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## **Examining the Role of Boundary Organizations and Environmental Champions in Increasing Natural Hazard Preparedness in Bangkok, Thailand**

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**Abstract:** Coastal cities are particularly exposed to natural hazard and climate change impacts. Due to its geography, its likeliness to be impacted by natural hazards and its low level of preparedness, Bangkok, Thailand, is one of the most vulnerable coastal cities in the world. A growing number of organizations and individuals are working together to bridge the divides among government, international, national and local organizations and members of civil society in order to reduce Bangkok's vulnerability. An increase in local knowledge, paired with stronger local collaboration, enhances a society's preparedness against natural hazards. This study examines the role of boundary organizations and environmental champions in boundary-spanning activities aimed at increasing environmental cooperation and preparedness in Bangkok. Data were collected using semi-structured interviews and archival analysis. The findings of this case study highlight the importance of boundary-spanning organizations and key individuals (i.e., environmental champions) in facilitating cooperation between disparate groups at varying geographic scales to increase preparedness in a city vulnerable to natural hazards.

**Keywords:** boundary organizations; environmental champions; climate change adaptation; Bangkok, Thailand

## Introduction

Coastal cities are exposed to environmental variability and climate change impacts. They are especially susceptible to sea level rise, altered precipitation rates, major weather events including tropical cyclones and storm surges, increases in sea temperatures, and ocean acidification. Lack of properly designed development, emergency management systems, and adapted communities worsen these vulnerabilities (ADB 2011; ADRC 2009). The populations of major Southeast Asian coastal cities are especially at risk due to low social, governmental, and infrastructural capacity to address existing vulnerabilities, prepare for impacts, and recover from disaster. Due to its geography and low level of preparedness, one of the most vulnerable coastal cities is Bangkok, Thailand.

In order to combat vulnerability, a growing number of organizations are working together to bridge the divide between government and civil society; they are sometimes referred to as boundary organizations (Buizer, Jacobs and Cash 2010; Cash and Moser 2000; Leys and Vanclay 2010). In addition, there are key individuals who serve as champions of the environment. These individuals help to connect and facilitate the work of disparate institutions and groups that unite under the common goal of reducing vulnerability in the city (Gattiker and Carter 2009; Taylor, Cocklin, and Brown 2012). This in-depth case study of Bangkok, Thailand examines the role of boundary organizations and environmental champions in boundary-spanning activities to create and enhance awareness and preparedness in Bangkok, Thailand.

## Background

Urban populations in major cities, especially in low and middle-income nations, are dense and their exposure to climate change and natural hazard impacts is significant (Satterwaite et al. 2007). Poor communities may be especially defenseless as a result of high concentrations of people, the location of homes, reliance on local resources for their livelihoods, and limited adaptive capacity. Scarce individual or community resources, absent or defective physical infrastructure, limited access to public services, and lack of awareness or preventative knowledge interact to increase vulnerability and magnify the effects of climate change impacts, major weather events, and human-induced changes.

The concept of vulnerability is applied widely in the literature. Vulnerability is often defined as the extent to which a system is at risk for exposure to an impact, how sensitive the system is to the exposure, and how capable it is of responding and adapting (Bohle and Warner 2008; Christopherson, Mitchie, and Tyler 2010; Nelson, Adger, and Brown 2007). For the purpose of this study, vulnerability is defined as ill-equipped social-ecological systems challenged by climate change and by natural hazards and risks.

Adaptation most commonly refers to the capacity of a social-ecological system to learn, make alternative decisions, and act to address past, current, or future changes (Folke et al. 2010, Lebel, Grothmann, and Siebenhuner 2010; Nelson et al. 2007). Adaptation at a particular scale has also been referred to as adaptiveness, adaptability, and adaptive capacity. The current focus on adaptation has arisen in response to high levels of vulnerability, uncertainty, and complexity inherent in dealing with climate change impacts, disasters and hazards. Adaptation is often articulated as a practice or tool that describes preparation, reaction, recovery, and planning for impacts. Adaptation is conceptualized in this study as the act of preparing for physical impacts caused by climate change. Nelson et al. (2007) suggest that adaptation is a response to past, current, or predicted undesirable conditions. Building on this, Folke et al. (2010) describe “adaptability” as the ability of a social-ecological system to learn, compile multiple knowledge bases, and change practices. These changes in practice occur in response

to internal and external forces that reduce the steadiness of the existing or ideal state. Organizations at the local, national and international scales are important contributors to increased adaptation in cities vulnerable to climate change impacts.

### *Boundary Organizations*

The organizations and groups that boundary span across the multiple issues of climate change adaptation are often referred to as boundary or bridging organizations (Buizer, Jacobs and Cash 2010; Cash and Moser 2000; Leys and Vanclay 2010). Cash and Moser (2000) describe boundary organizations as a type of institutional arrangement that mediates between groups (e.g., scientists, decision makers) and scales of action or governance (e.g., local, national). The roles of boundary organizations are multiple and varied, but some functions are generally included within their purview: bridging gaps in knowledge systems; providing a venue for dialogue between multiple actors; serving as a translator of knowledge; and ensuring fairness between groups (Buizer et al. 2010). They facilitate the multi-directional flow of information, attempt to resolve some tension between science and policy, and act as impromptu “information brokers,” translating science dialogue into policy and policy into dialogue (Cash and Moser 2000). They play a role in holding workshops, implementing guidelines, engaging stakeholders, supporting networks, and fostering relationships within a network of groups.

In their discussion of multilevel risk governance, Corfee-Morlot et al. (2011) describe boundary organizations as the tool that brings scientists and policy makers together. They argue that a good boundary organization can develop knowledge systems by balancing unspoken trade-offs. Boundary organizations act as a catalyst to action in environmental reform. They commonly provide translation and communication services in cases where networks may be constrained by language difficulties. In complex settings, boundary organizations make sense of existing information and make it accessible to all affected groups.

By providing accessible information, bringing relevant actors together, and increasing collaboration, boundary organizations reduce vulnerability created by lack of information (or dissemination of misinformation) and non-cooperation between stakeholders. In certain cases, a single individual is able to provide some of these functions in multi-stakeholder environments. These individuals are often referred to as environmental champions.

### *Environmental Champions*

Boundary organizations often function as a broker and intermediary between multiple actors. However, as an organization with multiple members, they also contribute to the existing complexity inherent in systems or networks. Various scholars have identified the prevalence, in networks or systems, of key individuals who provide leadership for a shared vision and the motivation to achieve that vision (Gattiker and Carter 2009; Taylor, Cocklin, and Brown 2012). The role of environmental champions is not to reduce the participatory or multi-stakeholder nature of participatory governance, but to increase the coherence of collaboration.

The complexity of climate change problems in vulnerable cities like Bangkok creates confusion and hinders or precludes effective action. As part of a multi-year study, Taylor (2009a) reviewed the role of environmental champions as it has been discussed in the literature and identified some of the main problems environmental champions may help to resolve. These problems include a poor or incomplete definition of the problem(s) at hand, over-causal interdependencies, unintended consequences of actions, unstable conditions, a lack of obvious solutions, complex social situations, transboundary issues, previous policy failures, and the

necessity for behavioral changes. All of these issues are inherent in climate change adaptation. Given these problems, many efforts to combat or adapt to climate change are destined to fail unless knowledgeable guidance is provided.

