

Resilient Cities for the Poor or by the Poor?

A Case Study from Bangkok

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Statement of authenticity of material

This thesis contains no material which has been accepted for the award of any other degree or diploma in any institution and to the best of my knowledge and belief, the research contains no material previously published or written by another person, except where due reference has been made in the text of the thesis.

Signed



Shaikh Muhammad Mehedi Ahsan

Berlin, February 21st, 2013

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Abstract

This study applies the concept of resilience in terms of flooding, in two urban poor communities in Bangkok. The conceptual framework of this thesis stands on DFID's Livelihood framework (1999) and IRFC's community resilience framework (2012).

Both qualitative and quantitative approaches were taken, using semi-structured interviews, photographic review, community workshops and the researcher's observations, to collect data from two case study communities. The analysis is structured on three levels: city level, community level and household level, with the main focus of analysis on community level and household level. With the city level analysis the contextual background has been drawn for Bangkok, combining the two major challenges of urban poor communities and flooding. community and household level analysis identified the impacts of flooding on livelihoods, and responses at household and community level focusing on preparation, emergency management during flooding and recovery after the flood. These analyses lead to analysis of community resilience within the two case study communities.

Major findings of this study are that strong community organization capable of establishing relationships with different stakeholders is able to establish the community's resilience. This study also identifies further areas for research and presents recommendations for further development of the case study communities' resilience. As flooding has historically affected Bangkok, and with predictions of increasing flood frequency and intensity due to climate change, flooding is a growing threat for Bangkok's urban poor communities. Though Thailand has demonstrated best practice examples of slum upgrading, the concept of resilience is not yet integrated into this community process. The findings and recommendations of this study potentially can contribute to this process.

Key Words: Resilient Cities, Resilient Community, Flood, Urban Poor Community

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List of Acronyms

ACHR	Asian Coalition for Housing Rights
ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
APN	Asia Pacific Network on Global Change Research
BMA	Bangkok Metropolitan Administration
BMR	Bangkok Metropolitan Region
CARE	Cooperative American Relief Everywhere
CODI	Community Organization Development Institute
DRR	Disaster Risk Reduction
DFID	Department for International Development
GDP	Gross Domestic Product
GLF	Green Leaf Foundation
HH	Households
ICLEI	Local Government and Sustainability
IDS	Institute of Development Studies
IFRC	International Federation of Red Cross
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperative Agency
MEA	Metropolitan Electricity Authority
MWA	Metropolitan Waterworks Authority
NESDB	National Economic and Social Development Board
NGO	Non Government Organization
NHA	National Housing Authority
NSO	National Statistics Office
NULICO	National Union for Low Income Community Organizations
NWPFT	National Water Policy and Flood Committee
SL	Sustainable livelihood
SLR	Sea Level Rise
THB	Thai Baht (currency)
TWRA	Thailand Water Resources Association
UNEP	United Nations Environmental Program
UNDP	United Nations Development Programme
UNISDR	United Nations International Strategy for Disaster Risk Reduction
UN-ESCAP	United Nations Economic and Social Commission for Asia and Pacific
UK	United Kingdom

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Chapter One – Introduction

- 1.1 Background
- 1.2 Why Resilient City for the Poor, or by the Poor?
- 1.3 Scope of Thesis
- 1.4 Research questions hypothesis and Objectives
- 1.5 Outline of the thesis

1.1 Background

In 2008 for the first time in human history rural and urban populations became equal, meaning half the world's population, an estimated 3.5 billion people, is living in urban areas. It is estimated that by 2030 some 60% of the world's population will live in urban areas and by 2050 this will have risen to 70% (6.4 billion will be living in urban areas (UN-HABITAT 2008; WDR 2010). More than 90% of the world's urban population growth is currently taking place in low-quality, overcrowded housing or in informal settlements in developing countries, with 60% of this urban growth occurring in Asia. This rapid urbanization of developing countries, coupled with the increased intensity and frequency of adverse weather events, will have devastating effects on these countries, which also have lower capacities to deal with the consequences of climate change (UN-HABITAT 2011).

Poor people living in slums are at particularly high risk from the impacts of climate change and natural hazards. They live on the most vulnerable land within cities, typically areas deemed undesirable by others and thus affordable. Residents are exposed to the impacts of landslides, sea-level rise, flooding, and other hazards. (Moser and Satterthwaite. 2008, Bicknell et al., 2009). Among these, flood is one of the most common hazards usually faced by many cities (Jha et al., 2011). Floods are climatic events and usually happen after heavy rainfall. In urban areas it is not just related to heavy rainfall and extreme climatic events; it is also related to land use changes in floodplain areas with development of built-up areas.

Due to a lack of proper land use planning, in most cities in developing countries urbanization is covering large areas with concrete, roads and pavements and additionally encroaching on and obstructing natural drainage systems. Large-scale urbanization and population increases have led to increasing numbers of people, especially the poor, settling and living in floodplains in and around urban areas. They lack the resources, and often the information, to respond in ways to mitigate their increasingly precarious situations.

1.1 Why Resilient City for the Poor, or by the Poor?

In general the urban poor live with many deprivations. Their daily challenges include: limited access to employment opportunities and income, inadequate and insecure housing and services, violent and unhealthy environments, little or no social protection mechanisms, and limited access to adequate health and education opportunities. Vulnerability is exacerbated by their daily challenges and adverse weather events result in the loss of basic services, damage or destruction to homes, loss of livelihoods, malnutrition, disease, disability, and loss

of life. ICLEI (2011) identified that urban poor are facing the following impacts of climate change (see Table 1).

Table: 01. Impacts of Climate Change on vulnerable communities/ urban poor

Temperature change; heat and/or cold waves	-heat fatalities due to poor air circulation in congested slums and lack of access to air conditioning.
Drought	-vulnerability of slums/ informal settlements where water is scarce. -large rural migration into cities.
Extreme precipitation patterns and flooding	-urban poor are forced to settle in hazardous flood plains.
Storm surge	-displacement of vulnerable communities -forced migration/ relocation
Sea-level rise/ coastal erosion	-displacement of low lying coastal communities, river erosion. -communities and other vulnerable areas
Other impacts common to each vertical category	-loss of livelihood in many sectors -pressure on women, elderly and children

Source: ICLEI 2011

As urban poor are highly vulnerable groups, climate change has added new dimensions to existing challenges, and presents further challenges in achieving the Millennium Development Goals. Specifically Goal 7 Target 11 which aims to improve the lives of 100 million slum dwellers by 2020, the Agenda 21 for sustainable development, and a global call for cities without slums.

For responding to these challenges the concept of Resilient Cities is becoming very popular terminology in the area of urban development. Many urban development actors are now aligning their pro-poor agendas with this new concept. However the situation of the real victims, the urban poor, is not changing as much as it is being talked about. Different ongoing initiatives are not sustained because urban local government institutions often do not have the capacity to tackle these new challenges. Potentially the urban poor can contribute here, in developing their community's resilience as well as contributing to resilient city development processes.

1.3 Scope of Thesis

This thesis focuses on flood hazard, in the selected urban poor community of Bangkok Metropolitan City, Thailand. The main focus of this study is to identify the impacts of flood on the livelihoods of the two case study communities and their responses as part of the preparation before flood, emergency responses during flood and recovery after flood. This study also analyzed the roles played by communities and other stakeholders in building the resilience of the communities.

