement could be used to protect vulnerable populations from future climate change impacts and hazards here in Manila.

The research examines the current uses of resettlement in the mega city to address climate or associated environmental threats, and the potential future use of resettlement as climate change adaptation/disaster preparedness for vulnerable informal settlements. For further information, please find attached my research proposal.

I am contacting you because I would like to interview you or, if you are unavailable, an associate on the work of [agency/group] regarding resettlement strategies in Manila. Specifically, I am interested in your thoughts on using the existing resettlement infrastructure as a method for climate change adaptation and disaster preparedness in Manila. I feel your experience with [related experience of the contact] would be a perspective of great value in my research. Additional interview information, including interview procedures and ethics, is attached.

I look forward to hearing from you shortly. If you are unable to meet with me, or if you feel a different colleague would be better suited to speak with me, I would appreciate if you could forward this email on to other staff that may be available.

Kind regards,

[Researcher name, affiliation, and contact information]

Appendix B: Contact Email Attachment 1 - Research Proposal

<u>Assessing the Feasibility of Managed Retreat as</u>
<u>Climate Change Adaptation in Manila</u>

<u>Summary</u>

The Philippines, and the capital Manila in particular, is at extreme risk from intensifying climate change impacts. Engineered adaptation strategies, including dams, dikes and river dredging, are abundant throughout the city while non-structural adaptation measures are less common. One non-structural adaptation strategy is managed retreat, the facilitated movement of populations away from at-risk areas. Managed retreat can be conducted through resettlement, suggesting that the existing resettlement infrastructure for informal settlements in Manila could be an avenue for conducting future climate change adaptation. This research will investigate the feasibility of employing managed retreat as climate change adaptation using the existing resettlement infrastructure in the coastal megacity of Metropolitan Manila. It will be written as two manuscripts. The first will be situated in secondary data and deduce how environmental and climate hazards are considered within documents relating to current resettlement practice in Manila. The second manuscript will use the results of key informant interviews to understand how environmental and climate hazards are and could be addressed using resettlement in Manila. The final thesis submission will be a compilation of the two manuscripts with transitional chapters.

<u>Introduction</u>

The Philippines is at extreme risk from intensifying climate change and natural disasters (AusAID, 2011). This is especially evident in the capital Manila, which is positioned on an alluvial plain and surrounded by three flood risks: river, coast, and lagoon (Porio, 2011). These risks combined create the need for immediate adaptation strategies to protect vulnerable populations. The Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report proposed three adaptation strategies to intensifying climate threats: *protect*, *retreat*, and *accommodate*, which stand as the foundations of adaptation research today (Bijlsma et al., 1995). Existing and proposed protection projects in Manila, including the Metro Manila Wastewater Management Project (MWMP) and the Pasig-Marikina River Channel Improvement Project (PMRCIP), suggest new or improved engineered adaptation structures, also know as hard measures, to reduce urban threats (DPWH, 2013, DPWH, 2011). These measures are examples of Manila's already firm grasp on the *protect* and *accommodate* adaptation strategies, meaning that the strategy of managed *retreat* is least prevalent in the coastal megacity.

There are two forms of managed retreat[4] discussed in the literature: realignment[5] and resettlement[6] (Alexander, Ryan & Measham, 2011; Locke, 2009). Metro Manila has well-established resettlement practices and policies to relocate informal settlements that emerged during the rapid urbanization of the city over the past several decades (DPWH, 2013, DPWH, 2011; Shatkin, 2004). This resettlement process is known to be controversial, highly politicized, and inadequately implemented, often with devastating outcomes for those being relocated. It is not yet understood how introducing climate change adaptation goals into an already-complex process will impact all actors involved. While these existing resettlement practices may offer an avenue for conducting managed retreat in Manila, these applications have yet to be thoroughly explored academically.

In the past, resettlement in Manila has been implemented by the government for a number of reasons, including insecure land tenure, private interest in occupied land, and small-scale environmental concerns (e.g. settlements producing river pollution which obstructs river flow) (Shatkin, 2004). Resettlement in response to flooding and anticipated climate threats has been conducted on a small scale in Cavite City (Sales Jr., 2009) and Marikina City (Porio, 2011), Metro Manila, Philippines. In both cases, the authors mention the strategy is but one of several response options, without any in-depth discussions of logistics, policy, or effectiveness. Sales Jr. (2009) recommends managed retreat as a local adaptation strategy (pg 401), suggesting that the time to examine the feasibility of resettlement as a form managed retreat for Manila is dawning.