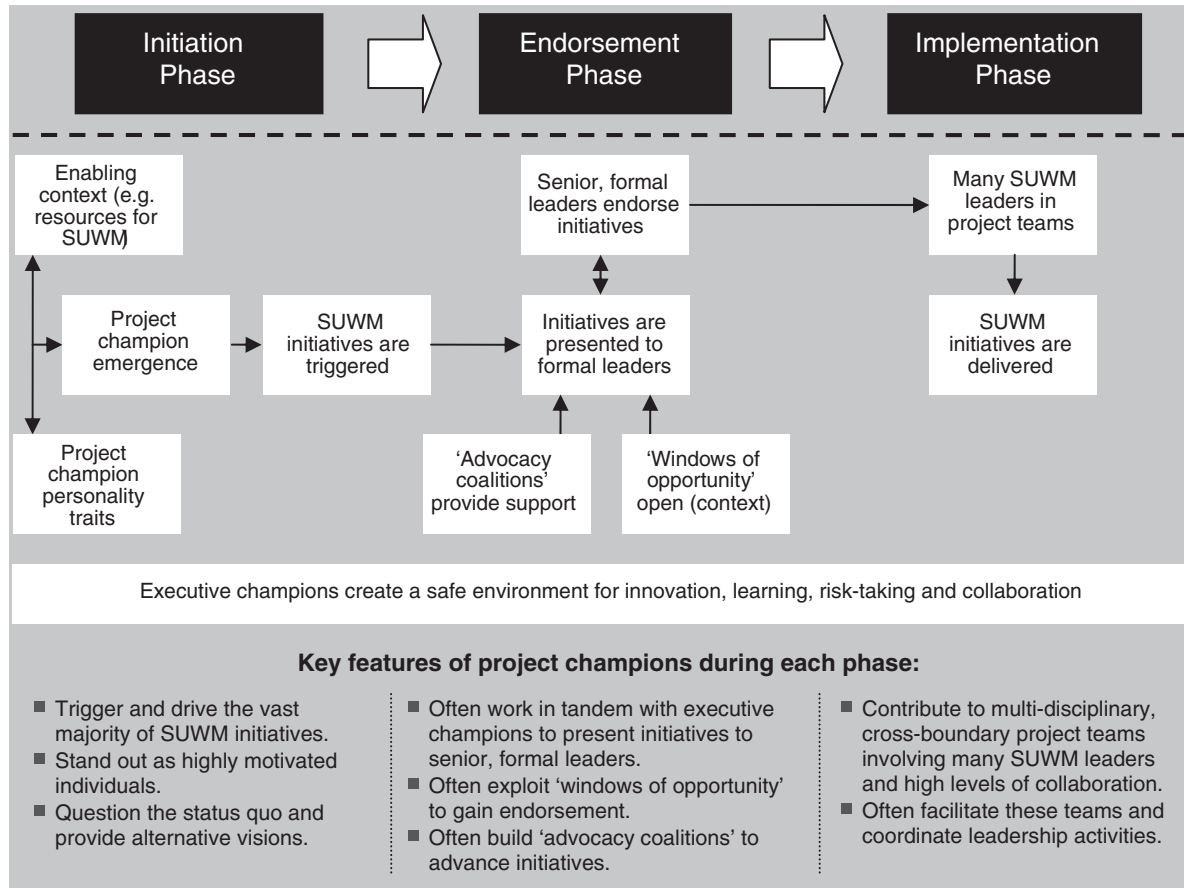
The term environmental champion is fairly contemporary, but the idea is not new. In corporate sustainability practices, the phenomenon of change agents has been examined in the championing of top-down and bottom-up methods (Dunphy, Griffiths, and Benn 2007). Within environmental projects in a multi-organization setting, scholars have termed these individuals project champions or leaders (Gattiker and Carter 2009; Taylor 2009b). Environmental champions are important components in achieving environmental goals within communities, organizations or projects. However, their role in broader environmental management systems has not been well examined.

Gattiker and Carter (2009) quantitatively analyzed the ability of key individuals to foster commitment in a multi-organizational setting dealing with environmental projects. These researchers analyzed environmental projects that included ingredient replacement in products, energy reduction practices, and the integration of environmentally conscious management practices. In a large-n analysis of 241 respondents, the authors found that, generally in multi-organizational settings, individual project advocates or champions are important in gaining intra-organizational commitment.

Findings from six case studies of Australian urban water management practices by Taylor et al. (2011) highlight the importance of environmental champions in environmental management. They show that environmental champions were often employed in a position of power, but were not specifically tasked with motivating or advocating for outcome-oriented objectives. However, in each of the six cases individuals took it upon themselves to promote project objectives and motivate others to achieve ideal outcomes.

Through their research on environmental champions in the context of urban water management practices, Taylor et al (2011) developed a conceptual model that illustrates three phases that characterize the events and elements that the presence of an environmental champion precipitates or encourages (see Figure 1). The first phase, the initiation phase, begins with the existence of resources for an environmental project and the presence of a key person to champion the project. The second phase, the endorsement phase, brings in additional stakeholders for increased support. The third phase, the implementation phase, is earmarked by the eventual implementation of the environmental project. Figure 1 illustrates the three central stages during which an environmental champion supports and endorses challenging environmental work and gains support and resources from stakeholders to implement the work (Taylor et al. 2011).

**Figure 1: A three phase conceptual model illustrating the role of environmental champions in implementing projects (Taylor et al. 2011).**



The champion phenomenon contributes evidence of enabling factors that lead to effectiveness in connecting organizations, government, and civil society. Depending on their backgrounds, environmental champions can often straddle the lines between universities, government, communities, and non-governmental organizations (NGOs).

### **Bangkok and the Bangkok Metropolitan Region**

This case study examines the role of boundary organizations and environmental champions in reducing local vulnerability to climate change and natural hazards in Bangkok, Thailand. Bangkok is Thailand's capital city; it is host to approximately 9 million residents and spans approximately 1,560 square kilometers (km<sup>2</sup>). It is situated within the greater Bangkok Metropolitan Region (BMR), which has an estimated population of over 16 million.<sup>1</sup> In addition to the capital city, the BMR includes five additional provinces: Samut Sakorn, Samut Prakan, Nonthaburi, Pathu Thani, and Nakhon Pathom.<sup>2</sup>

Just north of the Gulf of Thailand, Bangkok is situated 1-2 meters above sea level, on average. The city is located on the delta of the Chao Phraya River Basin, the largest river basin in the

<sup>1</sup> This number is an estimation drawn from population provided by Panya Consultants (2009) and the Population Reference Bureau (2011). Large portions of the population are unaccounted for and informal. Estimations of the population for the BMR are as high as 20 million people.

<sup>2</sup> Spelling of Thai names phonetically from Thai spoken language is fluid and multiple spellings of the same name often exist.

country, covering 159,000 km<sup>2</sup> (Panya 2009). Bangkok's central core lies several kilometers inland from the ocean. The coastal areas are densely populated and are host to a majority of Bangkok's industry.