1.4 Research questions, Hypothesis and Objectives

The following questions will be explored through the thesis:

1. What are the key challenges facing by the urban poor? How does flooding influence their daily challenges? What are the impacts of flood to the lives of urban poor people?
2. What are the responses by individuals and communities to build protect and maintain their livelihoods in the face of these challenges? How do they take preparations before the events; how do they respond during the flood, and recover after the flood?
3. What makes poor communities in urban areas resilient flooding in particular?
4. How can the city contribute to the resilience of the urban poor? Conversely, how can the urban poor influence the resilient city development process?

Hypothesis:

The urban poor have their own concepts for building a resilient community and are able to contribute to the Resilient City development process, provided that city governance actors provide an enabling environment.

Objective:

Through exploring the research questions, the objective of this thesis is to identify areas of improvement and recommendations for pro-poor resilient city development, around how urban poor communities can take an active role in the resilient city development process.

1.5 Outline of the thesis

The thesis is structured into eight chapters. Chapter one provides background with research questions and hypothesis. Chapter two describes the brief history of the concept of resilience and resilient cities, and the characteristics of a resilient community and its relationship with the urban livelihood framework which gives the conceptual outline/theoretical framework of the thesis.

Chapter three presents the analytical framework and research methodology, and chapter four gives a brief profile of Bangkok Metropolitan City focusing on its history, causes of floods, and reasons for slum development. A stakeholder map has been drawn which gives a broader understanding of the city as well as the specific foundation of the case study.

Chapter five gives a brief profile of the study area, focusing on the vulnerabilities and strengths of the community. Chapter six focuses on different responses of the community before flood as preparation, during flood as emergency management and after flood as recovery. It also specifies the response from individual households and community level responses. At the end of this chapter the role of different institutions in flood management is presented.

Chapter seven highlights the community resilience. Characteristics of the community and its resilience are based on the recent IFRC study (2012) on Community Resilience. At the end of this chapter the characteristics of community resilience are verified and the results of the community workshop are presented, showing how the community members consider themselves to be resilient and what their future plans are for achieving resilience.

Chapter eight summarizes the reflections of the author of this research work, on what a resilient community/city means to urban poor people and how they can better contribute within the resilient city development process.

Chapter Two – Conceptual Framework

2.0 Resilient Cities and Urban Poor – a review of the literature

2.1 What is resilience?

2.2 What is vulnerability and adaptation?

2.3 What is urban resilience?

2.4 What is a resilient city?

2.5 What is a resilient community?

2.6 Sustainable Livelihoods of urban poor

2.7 Relationship between sustainable urban livelihoods and community resilience

2.8 Role of urban poor in developing a resilient community and resilient city (participatory mechanism)

2.9 Conceptual framework and its relationship with the scope of this thesis

2.10 Conclusion

This chapter outlines the conceptual framework of the thesis. For developing the concepts, the literature review explores the idea from overall resilience to urban resilience, then community resilience and the sustainable livelihood models for urban poor. This research is mainly based on DFID's (1999) sustainable livelihood framework and IFRC's (2012) Community Resilience Framework, with the theoretical framework for this thesis developed by combining these two theories. Based on this broader conceptual framework, the scope of the thesis is identified and then linked with the framework's components.

For developing the conceptual framework of this thesis a number of literatures have been reviewed from a broader perspective of resilience, and then focused on urban areas/cities, and community and household level. The main purpose of dividing into these categories is to understand the concept of resilience, and what it means in urban areas and at the community and household level. It is also important to understand the concept of other related terminologies, i.e. vulnerability and adaptation, and to clarify the relationships and the differences with the concept of resilience at different levels. Sections 2.1-2.3 cover the concepts of resilience, vulnerability, adaptation and urban resilience. Section 2.4 introduces city resilience, covering the definition and characteristics of a resilient city, and 2.5 details the Characteristics of a safe and resilient community. The focus of 2.6 and 2.7 is household level-based, covering the sustainable livelihood model, and the potential linkages of household level and community level have been established by combining the livelihood model and the community resilience framework. 2.8 is focused on the role of urban poor in resilient communities and in the wider scope of resilient cities. Finally section 2.9 covers the broader conceptual framework and its relationships with specified scope of this research.

2.0 Resilient Cities and Urban Poor – a review of the literature

2.1 What is resilience?

The existing literature has been reviewed to develop a theoretical understanding of the relevant terms. However there is no universal definition of resilience.

The origin of the term Resilience evolved in the field of ecology in the 1970s. Ecologists used the core concept of resilience in their analysis of population ecology and in the study of managing ecosystems (Janssen et al., 2006). Holling (1973, p. 17) states that:

“...resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist.”

This can be simplified to express that resilience is about the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change. Ecologists developed a significant research body of theoretical and mathematical models of resilience. However since the late 1980s the concept of resilience has been used in the analysis of human-environment interactions in the fields of sociology, economics and psychology, mainly to describe and understand how humans affect the resilience of ecosystems (Janssen et al., 2006). Another origin of the term resilience is in metallurgy and engineering and is now being applied in psychology and community development as well as Disaster Risk Reduction (Twigg, 2007; Norris et al., 2008; cited in Tyler et al., 2012). The Intergovernmental Panel on Climate Change, IPCC defines resilience as:

“The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning the capacity for self-organization, and the capacity to adapt to stress and change.” (IPCC, 2007).

Tyler et al (2012) state that; “this definition of resilience is broadly consistent with definitions from ecological sciences (Carpenter et al. 2001; Resilience Alliance, 2007) and from Disaster Risk Reduction (UNISDR, 2012)”. As per ICLEI (2011):

"Resilience is the capacity and ability of a community to withstand stress, survives, adapt, bounce back from a crisis or disaster and rapidly move on. Resilience needs to be understood as the societal benefit of collective efforts to build collective capacity and the ability to withstand stress."

2.2 What is vulnerability and adaptation?

It is important to understand the concept of vulnerability in order to better understand the concept of resilience.

Vulnerability

Schoon (2005) stated the origins of the term vulnerability through using a literature survey which highlighted that the use of “vulnerability” is approximately 50% natural hazards research-based, and a third from entitlement and poverty literature and recently, an additional branch of literature has emerged from climate change researchers. Blaikie et al. (1994: p. 9) define vulnerability as:

The characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impacts of natural hazard.”

Burton et al. (1978) define vulnerability as a result of change placing people at risk. Schoon (2005) states that:

“...development and poverty experts and welfare economists use the concept of vulnerability a bit differently. Most draw extensively on the work of Amartya Sen [Indian welfare economist] and his work on the fragility of humanity through entitlements and government failures”.

As per the definition by Chambers (1989):

“Vulnerability refers to exposure to contingencies and stress and difficulty in coping with them. Vulnerability has thus two sides: an external side of risks, shocks, and stress to which an individual or household is subject and an internal side which is defenselessness, meaning a lack of means to cope without damaging loss”.