In the last decade, academia has begun to assess the feasibility of managed retreat for coastal climate change threats. These assessments are all conducted in the developed world context with a focus on realignment-style managed retreat strategies, not resettlement (Abel et al., 2011; McGlashan, 2003; Reisinger, Lawrence, Hart & Chapman, 2014). In Manila, climate adaptation strategies have been largely centered on hard options that allow populations to adapt in-situ, creating an opportunity for research to explore soft adaptation measures like managed retreat. The literature that has examined resettlement in Manila describes the process from bottom-up or community level perspectives, allowing an opportunity to explore the process from a multi-scale (international to community level) comprehensive point of view. The following research is proposed to address these gaps.

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[4] Managed Retreat: A collective term for the application of management tools designed to move and maintain existing infrastructure and populations away from environmentally threatened areas (Alexander, Ryan, & Measham, 2011; Neal, Bush & Pilkey, 2005)

[5] Realignment: A defensive strategy involving the movement of existing infrastructure away from threatened areas while managing the natural deterioration of said areas (often coasts) with soft and hard defensive structures Often, the movement is not far from the original threatened area (Mycoo & Chadwick, 2012; Roca & Villares, 2012).

6 Resettlement (aka relocation): A defensive strategy that involves the facilitated movement of populations from one location of high environmental risk to another of lower risk. These movements can be either near or far from the original threatened areas (McDowell, 2013, Johnson, 2012)

Purpose and Objectives

Managed retreat literature distinguishes between wealthy and poor retreat contexts, suggesting different approaches to community movement in each case. Manila hosts large populations of both demographics, however this research will focus on the urban poor because existing resettlement schemes are already tailored to this segment of the population. The purpose of this research is to assess the suitability of managed retreat, operationalized using existing resettlement infrastructure[7], as a climate change adaptation option for the informal settlements of the coastal megacity of Metro Manila. To address the literature gaps within the context given, the overarching research question will investigate:

Is managed retreat, manifested through resettlement, a feasible climate change adaptation strategy for informal settlements in Metro Manila?

Manuscript 1: Content Analysis of Existing Resettlement Literature

Summary

The first component in considering resettlement as an adaptation strategy is to examine existing documentation on resettlement policy and best practices in Manila. This will establish how climate and environmental concerns have been discussed in relation to resettlement, which will be the foundation of the research for the second manuscript. The goal is to deduce if resettlement priorities are shifting towards environmental concerns, or even adaptation, organically. It will be a snapshot of Manila's past and current perceptions of resettlement as a defensive or protective measure regarding environmental threats. This research will investigate:

How are climate change and associated environmental hazards considered in current formal documentation on informal community resettlement conducted internationally and within Manila?

Methods

This manuscript will be comprised of secondary data, examining the considerations given to climate change and related environmental hazards in current policy and guidelines. Variations in priorities, terminology, and planning will be reviewed. Documentation of best practice and existing projects will be examined from all levels of government, as well as resettlement policies of international actors involved in resettlement projects in Manila. A list of initial documents is attached.

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[7] Resettlement infrastructure relating to soft measures, like policies, institutions, and laws.

Manuscript 2: Discourse Analysis of Perceptions of Current Actors on Existing and Future Practices for Resettlement

Summary
        Manuscript 1 seeks to understand how climate and the environment have been considered in past and current resettlement schemes in Manila. The second manuscript aims to validate the findings from Manuscript 1 while investigating the potential use of resettlement as adaptation through resettlement actor interviews.
        There are layers of actors, spanning all institutional scales, involved in resettlement in Manila. Each plays a role in the process, thus it is important to understand perspectives from actors at all scales of resettlement. This manuscript will investigate:

What are the attitudes and perceptions of resettlement actors in Manila regarding the role of climate and associated environmental threats in current resettlement practices, and the potential for future climate change adaptation through resettlement?

Sub Question 1: How do resettlement actors understand current resettlement policy and practice to address climate and environmental threats in Manila?
- A portrait of current practices, perceptions of success, and noted challenges with the current resettlement projects will be developed to establish a baseline for potential adaptation additions to be implemented. Responses here may give insight into the documents analyzed in Manuscript 1.

Sub Question 2: What are the resettlement actors' perceptions of the feasibility of operationalizing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila?
- A collection of professional assessments at all scales of the anticipated reception, feasibility, and challenges to the application of resettlement as climate change adaptation.