### *Climate Change and Natural Hazard Impacts*

Bangkok is susceptible to climate variability and is highly impacted by climate change. Its coastal location on the delta of a river basin increases its vulnerability. Major impacts to the city include change in natural ecosystems, rise in sea level, increase in major weather events, and changes in average rainfall. Conservative IPCC projections for climate change in Bangkok include a 2% increase in precipitation rates, a 2°C temperature increase, and a .29 meter rise in sea level (IPCC 2007b).<sup>3,4</sup>

Environmental impacts due to sea level rise and variable precipitation rates in Bangkok are further exacerbated by land subsidence due to excessive extraction of groundwater. Bangkok is literally sinking; it will, therefore, become even more susceptible to sea level rise (Yeung 2001). Regulation of groundwater extraction has reduced average land subsidence from 10 cm to 1-2 cm per year (Panya 2009). However, in this low-lying and highly populated region, a rise in sea level will worsen preexisting land subsidence. Sea level rise will also result in flooding and groundwater and soil salinization.

Floods are a frequent occurrence in Bangkok. The quantity and severity of floods in the city result from geography, natural weather events, and human impacts. Canals in Bangkok historically served as drainage for frequent natural flooding. To support rapid urban growth, many roads were built on top of the canals (Mekvichai 2008). To reduce regular flooding, the government built the Bhumibol Dam in 1964 and the Sikrit Dam in 1971. Despite existing measures to protect the city, flooding occurs regularly and is often very damaging. Extreme flooding occurred in October of 2011 due to heavy monsoonal and tropical rainfall. According to recent estimates, approximately 1,000 people died in the flooding and millions more were harmed or suffered losses due to the flooding. Property and infrastructure damages were estimated to be as high as 10 billion USD (Masters 2011). Most urban properties were inundated with water for weeks. Flooding damaged urban infrastructure, businesses and livelihoods.

In addition to climate change impacts, such as sea level rise and higher temperatures, Bangkok is also susceptible to many natural hazards, including extreme wind and rain events and high levels of precipitation. Storm surges and tropical storms are frequent in the Gulf of Thailand. While the incidence and severity of weather events seem to be increasing and may be linked to climate change, climate science cannot yet officially establish a causal relationship. In addition, the frequency and severity of tsunamis has increased over the last century (Masters 2011); future tsunamis will be even more devastating along coastal regions of Bangkok as a result of sea level rise and land subsidence.

Because it is subject to both climate change effects and natural weather hazards, Bangkok is a city at risk for major impacts that are interrelated and unpredictable in nature. Governmental and market forces have failed to address declining environmental conditions and increasing vulnerabilities to climate change and natural hazards. Weak regulations, escalating populations,

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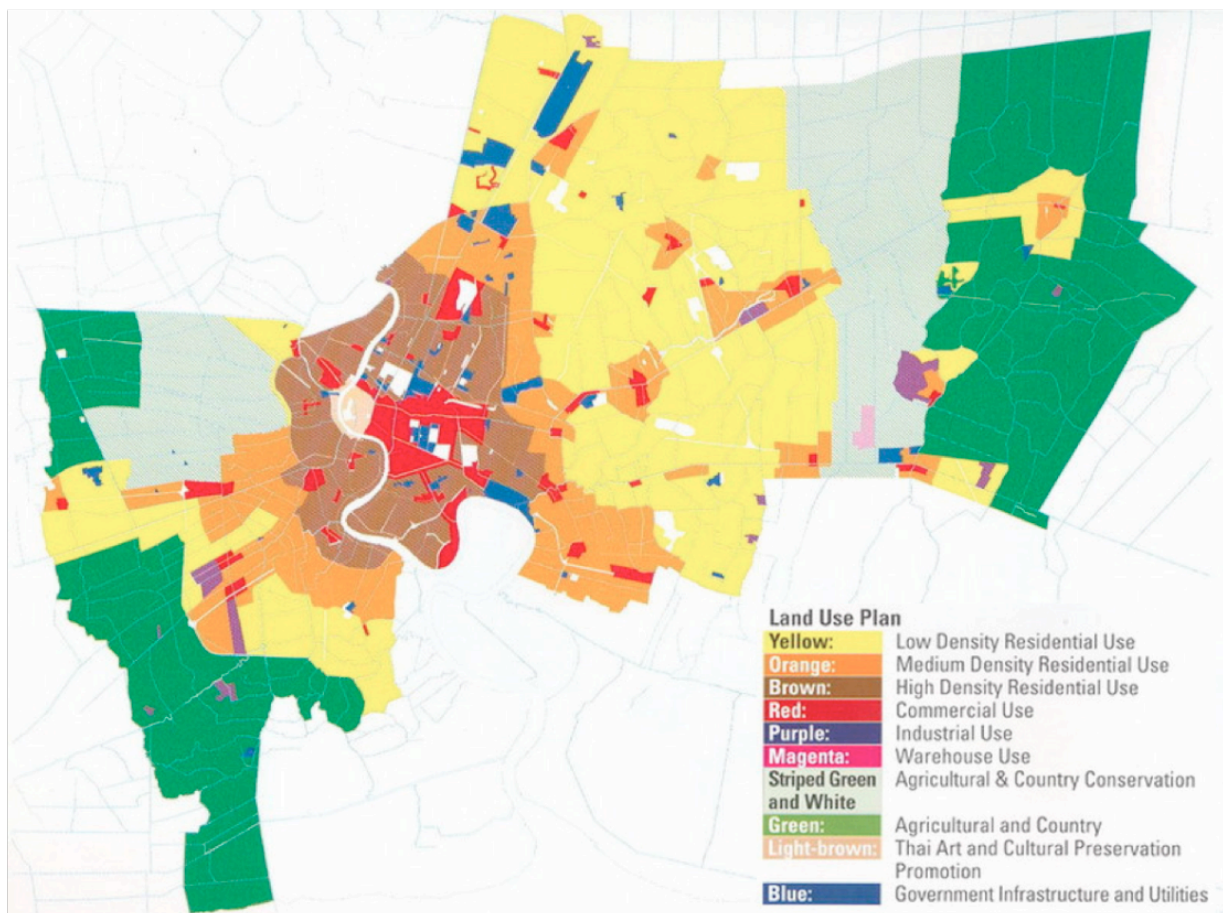
<sup>3</sup>This indicates an increase in shorter time periods with a decrease being seen over the year.

<sup>4</sup>These projections are based upon the A1F1 and B1 scenarios; please refer to the IPCC AR4 Report for further clarification on specifications of projections (2007a).

and rapid urbanization further the extreme social vulnerability engendered by climate change and natural hazards.

In 2007, the Bangkok Metropolitan Administration (BMA) produced a Comprehensive Plan for urban development extending to 2057 (BMA 2007). This plan is limited to the core of the city and does not include the five provinces that the BMR overlaps. Figure 2 shows land use mapping in the BMA's Comprehensive Land Use Plan. In the plan, the BMA highlights areas that are highly vulnerable to flooding and recommends that people do not locate there. However, there is little to no actual prohibition of settlement in the identified danger zones, which are currently densely populated.

**Figure 2: Bangkok Comprehensive Land Use Map (BMA 2009).**



## Methods

Due to the complexity of climate change adaptation system and disaster risk reduction efforts in Bangkok, and in order to provide the best possible understanding of the contextual details of the case, I chose a case study design. The case study design enables a detailed examination of a single or small set of cases and provides a structure to examine current places, people, and networks in native contexts (Stake 1995; Yin 2009). Closer examination of a single case or small number of cases provides the researcher with the opportunity to make sense of a phenomenon in context, while accounting for micro and macro scale information; hence, a single case study was deemed appropriate and necessary.