In the introductory article of IDS Bulletin (1990; p. 2) Chambers stated that:

“Vulnerability is not the same as poverty. It means not lack or want, but defenselessness, insecurity, and exposure to risk, shocks, and stresses”.

So vulnerability is lack of resilience. It indicated that the level of resilience determines level of vulnerability of a HH or community or a city.

Adaptation

This study is not focused on adaptation but as it is frequently used in the areas of Disaster Risk Reduction and Climate Change research it is necessary to clarify the differences between resilience and adaptation.

Janssen et al. (2006) mention that:

“Adaptation to environmental variability has been a focus of anthropologists since the early 1900s. In the 1990s, scholars began to

use the term adaptation for the study of the consequences of human-induced climatic change, without explicitly relating this back to the conceptual origins in anthropology (e.g., see Adger et al., 2005)".

And as per the IPCC definition, adaptation is:

"Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." (IPCC, 2007).

Adaptation is indeed different to resilience. Resilience focuses on the ability to absorb changes, while adaptation focuses on adjustment to change.

2.3 What is Urban Resilience?

Resilience in the context of urban areas is a somewhat different concept than used in other fields. The concept developed by ICLEI on urban resilience and city resilience has been used for developing the overall understanding that is presented in the box below and the box in section 2.4.

As per ICLEI (2011) the definition of Urban Resilience is presented in the following box:

Cities are highly complex interdependent systems with physical, organizational, social, and economic properties. Urban resilience is the ability of urban systems to withstand certain levels of stress by:

- Having flexible systems to absorb sudden shocks and slow onset of events.
- Distributing stress across systems and avoiding single pressure points.
- Restoring functionality in a timely way to contain loss and avoid disruption.
- Having substitutable systems, if a major loss in functionality occurs.
- Designing systems that safely fail to avoid catastrophic failure.
- Developing ability to identify problems and building capacity to deal with them, establish priorities and mobilize resources to respond, adapt and rapidly move on.

Urban resilience can be understood as the societal benefit of these collective efforts to build capacity in society, and develop the ability of systems and communities to withstand stress and rapidly move on.

Box 2.1, Definition of Urban Resilience

2.4 What is a resilient city?

As per the definition of ICLEI (2002), a resilient city is:

- A city that supports the development of greater resilience in its institutions, infrastructures, social and economic life.
- resilient cities reduce vulnerability to extreme events and respond creatively to economic, social and environmental change in order to increase their long-term sustainability.

-Resilient city activities are sensitive to distinctive unique local conditions and origins. Efforts undertaken to prevent crisis or disaster in one area should be designed in such a way as to advance the community's resilience and sustainable development in a number of areas.

Resilient cities is defined as a comprehensive 'urban resilience' concept and policy agenda with implications in the fields of urban governance, infrastructure, finance, design, social and economic development, and environmental / resource management"

Box 2.2 Definition of resilient city

Characteristics of a resilient city

As part of the Asian Cities Climate Change Resilience Network (ACCCRN) Program, Arup International Development and the Institute of Social and Environmental Transition (ISET) developed the following characteristics of a resilient city (da Silva et al., 2012; Moench & Tyler, 2011), as illustrated below in Box 2.3 and Figure 2.1.

Characteristics	Description
Flexibility	The ability to change, evolve and adopt alternative strategies (in either the short or longer term) in response to changing conditions. Flexibility implies recognizing when it is not possible to return to the previous way things worked and finding new solutions and strategies (evolution). This favours 'soft' rather than 'hard' solutions.
Redundancy	Superfluous or spare capacity to accommodate increasing demand or extreme pressures. Redundancy is about diversity and the ability to adopt alternative strategies through the provision of multiple pathways and a variety of options. Some components of the urban system serve similar functions and can provide substitute services when another component is disrupted.
Resourcefulness	The capacity to visualize and act, to identify problems, to establish priorities and mobilise resources when conditions exist that threaten to disrupt an element of the system. This capacity is related to the ability to mobilise assets (financial, physical, social, environmental, technology, information) and human resources to meet established priorities and achieve goals.
Safe failure	Resilient network infrastructures are designed for safe failure. This is related to their ability to absorb shocks and the cumulative effects of slow-onset challenges in ways that avoid catastrophic failure if thresholds are exceeded. When a part of the system fails it does so progressively rather than suddenly, with minimal impact to other systems. Failure itself is accepted.
Responsiveness	The ability to re-organise, to re-establish function and sense of order following a failure. Rapidity is a key part of

	responsiveness in order to contain losses and avoid further disruption. However, such rapidity of response should not impair the capacity to learn, and therefore a balance between learning and rapidity should be achieved.
Capacity to learn	Direct experience and failure plays a key role in triggering learning processes. Individuals and institutions should have the ability to internalize past experience and failures, and use such experience to avoid repeating past mistakes and exercise caution in future decisions.
Dependency on local ecosystems	Resilient urban systems exercise a greater degree of control over the essential assets required to support well being, securing access to and quality of such resources. This involves recognizing the value of the services provided by local and surrounding ecosystems (often described as the city's green and blue infrastructure), and taking steps to increase their health and stability. These services (often undervalued) perform processes such as flood control, temperature regulation, pollutant filtration, and local food production (Luque and Duff 2006, Hodson and Marvin 2009).

Box 2.3 Characteristics of resilient city, Source: da Silva et al. (2012)

da Silva et al. (2012) state that:

“These characteristics of resilience can be used to group and conceptualize a set of systemic behaviors that avoid catastrophic outcomes or system breakdown, and enable recovery and stability after dramatic and unexpected events or gradual impacts that force change over time. Each of the characteristics is applicable to the infrastructure, institutional and knowledge networks that comprise the urban system, however characteristic– safe failure - applies specifically to infrastructure, and - dependency on local ecosystems - to ecosystems”.

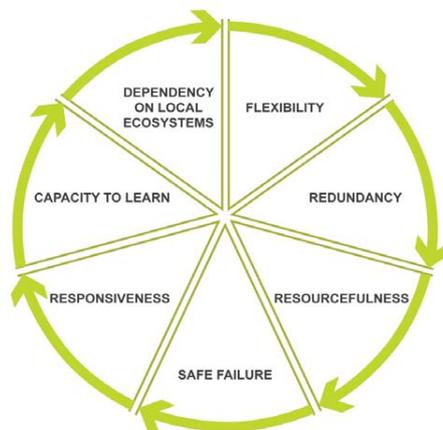


Figure 2.1 Characteristics of resilient urban systems
Source: da Silva et al. (2012)

2.5 What is a resilient community?

Following on from the definitions of resilience and resilience cities, the definition of a resilient community involves the “the ability of a community to prepare and respond to, and recover quickly from the effects of disaster” (Mayunga, 2008).

Research on community resilience was commissioned by the International Federation of Red Cross and Red Crescent Societies in 2012 and conducted by Arup International Development, on Characteristics of a Safe and Resilient Community. This research reviewed 25 key documents (including 15 resilience frameworks) and field work was carried out in 30 communities across Sri Lanka, Indonesia, Thailand and the Maldives in both urban and rural communities. The output of this research was the key characteristics of community resilience, and these are used as the basis for field work in this thesis.