Methods
        The data for this manuscript will be obtained through key informant interviews with actors operating in some capacity with current resettlement schemes in Manila. In an effort to capture the political complexity surrounding resettlement, actors in both 'top-down' and 'bottom-up' roles will be interviewed. International and national-scale actors (top-down) will include national and city-wide governments as well as international adaptation donor organizations (e.g. World Bank, Australian Development Bank, AusAid). Local government units (LGUs) and non-governmental organizations (NGOs) (e.g. Habitat for Humanity, Christian Aid) will form the local and municipal-scale (bottom-up) perspective. A list of initial contacts (only a starting point, suggestions are most welcome) is provided. The data collected will remain anonymous, and will be coded and analyzed for patterns, currently proposed with the NVIVO coding program. Any

documents or other sources of secondary data that may be accessed through these interviews will be incorporated into manuscript 1.

Full Thesis Submission

The full masters thesis submission, addressing the overarching research question, will be a two-paper manuscript theses. It will comprise manuscripts 1 and 2 plus additional linking or transitional chapters in order to present a comprehensive understanding of past, current, and future uses of resettlement to adapt to climate change and the compounding environmental impacts projected for Metro Manila.

Anticipated Outcomes

The purpose of this research is to assess the appropriateness and feasibility of evolving the existing resettlement practices into climate change adaptation practice for informal settlements in Metro Manila. One of the anticipated main conclusions of the research is the degree to which the coastal megacity's existing or planned intentions to address climate and environmental concerns can be achieved through resettlement. If it is understood that there are no plans to introduce adaptation through resettlement, the conclusions will explore the reasons behind the dismissal. These findings will contribute to the managed retreat and resettlement literature by discussing best practices. Additionally, this research will offer insight on the applications and challenges relating to the incorporation of adaptation initiatives into pre-existing resettlement operations. These findings may benefit any city currently practicing resettlement and considering soft climate change adaptation strategies for at risk populations. Finally, the Metro Manila case study of managed retreat adaptation can be juxtaposed with other coastal megacity studies considering managed retreat to offer a thorough demonstration of current perspectives and potential futures for this adaptation option in coastal megacities.

Anticipated Timeline

June 22nd – August 19th, 2014	Field Work/Key Informant Interviews in Manila
September – December 2014	Manuscript 1
January – May 2015	Manuscript 2
June – August 2015	Full Thesis Completion and Defense

Appendix C: Contact Email Attachment 2 - Additional Interview Information

The interview would last approximately 30-45 minutes. It can be conducted in the language of your choosing, but please note a research assistant will accompany me for any interviews not conducted in English. I am also available to interview over the phone or skype.

Throughout the interview, I will be taking written notes and audio recording. If you agree to an interview, I will require your signature of consent to participate, to be audio recorded, and to use your data anonymously in my research.

This study has been reviewed and received ethics clearance through the University of Waterloo Research Ethics Committee. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca

[Researcher Name, affiliation, and contact information]

Appendix D: Participant Consent Letter

Dear Research Participant,

This letter is an invitation to consider participating in a study I am conducting as part of my Master's degree in the Department of Environment at the University of Waterloo under the supervision of Professor Brent Doberstein and Mrs. Linda Mortsch. This letter is to provide you with more information about this project and what your involvement would entail if you decide to take part.

Metro Manila is considered to be at high risk of projected climate change impacts, creating the need for immediate adaptation strategies to protect vulnerable populations. The city has strong-engineered adaptation structures, also know as hard measures, to reduce urban threats, but soft adaptation measures are less explored. Managed retreat, a soft adaptation measure involving the movement of populations away from climate threats, may be a successful adaptation option for Manila if implemented via the city's well-established resettlement practices and policies. The purpose of this study, therefore, is to assess the suitability of retreat, using existing resettlement infrastructure, as a climate change adaptation option for the informal settlements of Metro Manila.

This study will focus on how climate change and environment are considered in resettlement documents and by resettlement actors in Manila. The first part of this research examined resettlement documents to understand how climate change and associated environmental threats (flood, landslide, storm surge) are considered in resettlement practices currently. I am conducting interviews for the second component of the research, which gathers resettlement actor (government, international aid agencies, and non-government organizations) perspectives on current resettlement practices and the potential use of resettlement for climate change adaptation in the future. Therefore, I would like to include your perspectives, as a staff member of a resettlement department/organization, in my study. I believe that because you are actively involved in the management and operation of your organization, you are best suited to speak to the various issues, such as current priorities of resettlement projects, challenges to implementing and maintaining resettlement, and future prospect for resettlement as climate change adaptation.