For the purpose of this case study qualitative data was most suitable, which is typically described as exploratory and aimed at discovering greater detail (Lincoln and Guba 1985; Marshall and Rossman 2006; Yanow and Schwartz-Shea 2006) through semi-structured interviews (see Appendix A) and archival analysis. Data collection and analysis focused on the role of boundary organizations and environmental champions in increasing preparedness to natural hazards.

Interviewees were selected through purposive and snowball sampling. The purposive sampling used a typical case format, which was defined by selecting informants based on their position within the research setting (Frankfort-Nachmias and Nachmias 2007). For example, contact was initiated with the director of the Thai Environment Institute because of his role in and knowledge about his own institution, other NGOs, and events in Bangkok. Snowball sampling, i.e., when already-established informants are asked for recommendations about additional contacts (Miles and Huberman 1994), was used to identify and contact other informants.

A total of approximately 70 informants included individuals from international institutions, NGOs, universities, private businesses, capacity building institutions, city government (Bangkok Metropolitan Administration (BMA) and departments), national government (ministries and departments), community groups, and international environmental organizations<sup>5</sup>. Forty of the seventy informants were considered “core” informants, as they were most knowledgeable about issues under study. The data were collected in person in Bangkok.

Archival research was used as a secondary data collection method. Documents were selected through conceptual, informant-based, and keyword sampling. Conceptual-based sampling (Frankfort-Nachmias and Nachmias 2007) identified materials through major concepts in the literature that informed my research (e.g., “capacity-building,” “social learning,” and “cooperation”). Some documents were identified through informants who spoke of or recommended reports, existing or future policies and laws, books, and other materials that related to the case. Additional information was derived through key word searches of the Internet, library databases, institutional databases, governmental websites, and others.

Over 200 pieces of archival materials were identified and analyzed, including public records, documents, artifacts, texts, newspapers, meeting minutes, reports, photographs, policies, and laws. Most of the information in the archival materials is contemporary in nature (i.e., from 2001 to 2011), as it best represents the existing context. Older archival documents were used to provide insight into the history of Bangkok and its development.

Interview transcripts were qualitatively analyzed through the processes of coding and memoing. The coding scheme was defined by concepts and theories derived from the literature (e.g., resilience, place-based, and vulnerability). Memos compared language and information contained in the data with existing concepts and theory. Content analysis was used to examine meeting logs, announcements, institutional statements and reports, planning documents, policies, and laws. Informant statements and support from archival documents underpin the study findings<sup>6</sup>. The analyses revealed patterns in the data about trends at large and knowledge

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<sup>5</sup> International institutions are inclusive of international governmental organizations (IGOs), international financial institutions, international environmental organizations and international foundations.

<sup>6</sup> Archival documents are cited by author and date. Interviews will be indicated by an “I” and the corresponding number of the interview. This corresponding number represents a transcription or notes of an interview with one of the 70 informants. The numbers are randomized and do not coordinate with the listing of informant roles. If allowed and necessary, the informant role is introduced with the discussion of information.

in context. Triangulation of data sources (i.e., different informants and documents) and collection methods (e.g., interviews and archival data) ensured reliability of findings.

Because the case and context of this study have been represented as fully as possible, others are able to assess the applicability of the findings to other similar cases. The goal of the study was to derive important lessons and best practices from the city of Bangkok that may have significant implications and applications in other cases.

## Findings

Three main findings emerged from the interviews, archival analysis, and contextual analysis. These findings are summarized below and discussed in detail in the following sections:

1. There is a significant lack of government support for climate change adaptation in Bangkok.
2. Funding from local, national and international sources is unreliable and, when available, it is usually bounded by time restrictions.
3. Boundary organizations work across issues with many different stakeholders to address the limits of governmental structure. They provide a guiding force to initiate, gain support for, and implement adaptation projects.
4. Environmental champions connect and provide guidance to boundary organizations. In addition, they can play key roles in maintaining the viability of environmental projects and programs after a project or program has been implemented.

### 1. Government Participation

Thailand has a long history of political instability. Conflict between political parties and accusations of corruption have resulted in distrust of government capabilities. A majority of informants felt that political unrest contributed to the government's inability to play a larger role in climate change adaptation efforts, despite major physical impacts in the city. As an informant from within the government stated: "The more we have the political crisis, the more we ignore the environmental issues" (I-4)<sup>7</sup>.

Informants criticized the Bangkok Metropolitan Administration's (BMA) management of emergency situations before and after major flooding. They explained that, although the BMA attempts to address issues that have a direct impact on the city, BMA authority and funding are not sufficient (I-7, I-1). Much of the authority remains at the national level, and incomplete decentralization of the government has further contributed to governmental ineffectiveness (IDS 2007). An emergency management specialist commented that divisions in the government are creating rifts in the capability to govern: "With the current political situation in the country, it takes some time to come between government agencies. It is fragmented, fragmentation will always be there" (I-6). This reduces the ability of non-governmental institutions to rely on government agents for cooperation in times of emergency.

Despite many calls for the transition of functions and financial mechanisms to more local scales, a majority of the power in Thailand remains at the national level (ESCAP 2012). National policy requires cities like Bangkok to carry out many responsibilities, but does not always empower them to take action without the support of the central government (I-7). Informants see this as

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<sup>7</sup> Interviews are coded through a confidential numbering scheme to protect identities of the informants.

highly problematic. An NGO program manager commented on the current state of cooperation between levels of government: "...they can only manage within the boundaries, and there is no linkage between different levels down to the district and sub-district level, and also at the regional level" (I-37). They feel this fragmentation reduces the ability of NGOs and other institutions to cooperate with the government.

Kanokkan Anukansai, of Transparency International of Thailand, stated: "the regulatory framework in Thailand is quite good but whether it is put into practice is a different issue" (Bangkok Pundit 2010). Extreme disorganization, overlapping jurisdictions, and significant coverage gaps exist in the government structure. Because there is no single unit that is tasked with adaptation or flood management, coordination in this area is difficult to organize.

A capacity-building activist comments on the difficulty in getting governmental actors to cooperate under a single heading to reduce vulnerability in the city. In this informant's words, "like in many other governments, departments are created to take care of certain mandated issues. But we do not have anything that really crosses these issues" (I-1). In an attempt to improve government, more departments and committees are created under policies and laws designed to address specific issues. The ever-increasing number of government units multiplies the time and complexity involved in dealing with the government. An international institution program manager articulates this point:

"...if you go through the government system of management, it can take years before you even to get a project. And if you look at the history of environmental projects that have had to go through the government bureaucracy, [it] takes a long time just to get the project up and running, and even once it gets up and running, it's a bureaucratic process" (I-26).

This indicates that, even with promising work being done or to be done, it takes far too long to navigate Thai bureaucracy.