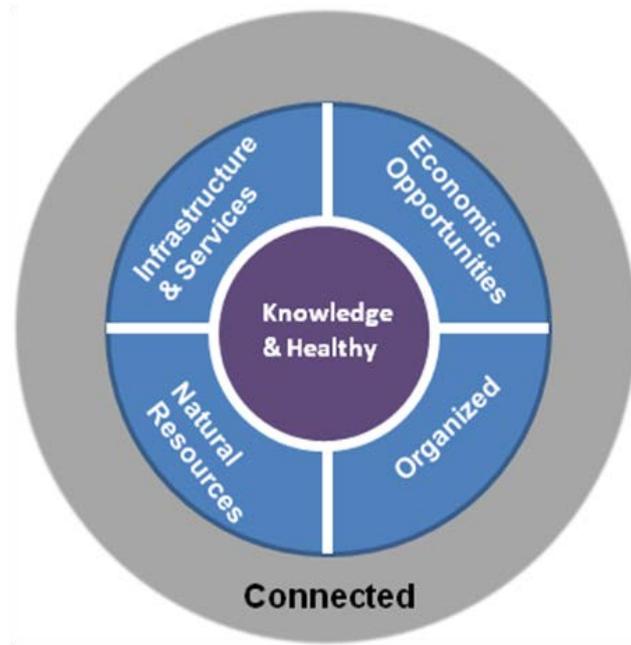
The following characteristics of a safe and resilient community have been developed by the IFRC (2012), illustrated in Box 1.4 and Figure 1.2:

A safe and resilient community...

1. ...is knowledgeable and healthy. It has the ability to assess, manage and monitor its risks. It can learn new skills and build on past experiences
2. ...is organized. It has the capacity to identify problems, establish priorities and act.
3. ...is connected. It has relationships with external actors who provide a wider supportive environment, and supply goods and services when needed.
4. ...has infrastructure and services. It has strong housing, transport, power, water and sanitation systems. It has the ability to maintain, repair and renovate them.
5. ...has an economic opportunity. It has a diverse range of employment opportunities, income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
6. ...can manage its natural assets. It recognises their value and has the ability to protect, enhance and maintain them.

Box 2.4: Characteristics of a safe and resilient community

Source: IFRC (2012)



Source: IFRC. (2012)

Figure: 2.2, the six *characteristics* of a safe and resilient community

This IFRC research highlights all these characteristics of safe and resilience communities. In order to recognize the importance “knowledge and healthy” is identified as number one characteristics of a safe and resilient community as because individual knowledge and awareness is central to the ability of households to prepare individually, and collectively be able to prevent, respond to and to recover from shocks and stresses. This characteristic is also important to access different assets and wider resources beyond the direct control of the community (IFRC, 2012). Thus the figure 2.2 has ‘knowledge and healthy’ placed in the centre. The concept of community resilience originated from Disaster Risk Reduction communities and also separately from a developmental perspective within the context of sustainability (IFRC, 2012).

2.6 Sustainable Livelihoods of urban poor

For understanding household (HH) level resilience the sustainable livelihood framework has been used in this study, as the livelihood-based approaches seek to reduce vulnerability by building assets, thereby combining disaster and development methodologies (Sanderson, 2009; Pasteur, 2011 cited in IFRC, 2012). The concept of a sustainable livelihood approach first appeared in research literature in the 1980s, and had become in the late 1990s one of a trio of principles underpinning UK development policy and the basis for a number of DFID programmes and practices (Solesbury, 2003).

The definition of a sustainable livelihood is commonly accepted as:

"the capabilities, assets (including both material and social resources) for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base." (DFID, 1999a)

The UK Labour government's 1997 White Paper on international development influenced the concept of sustainable livelihoods, to;

"refocus our international development efforts on the elimination of poverty and encouragement of economic growth which benefits the poor. We will do this through support for international sustainable development targets and policies *that create sustainable livelihoods for poor people*, promote human development and conserve the environment". (cited in DFID, 1997)

Sustainable livelihood (SL) approaches originated for rural poverty reduction though a heavy focus was placed on the assets of poor men and women, rather than, as with previous development approaches, focusing on their needs or deficiencies both in urban and rural areas (Farrington et al., 2002). Since the 1980s and 1990s this model has been adopted by different development organizations including the UN and other development agencies, and from the early 2000s the focus of this model is also covering urban issues. The following table outlines the categories of assets in the various SL models (Table 2.1) and is sufficiently generic that they apply equally to urban and rural areas.

Chambers	UNDP	OXFAM, DFID	CARE	Moser
Tangible (stores, resources)	Human	Human	Human	Labor
Intangible -Claims for material, moral or practical support -Opportunity to access resources.	Social	Social	Social	Economic & Social infrastructures
	Natural	Natural	Economic	Housing
	Physical	Physical		Household relation
	Economic	Economic		Social Capital
	Political			

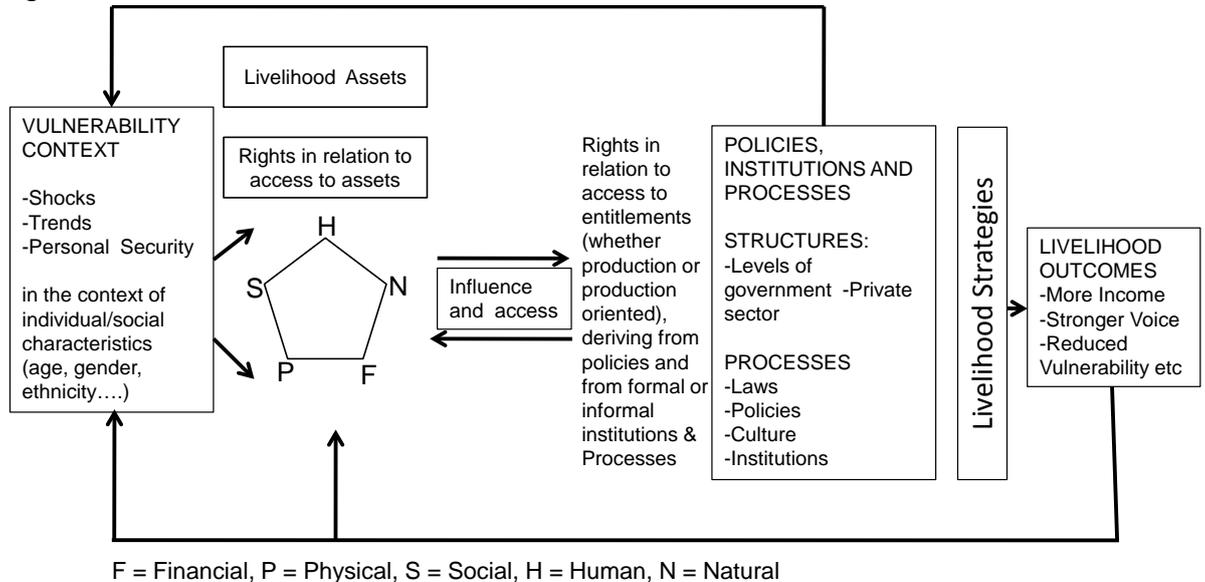
Table: 2.1, Asset categories in different sustainable livelihood model

Source: Farrington et al. (2002)

However urban areas are more complex than rural areas, thus the types of assets used by urban poor and the factors affecting the accessibility of these assets, tend to be different from those of the rural poor.