Participation in this study is voluntary. It will involve an interview of approximately 30 minutes in length to take place in a mutually agreed upon location. You may decline to answer any of the interview questions if you so wish. Further, you may decide to withdraw from this study at any time without any negative consequences by advising the researcher. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Data collected during this study will be retained for 2 years. Only researchers associated with this project will have access. There are no known or anticipated risks to you as a participant in this study.

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me by email at aetadgel@uwaterloo.ca. You can also contact my supervisors, Professor Brent Doberstein at 519-888-4567 ext. 33384 or email bdoberst@uwaterloo.ca, and Mrs. Linda Mortsch at 519-888-4567 ext 35495 or ldmortsch@uwaterloo.ca.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or maureen.nummelin@uwaterloo.ca.

I hope that the results of my study will be of benefit to those departments or organizations directly involved in the study, other coastal cities considering resettlement-related climate change adaptation that are not directly involved in the study, as well as to the broader research community.

I thank you very kindly for your assistance in this project.

Yours Sincerely,

Anne Tadgell
Student Investigator

CONSENT FORM

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

_____

I have read the information presented in the information letter about a study being conducted by Anne Tadgell of the Department of Environment at the University of Waterloo. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and any additional details I wanted.

I am aware that my interview will be audio recorded to ensure an accurate recording of my responses.

I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from this research, with the understanding that the quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

This project has been reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005.

1) With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

☐YES ☐NO

2) I agree to have my interview audio recorded.

☐YES ☐NO

3) I agree to the use of anonymous quotations in any thesis or publication that comes of this research.

☐YES ☐NO

OR

I agree to the use of my name in any thesis or publication that comes out of this research.

☐YES ☐NO

Participant Name: _____ (Please print)

Participant Signature: _____

Date: _____

Note: bold questions are key questions that the researcher asked in every interview.

<div align="center">

Introduction

</div>

Thank you very much for agreeing to meet with me.

I've contacted you because, given your position as …, you have valuable insights into resettlement and/or CCA/DRR projects occurring throughout Manila *(this will be personalized)* that can greatly inform my research. As I mentioned in my email, the goal of my research is to understand if resettlement is a possible technique for climate change adaptation and disaster preparedness for informal settlements within the city.

This interview should last approximately 30-45 minutes. You may refuse to answer any question(s) and stop the interview at any time without penalty.

Throughout the interview, I will be taking written notes and audio recording. Before we begin, I kindly request your signature of consent to participate, be audio recorded, and to use your data anonymously in my research. All interview comments will be kept <u>strictly anonymous</u> unless you permit your name to be used. If you agree to have your name associated with your comments, a separate signature of consent will be required.

(PRESENT FORM)

In the weeks following our meeting, I will send a transcribed copy of this interview to you so you can confirm the accuracy of statements and clarify any points you made.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee

<div align="center">

Getting Started

</div>

- What is your organization/department's role in resettlement/CCA/DRR in Manila?
- What is your role within the organization/department?
- How do you see climate change impacting Manila in the future?

Past Resettlement (Has)

<div style="border:1px solid black;">

Research questions from proposal

Manuscript 1: How are climate change and associated environmental hazards considered in current formal documentation on informal community resettlement conducted internationally and within Manila?

Manuscript 2, Sub Question 1: How do resettlement actors understand current resettlement policy and practice to address climate and environmental threats in Manila?
- *A portrait of current practices, perceptions of success, and noted challenges with the current resettlement projects will be developed to establish a baseline for potential adaptation additions to be implemented. Responses here may give insight into the documents analyzed in Manuscript 1.*

</div>

- What are some specific extreme events that have resulted in relocation in/near Manila?
- Are you aware of any previous examples of environmental relocation projects?

Current Resettlement (Is)
(Addressing same research questions as above)

- **For what purposes is resettlement being used now?** (list top 3?)
- Is it effective in achieving/satisfying these purposes?
- How are environmental hazards considered in resettlement *practice* today?
- How is climate change adaptation considered in resettlement *practice* today?
- What are the existing challenges to the implementation of resettlement projects?

Documents and Policy

- Are there guidelines for resettlement best practices available from your dept/org for resettlement practice?
    - In Manila specifically?
- How are environmental hazards considered in resettlement *policy* today?
- How is climate change adaptation considered in resettlement *policy* today?
- Have you observed any changes within your dept's/org's literature or documentation to address CC or environmental concerns?

Future CCA/DRR Resettlement (Can)

<table>
<tr><td>

Research Questions from Proposal

Manuscript 2: What are the resettlement actors' perceptions of the feasibility of operationalizing resettlement as a climate change adaptation strategy for informal settlements in Metro Manila?