Distrust for the government intensified following the floods in October 2011. Results from polls taken months in advance of the flooding, during the flooding, and following the flooding in Bangkok demonstrate an increasing public perception that national and local governments are unreliable in preventing or addressing impacts of this magnitude (Suan Dusit Poll 2011). The polls were based on a scale of 1-10 (1 being the lowest rating and 10 being the highest). In September, government approval was already ranked low at 5.64; during the height of the flooding in October, the approval rating dropped to 4.7 (Suan Dusit Poll 2011). Surveyed individuals rated governmental ability to solve problems at 5.28 in September (during early stages of flooding); and 4.26 during later stages of the flooding. A separate poll conducted in Bangkok with 1,357 people in November of 2011 showed that 64% of people surveyed were less confident in the government because it was unable to solve problems like flooding in the city (2011). Respondents were also critical of the government's response to the floods and suspected that decisions made during times of emergency focused on protecting wealthier parts of the city (Asia Correspondent 2011).

## 2. *Financing Projects*

In addition to the difficulties presented by the unreliable and complex government system, institutional coordination of funding mechanisms from government and organizations is also difficult (IRIN 2013; World Bank 2007). Governmental funding for adaptation and preparedness occurs primarily at the national level. Despite Bangkok's need for more funding to address

environmental challenges, corruption and limited political support for climate change adaptation impedes dissemination of national government funds to the city. This reduces the quantity and quality of actions in the city and the capacity for the BMA and provincial governments to protect people.

Moreover, Thailand's status as a middle-income country (World Bank 2011) precludes some sources of funding for climate change adaptation and preparedness. While middle-income countries are officially allowed to receive assistance for mitigation of climate change, funding for adaptation and preparedness is limited (OECD 2011). A program coordinator discussed the lack of funding for local level adaptation and disaster risk reduction projects:

“So, basically it means that you are competing for funds. And in a country like Thailand today, where it's now essentially considered almost a developed nation, the traditional fund, kind of funding sources you might find in other parts of South East Asia, from donors, has just totally dried up. Sustainably managing, sustainable finance at the local level has actually created critical issues on how to operate in this city” (I-25).

Although funding for mitigation efforts is important, the lack of funding for adaptation and preparedness is an immediate and long-term problem (IRIN 2013).

Development aid in Bangkok is also constrained. Organizations involved in development projects and programs must commit themselves to the timeframes established by specific funding institutions or mechanisms. For example, the Swedish International Development Agency (SIDA) provides funding for a program called Mangroves for the Future that runs many climate change adaptation projects in Thailand. SIDA stipulates the length of time any funded project is allowed to continue, regardless of a need for continuing work after the designated time frame has expired. Funding agencies like SIDA are responsible for producing annual reports on the outcomes of their financial support. This means that, although two agencies may be addressing a similar challenge in the same area, they cannot cooperate with one another to address the challenge because they have different funding institutions and schedules<sup>8</sup>. A practitioner speaks to this point:

“But what can be the main mechanism that you use [to cooperate]? Because everyone works still in their little pieces and pies and they don't see the natural advantage of working together” (I-9).

### *3. The Role of Boundary Organizations*

Uncertain or limited support from the government and limited financial resources place significant constraints on Bangkok's ability to adapt to climate change. However, Thailand is host to many active organizations at the international, regional, national, city, and community levels. These institutions are autonomous entities, but the findings of this study indicate that collaborative and cooperative efforts between or among these autonomous entities are increasing. Networks of institutions working with the government and outside the government structure are very prevalent in Bangkok. Most of the institutions that are active in the climate change adaptation in Thailand are listed on Table 1. They were self-identified, mentioned by another institution as being active in adaptation projects in Bangkok, or noted during the course

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<sup>8</sup> Because development aid often comes from outside of the country of aid, funding mechanisms are unable to see the natural advantage of combining forces. Locally acting institutions are held to those international mandates.

of the study due to their participation in cooperative projects aimed at reducing vulnerabilities and increasing preparedness in the city and the BMR.

**Table 1: List of boundary organizations and institutions active in climate change adaptation in Bangkok, Thailand by type and role.<sup>9</sup>**

	TYPES OF ORGANIZATIONS				ROLES OF ORGANIZATIONS			
	<i>RIOs</i>	<i>CBOs</i>	<i>Universities</i>	<i>NGOs</i>	<i>Capacity Building</i>	<i>Funding</i>	<i>Research</i>	<i>Regulatory Functions</i>
Asia Pacific Research Network (APN)	X		X		X		X	
Asian Climate Change Resilience Network (ACCRN)	X			X	X	X	X	
Asian Development Bank	X				X	X	X	
Asian Disaster Preparedness Center (ADPC)	X			X	X	X	X	
Asian Institute of Technology (AIT)			X				X	
Association of Southeast Asian Nations (ASEAN)	X					X		X
CARE (global)				X	X			
Chulalongkorn University			X		X		X	
“We Love Bangkok Sea”		X			X			
International Research Initiative on Adaptation to Climate Change (IRIACC)	X		X		X	X	X	
International Union for the Conservation of Nature	X				X	X	X	
Kasetsart University			X		X		X	
Mahidol University			X				X	
OXFAM: Raks Thai Foundation	X	X		X	X			
Southeast Asian System for Analysis Research and Training (SEA-START)	X			X	X	X	X	
Thai Environment Institute				X	X			
Thai Red Cross	X				X	X		
Thai Sustainable Development Foundation (SDF)				X	X			
Thai Working Group for Climate Justice (TCJ)				X	X		X	
Thammasat University			X				X	
United Nations Programs	X				X	X	X	X
World Bank	X				X	X	X	
YAD PHON (Thailand)		X		X	X			

<sup>9</sup> RIOs (Regional and International Organizations); CBOs (Community Based Organizations)

### *Regional and international institutions*

Many regional and international institutions are headquartered in Bangkok, which serves as a major Asian hub. Bangkok is the regional location of the United Nations' Asia Pacific headquarters. Of the agencies headquartered in Bangkok, the United Nations Development Program (UNDP) and the United Nations Environment Program (UNEP) are most active in promoting mitigation and adaptation to climate change and natural hazards, and are involved directly and indirectly in planning and financing preparedness activities. The UNDP is especially active in coastal communities, collaborating with local governments and providing funding for projects focused on mangrove rehabilitation (TEI 2008). Some funding for projects has come from the UN Human Settlements Program (UNHABITAT) and the Global Environmental Facility (GEF). In Bangkok, funds for implementation and project management are often funneled through UNEP or UNDP.

The International Union for the Conservation of Nature (IUCN), an international institution that focuses on tools and solutions to global environmental challenges, is highly active in Bangkok. Its current projects in the city and in the nation are focused on disaster risk reduction, flood prevention, and coastal environmental management. The IUCN's sub-unit, Mangroves for the Future (MFF), was created in response to the Asian tsunami disaster of 2004 (IUCN 2011). MFF projects focus on building capacity in coastal communities and supporting structural and non-structural interventions like mangrove planting and technical training.

The World Bank focuses its efforts on researching, presenting and communicating information about climate change impacts and disaster risk issues in Bangkok. Its report, the *Thailand Environmental Monitor*, presents national research about emerging issues and includes suggestions for policy, structural, and financing options (World Bank 2007). The World Bank also funded the "Climate Change Impact and Adaptation Study," conducted by Panya Consultants (2009) for the BMR. The study was the first to assess climate change impacts and ongoing structural and preparedness efforts in Bangkok. Their study has been crucial in supporting advocacy for reducing vulnerability in Bangkok.