Farrington et al. (2002) modified DFID's sustainable livelihood model and incorporated rights perspectives with urban adaptation, as illustrated below in figure 2.3.

Figure: 2.3, Sustainable Livelihood Framework



Source: Farrington J. et al. (2002), adapted from Carney et al. (1999)

Figure: 2.3, DFID Sustainable Livelihoods Framework, incorporating rights perspectives and with urban adaptations

This model shows the relationships between different assets, and influences on the access to societal structures and processes, to determine the livelihood strategies to reduce the vulnerabilities of a HH or the community. It clarifies that if any HH possesses sufficient assets this will enable them to better access different institutions and structures for achieving livelihood outcomes which enable them to reduce vulnerabilities, which means that the livelihood approach has a strong influence on achieving a resilient HH, and a resilient community.

2.7 Relationship between sustainable urban livelihood and community resilience

In the sustainable livelihood approach people are placed at the centre to deal with the multidimensional nature of poverty by tackling the complex nature of vulnerability, and the complexities of accessing both capital assets and entitlements provided by the state and others. And the concept is focused on individual or HH level which has a greater impact on achieving resilience. The community level resilience depends on six characteristics, developed by IFRC (2012), which has links with the sustainable livelihood approach. In general if the sustainable livelihoods are ensured the individual people/HHs are resilient,

and on a larger scale if the HHs are resilient this contributes to making the community more resilient. So the relationships between sustainable urban livelihoods and community resilience have been drawn in the following diagram, figure 2.4:

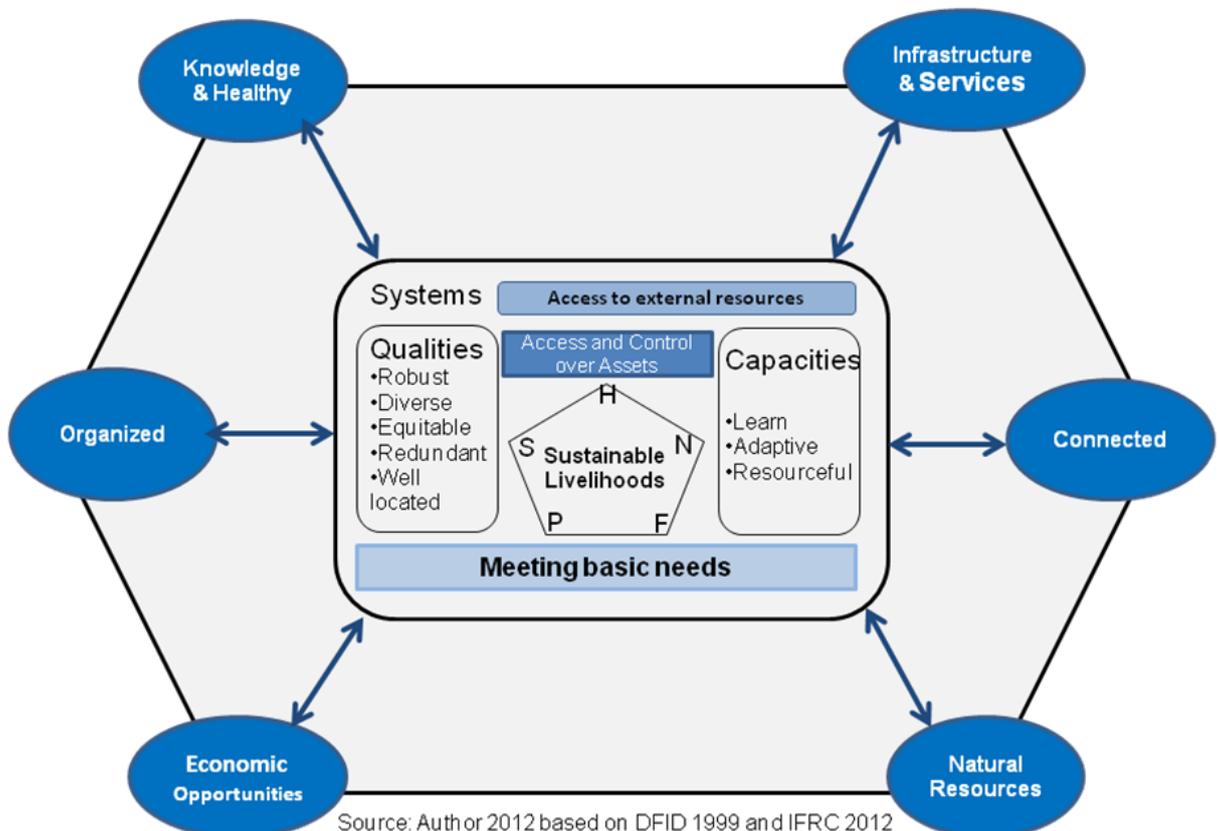


Figure 2.4 Relationship between sustainable urban livelihood and community resilience

2.8 Role of urban poor in developing a resilient community and resilient city

It has already been mentioned that urban poor are one of the main victims of any kind of hazards, and from this literature review it is clear that urban poor should be the main driver for achieving outcomes of sustainable livelihood models as well as community resilience. However to understand the role of urban poor in developing resilient communities or resilient cities it is important to understand the complex system of a city. da Silva et al. (2012) developed the following diagram, figure 2.5 to illustrate that;

“action to improve the adaptive capacity of vulnerable urban populations which focuses on disaster risk reduction (DRR) and urban poverty reduction is necessary, but insufficient. Specific action is also needed which enhances the ability of the city to continue to maintain

the essential functions that support the wellbeing of its citizens and sustain its economy. Such action needs to consider climate change impacts in the context of how the city works (the ‘urban system’) and who is least able to respond to shocks and stresses (‘vulnerable groups’). (da Silva et al., 2012)