- *A collection of professional assessments at all scales of the anticipated reception, feasibility, and challenges to the application of resettlement as climate change adaptation*

</td></tr>
</table>

- What comes to mind when I say 'climate change/DRR resettlement'?
  - How do you think that would look? What does it involve?
  - What are the distinctive qualities that make it different from current resettlement initiatives?

<table>
<tr><td>

The literature outlines 'successful' CCA/DRR resettlement (aka managed retreat) as:

1) **Proactive** – occurs before the event with prevention as a sole justification. There is no trigger event. Shifting from responding to a rapid onset event to preparing for slow onset environmental change
2) **Permanent** – must not have returning nor new residents to cleared area
3) Clearly **Communicated** – communities must feel the move is transparent, just, and fair. Care must be taken to fully explain why a move *before* an event is in their best interest, and to hear the residents concerns in return.
4) Provides **Incentives and/or Compensation** – to persuade residents to move
5) **Protection of Social Networks** – moving with family, friends, and neighbours has been shown to improve resettlement success. Further, provision of skills training and jobs at the new site has also improved resettlement effectiveness.

</td></tr>
</table>

- **In your professional opinion, is this type of resettlement (as outlined) a feasible CCA/DRR strategy for Manila?**
  - **Why or why not?**
- **If CC resettlement were to be implemented in Manila, how could it be facilitated**?
  - How much infrastructure (hard and soft) already exists?
  - What more would be needed to make it a realistic CCA/DRR option?
- Do you feel there is an increasing, decreasing, or same need for climate change relocation under future climate change?
- Are there opportunities provided by climate change as a new driver of resettlement?
- **Do you believe (your org/dept) would be receptive to resettlement as a CCA/DRR strategy?**
  - **Why or why not?**

<u>Documents/Policy</u>

- Are there any policies now which can/would hinder CC relocation?
- Are there any policies now which can/would assist CC relocation?
- What policy changes would be needed to facilitate CC relocation?

Barriers and Challenges

- **What are the challenges/barriers you anticipate regarding implementing resettlement as CCA/DRR?**
    - Which of those mentioned exist today?
    - Which are new challenges specific to CCA/DRR resettlement?
- Do you believe terminology would impact acceptability, for example "CC relocation" vs "flood relocation"?
- **Which resettlement/CCA/DRR actors do you think would be opposed to CC relocation? Why?**

Funding

- Are you aware of any funding opportunities that may be available for projects relating to CCA/DRR?
- Do you feel funding is a significant, insignificant, or neutral factor in implementing CC resettlement?
- Were CCA/DRR resettlement to be implemented, are there funding sources that could be called upon to assist in implementing the initiative? (International CCA funds, DRR funds, federal grants, etc)

Wrap Up

- Is there anything we didn't discuss that you feel is important regarding CCA/DRR resettlement?
- Other people I should talk to?
- Any documents that may aid my research?
- May I contact you with follow up questions?

Appendix F: Follow-up Email to Participants

Dear [Participant],

I want to extend my sincerest thanks for meeting with me and sharing your insights and experiences for my research. I enjoyed hearing about [details specific to the interview].

This is the website for the 4 city IDRC project to which my research will contribute, if you're interested.   http://www.start.or.th/iriacc-project

Again, thank you so much for you time and insights.

[Researcher name, affiliation and contact information]

CONFIDENTIALITY AGREEMENT

Transcription Services

> Assessing the Feasibility of Managed Retreat as Climate Change Adaptation in Metro Manila, Philippines

I, _____, transcriptionist, agree to maintain full confidentiality in regards to any and all audiotapes and documentation received from Anne Tadgell related to her masters study on Managed Retreat in Metro Manila. Furthermore, I agree:

1. To hold in strictest confidence the identification of any individual that may be inadvertently revealed during the transcription of audio-taped interviews, or in any associated documents;

2. To not make copies of any audiotapes or computerized files of the transcribed interview texts, unless specifically requested to do so by Anne Tadgell;

3. To store all study-related audiotapes and materials in a safe, secure location as long as they are in my possession;

4. To return all audiotapes and study-related documents to Anne Tadgell in a complete and timely manner.

5. To delete all electronic files containing study-related documents from my computer hard drive and any backup devices.

I am aware that I can be held legally liable for any breach of this confidentiality agreement, and for any harm incurred by individuals if I disclose identifiable information contained in the audiotapes and/or files to which I will have access.

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