### *Capacity Building Institutions*

In addition to international and regional institutions, there are numerous capacity building institutions in the BMR. Capacity building institutions go beyond the provision of financial support to work on improving the capacity of the city and local communities to enhance preparedness for climate change impacts and disaster risks. Capacity building includes skills training, information provision, and technological support.

Informants highlighted the role of capacity building institutions in increasing preparedness through information provision and training. One NGO actor described how, by including capacity training with mangrove growing projects, communities in the region are able to teach and learn important skills from each other. Following interventions by a capacity-building NGO, communities have the knowledge and skills needed to structure their own meetings and continue the learning process<sup>10</sup>.

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<sup>10</sup> The actor in the NGO comments that just by teaching them about strategic mapping of their community, they are able to come to their own aid: "Yeah, so we start with the good capability, to train them to let them know about the new, the map. Now they have their community map, and they know when they see the map as they see their own community, that they never seen before, right? So that map they can transform into the appropriate project" (I-4).

A practitioner highlighted the importance of tools and skill sets in addressing impacts from natural hazard challenges. Capacity building institutions enable individuals and groups to use training based on context-specific knowledge to resolve challenges.

“The main objective is try to build a network among the people, among the local people to try and conserve mangroves and make them understand the ecosystem of mangrove activities, capacity training. This way we address the problem in that area first, try to do the capacity building of the people in five target sites, and let them understand each other, to share and learn from each other. After they train, they have a training workshop for capacity building, they let each side, each working group, think about what they want to do to conserve” (I-4).

In addition, some regional capacity building institutions are in a position to facilitate training within government sectors:

“We help the government to understand what is the long term requirement. As a partnership program we assist with damage and loss assessment capacity building. We are actually helping the government to focus on the disaster and what are the needs that will be required to have a more sustainable development planning process and incorporate some of the training and planning” (I-6).

The most active institution – the Southeast Asian Climate Change System for Analysis Research and Training (SEA-START) – is perceived as having significant influence in Bangkok. SEA-START is a major research and capacity building institution in Bangkok. It holds workshops, meetings, seminars, and training sessions to increase the ability of local communities to address increasing environmental challenges (SEA-START 2012; START 2009). SEA-START serves as an intermediary organization between government and non-governmental institutions. It is highly respected for providing trustworthy research about potential natural hazard impacts and best preparation practices. The work of SEA-START is also important because SEA-START has worked to integrate the issues of preparedness with issues of climate change, environmental change, development, and disaster risk.

## NGOs

There are many active NGOs working on increasing natural hazard preparedness in Bangkok. Many initiate and coordinate projects at the local level independent of local and national government. NGOs play an active role in a range of issues and operate at varying geographical and political levels ranging from local to international communities.

In the last decade, the Thai government hired NGOs on a contractual basis to complete local-level work (TEI 2009). Local NGOs are perceived as being closer to some issues due to their familiarity with the locality in which they are sited and their participation in local issue networks. Therefore, the government assumes that they are better equipped to help a community deal with a specific problem like flood vulnerability. International institutions such as the UNEP have also hired NGOs like the Thai Environment Institute (TEI) to facilitate project management in specific communities. Two of the many NGOs that are active in Thailand are the TEI and Yad Phon.

TEI is a leading NGO in Bangkok and in the nation. TEI works on a range of environmental projects, conducts research, and promotes capacity building. TEI contributed to the National Climate Change Plan (2009) and the National Strategy on Climate Change (ONEP 2008),



providing guidance to Thai cities preparing for climate change. Since its creation in 1993, TEI has been very involved in climate change mitigation and adaptation issues. In collaboration with the Rockefeller foundation, TEI is working on a project entitled the Asian Cities Climate Change Resilience Network (ACCCRN). This project is designed to “test and demonstrate practical strategies for responding to the impacts of climate change on urban areas” (ACCCRN 2011).

The Yad Phon Association is a local NGO that primarily focuses on vulnerable coastal communities. It works with local communities to strengthen their resilience to weather events or any form of climate impact. Its projects also focus on preparing fishermen and other people who rely on the Gulf for their sustenance and their livelihoods to diversify in response to climate change. In places that do not have strong community organization structures, Yad Phon spends considerable time creating and improving communication and cooperation. With its assistance, some communities are said to have developed a “higher consciousness” about issues impacting their community (I-2).

Each of the forty core informants in this study stated that NGOs play a major role in reducing vulnerability and increasing preparedness in Bangkok. An international institution’s program coordinator views NGOs in the region as a major strength: “there are many assets here in Thailand, one of them is that local level participation community action and strong NGO’s exist” (I-26). NGO networks and their knowledge of community practices are key to fostering locally specific actions.

Despite their robust ability to form connections among international, national, and local entities, NGOs are often caught between the desires of the local community and the government, and often have to straddle the boundaries between issues and actors. One activist in a major Thai NGO comments that: “We have a hard job standing between the community on one side, to try and protect and endorse their rights, and then the government agencies on the other side. We want to reach out and cooperate and work with them, so we have to try and find a stance that allows us to be in the middle there. It is quite difficult” (I-31).

In some areas, existing community based organizations work on building resilience in their home communities (Raks Thai 2011). The inclusion of community partners is prevalent in many projects in Bangkok. Many of my informants repeatedly emphasized the importance of community participation in increasing the longevity and successfulness of a project. A community organization based in Samut Sakorn and Samut Prakan coastal provinces of Bangkok is known in English as “We Love Bangkok Sea”. Its mandate is to improve the management of the coast and the livelihoods of coastal communities in the provinces. We Love Bangkok Sea has come together to raise awareness about issues like sea level rise and coastal erosion. Elders who are aware of long-term impacts educate newer and younger residents in how to prepare themselves for changing conditions.

### *Universities*

Universities also play a facilitating role in boundary spanning activities for increasing preparedness in Bangkok. Professors, researchers, and students in major Thai universities are researching, campaigning, and collaborating with local communities and urban authorities to increase preparedness in Bangkok. Research from local universities is made available to governmental authorities and local communities. When research is not easily translatable, professors were not shy in going directly to communities to share their findings. A number of professors sit on governmental committees and coordinating bodies to act as the voice of the research community. Universities that are highly active include: Thammasat University,

Chulalongkorn University, Mahidol University, Asian Institute of Technology (AIT), and Kasetsart University.

#### 4. *Environmental Champions*

While Bangkok is host to many international, national, regional, and local organizations and institutions that create or enhance social, technical, and financial capacity in the city, a majority of informants explained that the multiplicity of active organizations also results in various problems, including overlaps in actions, confusion of goals, and conflict over language differences. Individual champions of climate change adaptation often arise to provide guidance in these areas (see Table 2).