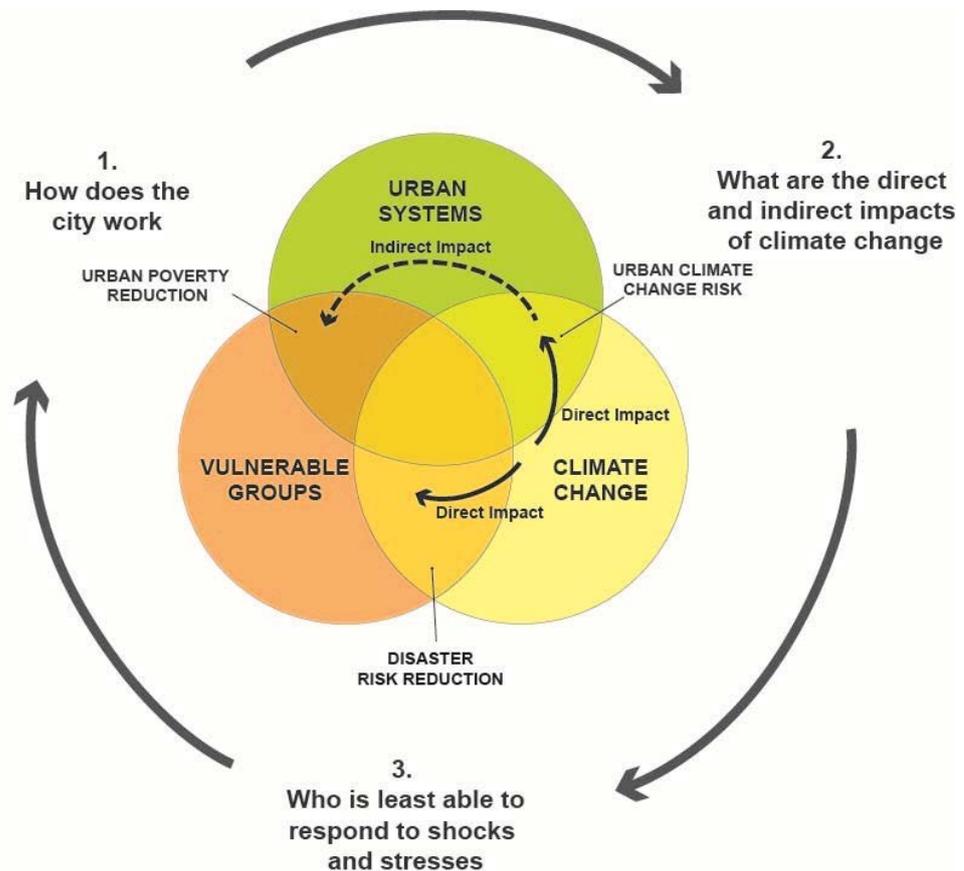


Figure 2.5, Climate impacts: a compound effect combining direct impacts, indirect impacts, and pre-existing vulnerabilities, Source: da Silva et al., 2012

However to run complex urban systems there are several governance actors to play different roles. The best practice examples of community upgrading emphasize that in any program related to urban poverty reduction, urban poor should be at the centre, and this principle is already supported in Thailand; “when communities are in charge, it’s cheaper, better, more appropriate and it can reach a very big scale” (CODI, 2008). Therefore in developing community resilience, urban poor should be a leading part of development projects and provided with capacity development support, to enable urban poor communities to actively take part in at different levels of decision making.

2.9 Conceptual framework and its relationship of the scopes of this thesis

Resilient individuals and HHs build resilient communities, which build resilient cities. Thus this section provides a conceptual framework for a broader understanding of the concept of resilience, resilient communities and sustainable livelihood frameworks for urban poor. The following figure 2.6 combines two livelihood frameworks (DFID, 1999) and the characteristics of safe and resilient communities (IFRC, 2012). The upper parts containing systems qualities, capacities and resilient community is from the IFRC's community resilience framework (2012) and the lower part is from DFID's sustainable livelihoods framework (1999). As in figure 2.4 it has been shown that if the HHs of the community has better livelihoods practices, this contributes to more resilient communities. The following figure 2.6 shows there is a relationship between transforming structures and process, and livelihood strategies of the livelihood model, with systems qualities and capacities of the model of resilient communities, and the livelihood outcomes with the outcome of resilient communities. The last row within the figure shows the scope of this thesis and its linkages with the broader conceptual framework, and contains the focus of this thesis which is flood and its impacts on urban poor communities.

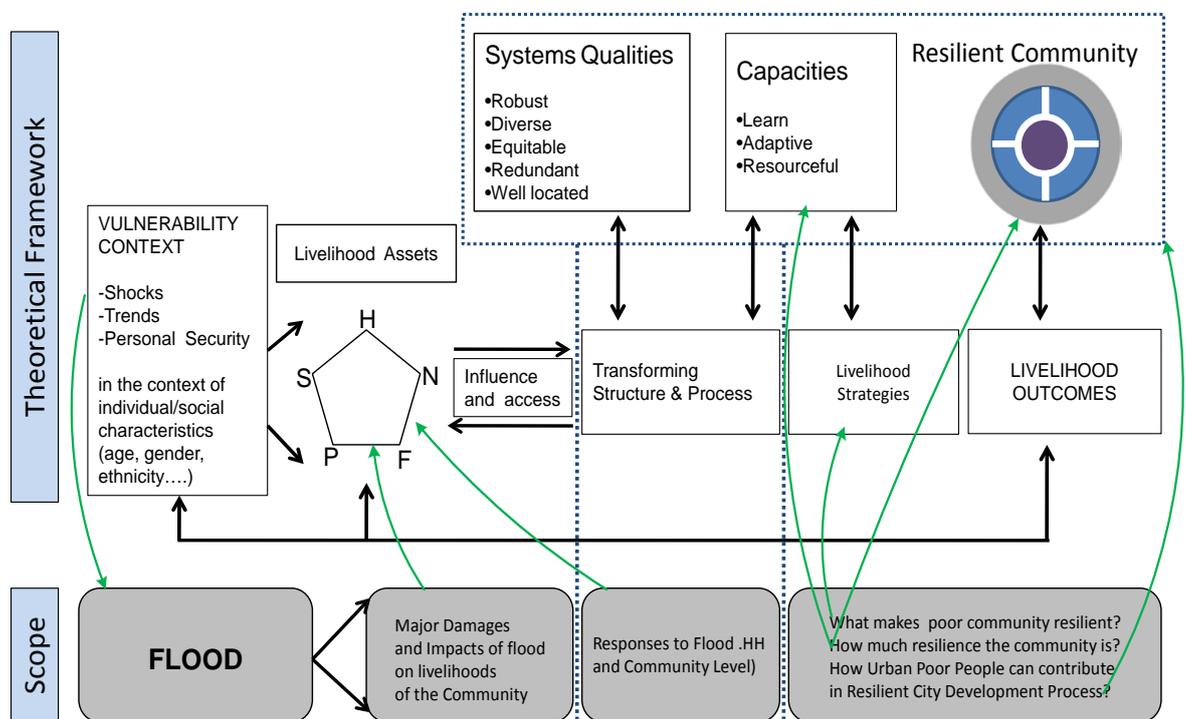


Figure: 2.6, Theoretical framework and the scope of the thesis
Source: Author, 2012, based on DFID, 1999 & IFRC, 2012

The green arrows show the linkage of the different parts of the thesis with different parts of the conceptual framework. For this study flood has been taken as the vulnerability context, and the major damages and impacts on the

livelihood of the community is linked with different assets of the framework. The HH and community level responses to flood are also focused in line with different assets of livelihoods. The last column of the last row shows the research questions of the study. Within this combined framework, questions are linked: the question of 'what makes a poor community resilient' is linked with the capacities, level of resilience' is linked with livelihood strategies and the six characteristics of a safe and resilient community, and the question of 'how urban poor can contribute in the resilient city development process' is linked with the concept of community resilience.

2.10 Conclusion

Cities are complex systems and networks of infrastructure, institutions and knowledge (da Silva et al., 2012) which are not the same as aggregating the number of communities within. Analyzing the city level resilience is therefore beyond the scope of this thesis, and the focus is on community resilience. Though for analyzing the community resilience, city level contextual background has been developed in chapter four and the interactions of the case study communities with different stakeholders, including the city authority has been analyzed in chapter five, six and seven. In the next chapter, the analytical framework and methodology is explained and the data collection and analysis methods are outlined.

Chapter Three – Analytical Framework and Methodology

- 3.1 Analytical framework
- 3.2 Selection of study area
- 3.3 Research methods
 - 3.3.1 Qualitative versus quantitative
 - 3.3.2 Data collection and sampling
- 3.4 Research timeline
- 3.5 Meeting challenges in the field
 - 3.5.1 Role of the researcher
 - 3.5.2 Limitations of the study
- 3.6 Conclusion

The conceptual framework was explored in chapter two, outlining the theories within which the research has been grounded. In this chapter, the research methodology is described, for data collection and analysis, outlining the analytical framework of this study.

3.1 Analytical framework

This study aims to analyze, through qualitative methodology, how urban poor people play their role in developing a resilient community and resilient city. City level, community level and household (HH) level are the three levels of analysis in this study which is presented in the following figure 3.1

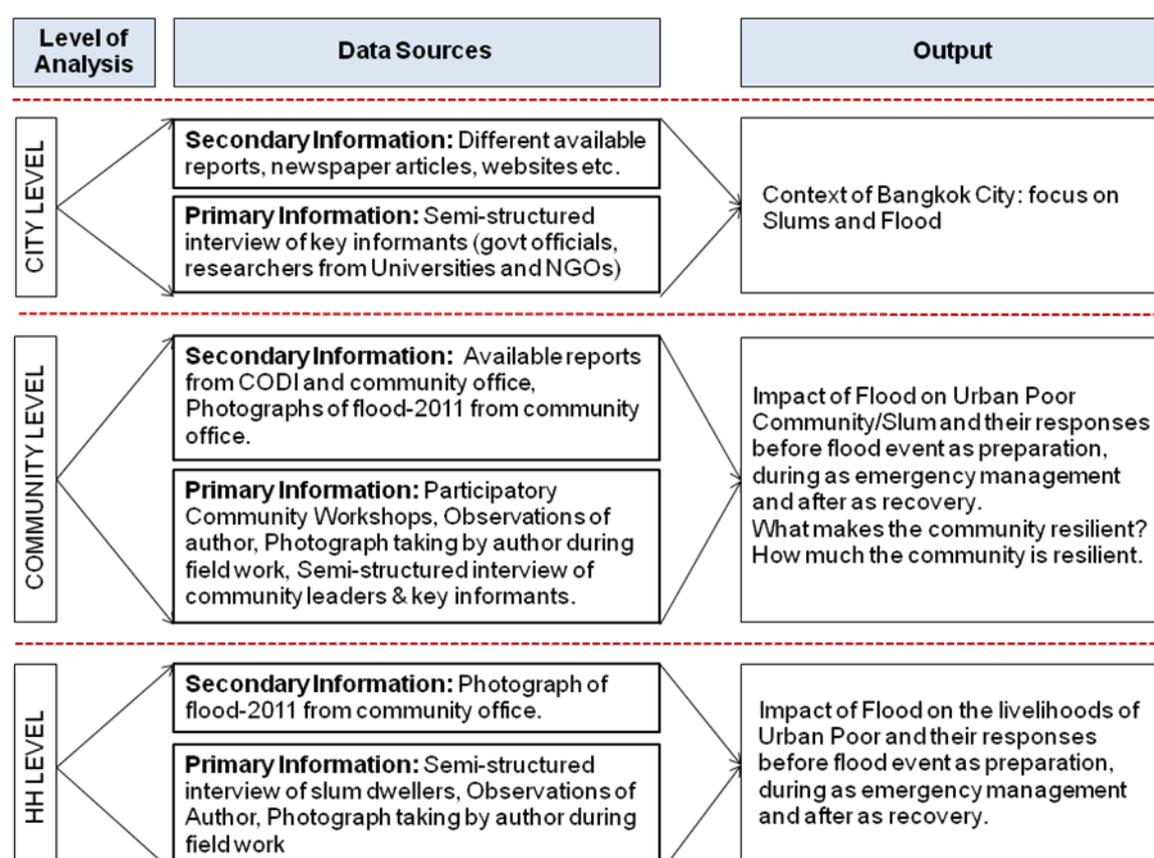


Figure: 3.1 Analytical Frameworks.

Source: Author, November 2012

City level analysis consists mainly of reviewing relevant reports and conducting expert interviews to draw a contextual background of Bangkok City, focusing on flood vulnerabilities and the state of urban poor communities/slums. However the primary unit of analysis of this study is the slum dwellers/urban poor mainly based on primary data collection by semi structured interviews of slum dwellers, to explore the flood impacts on their livelihoods and their responses to flood events (before as preparation, during and after as recovery). The community level analysis is based on primary information through conducting participatory community workshops to explore the level of community resilience. The community level analysis draws on the community resilience framework based on the recent IFRC study, "Characteristics of a safe and resilient community" (IFRC, 2012).

3.2 Selection of Study Area

As Bangkok city has been selected for this research, this section provides contextual background of Bangkok, considering flood vulnerability and urban poor communities. Bangkok is the capital city and also the largest urban area in Thailand. Bangkok covers an area of 1569 km² located in the delta of the Chao Phraya River Basin, which is the largest basin in the country. The Bangkok Metropolitan Region (BMR) includes Bangkok city and five vicinity provinces: Samut Prakarn, Samut Sakhon, Nonthaburi, Pathum Thani, and Nakhon Pathom. As of December 31, 2007, the total population of Bangkok Metropolitan Region (BMR) was 10.07 million (World Bank, 2009). Bangkok is vulnerable to flooding, and floods have been a regular occurrence in Bangkok throughout its recent history, with major events occurring in 1942, 1978, 1980, 1983, 1995, 1996, 2002, 2006 and 2011 (APN, 2012); urban poor communities are the most vulnerable groups during floods (UNESCAP, 2012). According to the Bangkok Metropolitan Administration (BMA) there were 789 urban poor communities in Bangkok in the year 2000. For this thesis two canal side urban poor communities (slums) have been selected in Laksi District (one of the 50 districts of BMA administrative area), which were adversely affected during the 2011 floods.

These two urban poor communities are also part of a network called Klong Bang Bua Environment Development network (comprising 21 adjacent communities of both sides of the canal) which was developed in the late 1990s to improve the overall environment of the area. From 2003 the Community Organizations Development Institute (CODI) began a secured housing project with the Bang Bua Canal Community and has worked with 15 communities out of these 21 communities (CODI office, 2012). Among the 15 communities there are some with HHs that have not joined the CODI secured housing project.

The author was advised by CODI to work with one of the 21 communities and specifically with Saphan Mai-1; a community with 106 HHs, of which 68 HHs are part of the CODI housing project and a further 38 HHs which will join in the next phase. The author participated in a joint meeting with CODI, Asia Coalition for Housing Rights (ACHR), UNESCAP and German-based multi-national company 'HITLI group' on sustainable low cost construction materials on November 20,

2012 at the CODI office, followed by a field visit to the Klong Bang Bua community. It was the author's first opportunity to come directly in contact with a slum in Bangkok. However the author notes that within the Klong Bang Bua community, the area of households participating in the CODI secured housing project (Baan Mankong Program) appears as a general middle class residential area. Whereas the households on the other side of the canal not participating in the housing project, were noted as similar to slums in any other city in developing countries. The following pictures show the difference between these two communities.