**Table 2: Roles of Environmental Champions**

<b>ROLES OF ENVIRONMENTAL CHAMPIONS</b>
Community organizing and creating networks between communities
Facilitating across communities, organizations and government
Scaling projects to local context
Communicating and sharing useful information with local communities
Gathering capacity and financial support for projects
Providing guidance to organizations to increase operational effectiveness
Translating dialects and technical information

One of the most surprising findings of this research was the frequency and intensity with which informants emphasized the critical roles key individuals or environmental champions play in facilitating collaboration and cooperation among institutions, NGOs, government, and local communities. Of the 40 core informants, 24 discussed the importance of central individuals who facilitate cooperation in Bangkok. Environmental champions were described as having the ability to bridge the boundaries between or among governmental, non-governmental, and local actors or institutions. These key individuals included professors, program managers at NGOs, community activists, and former politicians. In some cases, these individuals were in positions of leadership or management. Informants explained that environmental champions are able to bridge the divide between multiple institutions and are seen as a positive force in transforming isolated efforts and segregated institutions into cohesive efforts.

In some cases, champions mobilized and motivated people to work together. A university professor described a local champion, “I think he knows how to mobilize people, he knows how to treat people, and work for him to help create change” (I-14)<sup>11</sup>.

Informants stated that the champions’ experience, training, and longevity in issues specific to Bangkok encourage people to trust them. When trust has been established, more individuals from diverse institutions are willing to come together to work on projects supported by environmental champions. Another informant suggested that there are certain key individuals who possess high levels of initiative:

“...individuals here who are pretty active at the kind of the technical development community/scientific community are the individuals who have sort of taken initiative on their own, there’s a lot of that” (I-27).

A university professor recounted how local environmental champions who serve as mediators of language, governance, and information facilitated her action-based research in communities. She described one champion as:

“...well educated, not only, I do not mean only that he is highly educated, conform to the university or something like that, but he also educated himself with [experience] and his study is very serious - when we support him. I remember I went to evaluate his project that he received funding from the government from a Thailand Environmental Fund because he always explains very clearly, and he commits himself to this, he had very strong commitment” (I-34).

The dedication of some environmental champions to address environmental challenges fosters the evolution of talking points into actions.

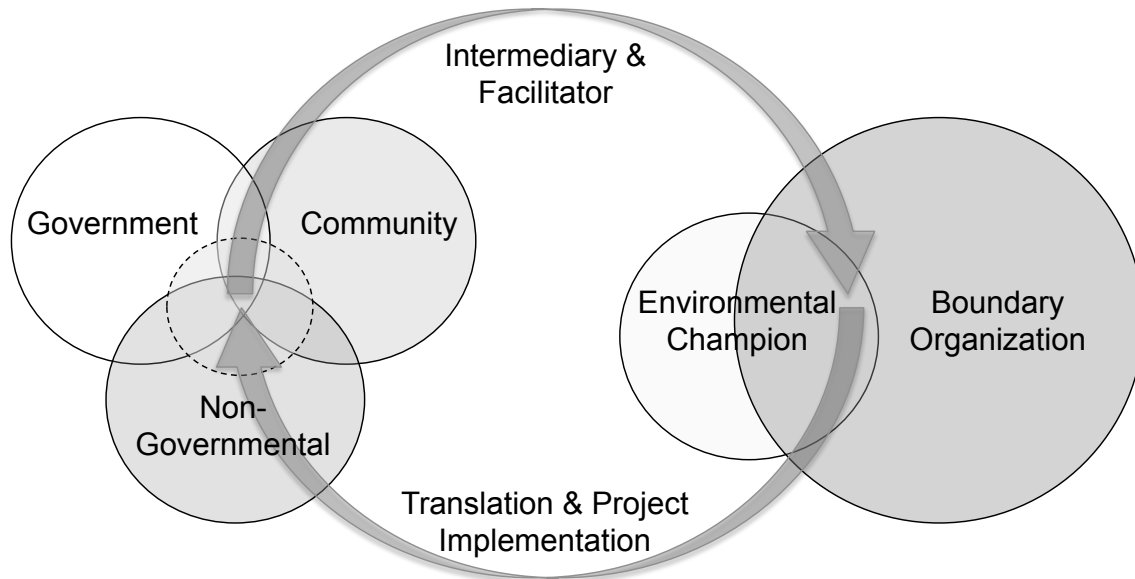
## Discussion

The findings of this case study highlight the importance of certain organizations and individuals in facilitating cooperation among disparate groups at varying geographic and socio-political scales. Boundary organizations and environmental champions serve as intermediaries between individuals and groups (scientists, government), and bridge geographical scales (local, national, international) (Buizer et al. 2010; Leys and Vanclay 2010). As illustrated in Figure 3, boundary organizations work as intermediaries and facilitators among public, private, and local sectors, translating and infusing information and knowledge back into the cluster of actors. However, boundary organizations provide an additional layer of complexity through which stakeholders must pass. Because they may have differing organizational standards, procedures and history, boundary organizations themselves add additional bureaucracy that may muddle collaborative efforts.

**Figure 3: Boundary organization and environmental champions as the intermediary, facilitator, and translator within the cluster of actors.**

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<sup>11</sup> An actor in an international development institution comments on the same champion: “He’s one of those people very good at being able to talk to even though you still see a bit of a gap with the language being used. He really does and that’s incredibly important” (I-26).



The roles of boundary organizations and environmental champions are interconnected. Resources and support for adaptation projects are commonly delivered by boundary organizations. Environmental champions help guide the progress of projects through implementation. Taylor et al. (2011) examine three phases that individuals follow during an environmental project (see Figure 1). Building upon their conceptual framework, this project examines and provides conclusions about the functions of boundary organizations and environmental champions in the three phases of environmental projects delineated by Taylor et al (2011): initiation, endorsement, and implementation.

#### *Initiation Phase*

The climate- and natural hazard-related problems in Bangkok are numerous and overwhelming. Actors are beset by the intensity and overlapping nature of climate change and natural hazard impacts. To respond to these challenges, individuals, communities, organizations, and the government are working independently and collaboratively. However, engagement in solutions-focused work is stymied by multiplicity, as many active stakeholders with varying capacities participate in climate change adaptation.

In the initiation phase, numerous divergent groups must be assembled to participate in a specific joint endeavor. The roles of boundary organizations and environmental champions are demonstrated most significantly in this phase as they provide guidance in bringing diverse climate change stakeholders together. To achieve this goal, boundary organizations serve as “middlemen,” “facilitators,” or “mediators” among public and private sectors at various governance levels, translating and infusing information and knowledge back into the cluster of actors.

According to Cash and Moser (2000), boundary organizations serve as “information brokers,” translating between scientific, political, and local types of knowledge. The complex natural hazard challenges faced by Bangkok are further complicated by its unstable government structure. For this reason, among others, there is an acute need for institutions that possess the ability to translate dialogues and facilitate cooperation within the governance structure. Working at the interface of policy, science, and the public, boundary organizations render information

more salient and accessible to each participant or participating group (Corfee-Morlot et al. 2011).

The most important component of a climate change adaptation project is a mutual understanding of the issue at hand. While boundary organizations bridge some of the complexity of multiple-stakeholders, an environmental champion furthers this work by reducing the amount of voices to a single voice representing the sentiments of stakeholders. In the initiation phase, environmental champions are individuals who provide leadership to determine the nature of a shared goal, the means to achieve that goal, and the motivation to obtain it (Gattiker and Carter 2009 Taylor, Cocklin, and Brown 2012). Environmental champions are able to bring together groups with differing backgrounds and unite them under a common goal through their ability to mediate among stakeholders. Through mediation, they are able to serve as a bridge to communication and mutual understanding across multiple boundaries (Taylor et al. 2011).

### *Endorsement Phase*

During the endorsement phase, boundary organizations and environmental champions work to build a coalition of support for the project. Much of the funding for environmental projects comes from international or national institutions and lacks local specifications. In many projects and programs, governmental units, international institutions, and development aid organizations contract and collaborate with a place-based boundary organizations. For example, in efforts to enhance resilience planning in Samut Sakorn, UNDP contracted with TEI to work as a facilitator between training support funding and community based needs (TEI 2009). TEI mediates among various governance levels, serves as a translator between individuals with different spoken languages (e.g., English, Thai), different institutional languages (e.g., science, government, public), and different organizational languages (e.g., local, international). In addition, TEI and similar place-based boundary organizations are able to continue working on a project or program beyond the limited timeframe established by the funding organizations.

The complicated nature of Bangkok's environmental challenges and multiplicity of organizations often results in reduced participation due, in part, to a lack of available or comprehensible information. An environmental practitioner comments on a boundary institution's role in communicating between the government and the community to increase participation in reducing climate change impacts:

“We want to learn from the communities, from the government to make Bangkok better. So that everybody who understands this will take part in this kind of activity - to reduce the impact of climate change. We make them understand, and we try to learn from community and communicate that to the government and... [vice-versa]” (I-39).

A practitioner in a Bangkok-based boundary organization speaks about the organization's role in bringing together governmental units and informing the public about ongoing projects:

“The ministry of transport, ministry of finance -- when we develop a project, we ask them to join. We work together like a team, so the relationship between both departments is better, because now they talk together. Especially at the working level, they communicate to each other” (I-16).

During the endorsement phase of a project, ongoing commitment must be secured from multiple stakeholders in order to ensure the project's viability and longevity. With the intervention of an

active environmental champion, information is more easily interpreted and disseminated among different actors. The capacity building institution, SEA-START, speaks to this point in the report of their workshop on Cities at Risk that brought together experts to discuss the most pressing issues in cities vulnerable to climate change, including Bangkok. The final report highlights a need for an ‘entrepreneur’ to help make adaptation to climate change a priority (START 2009). In their terms, an entrepreneur, or an environmental champion, is strategically positioned to make adaptation a priority in planning and development across multiple-stakeholders. The role of these individuals is critical during the endorsement phase to secure ongoing commitment.

### *Implementation Phase*

In the implementation phase, boundary organizations and environmental champions ensure that a project is carried through to completion. They maintain support for the project and organize leaders in multi-disciplinary, cross-boundary project teams (based on Taylor et al. 2011).

Because the environmental challenges in Bangkok are not unique, international institutions sometimes tend to apply the best practices used in one case to another case. Although practice replication may work in some cases, it often does not (I-2). In contrast, boundary organizations and environmental champions provide place-based solutions, tailoring action to a specific problem or geographic area. For example, instead of attempting to replicate an Asia Disaster Preparedness Center (ADPC) disaster preparedness guide, TEI, a place-based NGO, adapts the disaster preparedness guide to a specific locality with local and cultural specific details. An informant comments on this point, spotlighting SEA-START and TEI as locally important groups in providing place-based facilitation and translation:

“...if you look into the success story, it mostly is through dialogue and continuing to work with them [i.e., the community] at each side. It takes years, so it does not mean that if you have success in side A, and then you can copy to side B. No, if you go to side B, you almost have to repeat the whole thing, maybe not 100%, but at least 80% of the process has to be repeated again. But we do not have many TEIs [i.e., NGOs], we do not have many SEA-STARTs [i.e., capacity building institutions], so this is what we need to build for Thai people to have inside knowledge and be able to spend time to devote doing all this continuous dialogue. Working with them, getting the problems, trying to solve. They cannot solve through an academic network, so there’s no shortcut. But people always assume there is a shortcut; ‘okay you get this, then you repeat more, two, three, four, five - ten villages in two years.’ That’s not possible at all” (I-2).

Guiding a project to implementation from a starting place of limited awareness, a lack of understandable information, and weak support by navigating, mediating, and interpreting within and among multiple organizations represents success for boundary organizations and environmental champions. However, following a project’s implementation, commitment to maintaining the viability of the project commonly fades rapidly. Project failure often occurs within a few years of a project’s implementation due to a lack of ongoing financial support or due to a lack of further time commitments on the part of the original stakeholders (IRIN 2013).

The findings of this research suggest that a fourth phase – that of long-term maintenance and project resilience – should be added to Taylor et al.’s (2011) three phase model. This additional phase includes maintaining a project beyond its initial implementation. The research further suggests that boundary organizations or environmental champions could play critical roles in the maintenance phase of a project. Because boundary organizations are local, or have a local

outlet, and environmental champions are those with vested ties to the locale, they are able to see a project through beyond its initial implementation. In addition, organizations and individuals who are socially vested locally are more likely to want to see a project continue to succeed in the long term.

## **Conclusions**

The purpose of this case study was to examine the emerging role of boundary organizations and environmental champions in increasing preparedness for natural hazards in a vulnerable coastal city. The findings indicate that, to achieve greater preparedness in Bangkok, a significant shift from short-term to long-term understanding of impacts and how to prepare for them must occur. Major structural changes are needed in existing public and private practices, institutional structures, and procedures. Future endeavors should include more concrete and cooperative preparedness planning, increased government funding and participation, and consolidation of overlapping or duplicate efforts by multiple institutions. This research further suggests that collaborative organizations and key individuals that offer place-based solutions and support longer-term interventions that increase preparedness assist in reducing future vulnerabilities. To provide greater insight into the role of boundary organizations and environmental champions, further research could be done on how their roles have played out in different contexts. Southeast Asia is a region in which multiple cities exist in conditions similar to those in Bangkok. These cities are also host to boundary spanning organizations and individuals. Examination of additional case studies may reveal new insights on how coordination and cooperation are elicited and facilitated.

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## Appendix A: Interview Protocol<sup>12</sup>

1. How is Bangkok vulnerable to sea level rise and flooding caused by climate change?
  - a. How has it changed in recent years?
  - b. Are these changes related to the environment or to actions in the city?
2. What were the major sources of lack of preparedness that were apparent in the most recent flooding?
  - a. Can you describe the sources of response?
3. How do you feel the municipal government has prepared for these impacts in general?
  - a. How about the national government?
  - b. How do you feel they responded during the events?
4. What are the policies in place locally or regionally that aim to regulate and protect the city from climate change impacts?
  - a. How are they being implemented?
  - b. What are the major constraints to implementation?
5. Which organizations have taken the lead in protection in advance or during impacts in the city?
  - a. What types of projects do they introduce?
  - b. How are they implemented?
  - c. How do any of these organizations work together?
  - d. Can you describe the outcomes of these collaborations?
6. Are there any individuals you feel have taken a central role in adapting the city to climate change?
  - a. How do they engage in this role?
  - b. How are they unique?
7. How are communities involved in their own adaptation for impacts?
  - a. What are the major barriers to preparation and adaptation?
  - b. How can these be supported?
8. In your experience, have there been lessons learned and implemented from previous impacts?
  - a. How so and with whom in particular?
9. In your opinion, how do you think these issues can be properly managed and regulated?

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<sup>12</sup> This interview protocol was tailored to each individual interviewed, according to his or her role and experience.