Picture 3.1: Urban Poor Community with CODI secure housing project (Baan Mankong Program)



Picture 3.2: Urban Poor Community without CODI Baan Mankong Program

The physical appearance of first housing area (Photo 3.1) was apparently similar to the second area (photo 3.2), before the CODI project was implemented. However these visual differences raised the author's curiosity, to conduct a transect walk through the whole area of 21 communities. After conducting two transect walks, the following two communities were selected for the field work.

Table 3.1: Profile of the case study communities

<p>Saphan Mai 1 Community -Total number of HHs: 106 -Supported by CODI Baan Mankong Program (68 HH already finished the construction of their house before 2011 flood- remaining 38 HHs are waiting for second phase of construction)</p>	<p>Saphan Mai 2 Community -Total number of HHs: 600 -The community has not yet joined CODI Baan Mankong Program</p>
<p>Both of the communities are located on the same side of the Bang Bua canal and geographically connected.</p>	

A detailed description and the location map of the community are presented in chapter five.

The purpose of selecting these two contrasting communities is to identify if they have different preparations and responses for flood events as well as their level of resilience based on the IFRC’s community resilience framework. The indirect outcome of this comparison would contribute in the evaluation of the contributions of the CODI secure housing program in building community resilience.

3.3 Research methods

3.3.1 Qualitative versus quantitative

This research has been conducted based on both qualitative and quantitative methods. Qualitative data was collected by observation, transect walk through the communities, interviews, documents and records & participatory community workshops. This qualitative data is analyzed through a thematic and statistical process. Quantitative data has been collected through direct semi-structured household surveys, see figure 3.2.

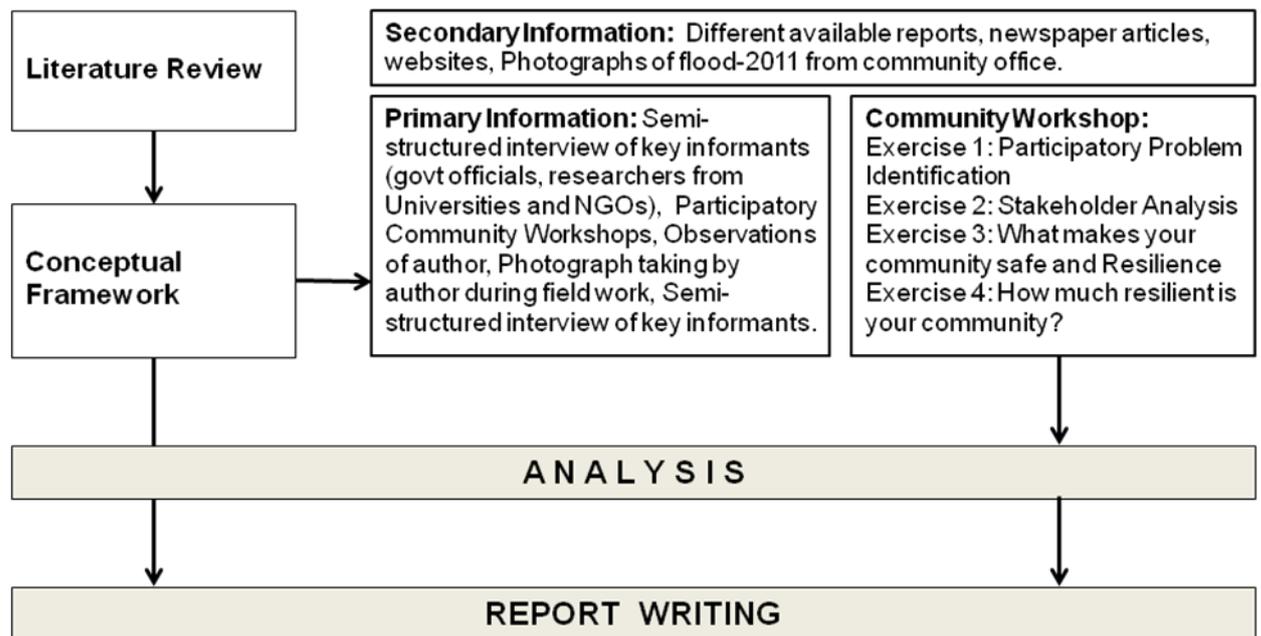


Fig: 3.2 Simplified presentation of Research Methodology

3.3.2 Data collection and sampling

Questionnaire development: Pre-testing and finalization

Targeting different groups (i.e. slum dwellers, community leaders, government officials and experts), different sets of semi-structured questionnaires have been developed. The questionnaires for slum dwellers and community leaders were

pre-tested by surveying 4 slum dwellers and 2 community leaders, and it was found some questions were not relevant to the Bangkok context. For example, questions about why they migrated to this community were not seen as relevant because they are living here for generations. These questions were deleted and some new questions were added and finalized to conduct the survey.

Sampling

For the Household level survey the following sample size is shown in the following table 3.2:

Table 3.2, Sample size

	Population	Sample Size	% of population
Community Network	21 community	2	9.5%
Households from Saphan Mai Community 1	106 HHs	20	19%
Households from Saphan Mai Community 2	600HHs	30	5%

Beside the HH level surveys, two community workshops were organized separately in the two communities where $13 + 11 = 24$ (out of 24, 15 participants were not covered by HH survey) people joined and additionally seven community leaders were interviewed for exploring the community structures and community level data collection. So in total 65 respondents were interviewed which is 9% in a total 706 HHs of these two communities.

Participatory community workshops and the following numbers in the table 3.3 of key informant interviews were conducted. The list of the interviewed people is attached as Annex: I

Table 3.3, Number of key informants

Community Workshops	2
Community Leaders	7
Government Officials	3
University Professors	2
NGO officials	4

In addition the author participated in the following formal meetings:

Table 3.4, List of official meetings attended

Meeting/organizer/participants	Date
Joint meeting: CODI, ACHR, UN-ESCAP & Hilti Group. Germany. UN-ESCAP is working with homeless federation in Philippines on low cost housing by sustainable low cost materials supported by Hilti Group, Germany. The purpose of this meeting was for replicating the learning through CODI & ACHR networks. The meeting was in English and author directly took notes during this meeting. Author got the opportunity to collect several	20.11.2012

newsletters, leaflets and publications by both CODI & ACHR in English.	
Community Council (network of all CODI supported communities in Bangkok): The community leaders from all 50 districts are organized as community council. The purpose of this meeting was to sign a MoU between Bangkok Police and Community Council for achieving community safety and security. The meeting was in Thai, Author was accompanied by an interpreter to take notes.	22.12.2012

Participation of these meetings helped the author to understand the context and role of different institutions and the role of community networks in slum upgrading of Bangkok.

Data Collection: Selection of Households

Systematic random sampling was applied to select the households. In the Saphan Mai-1 Community 10 HHs selected out of 68 were improved housing supported by the CODI project. 10 HHs selected out of 38 do not have improved housing. While selecting HHs geographical coverage considered that all 20 HHs were spread across the whole community area. A similar method was also followed in Saphan Mai 2 so that the selected 30 HHs were spread out in the whole community area.

Before starting the survey of the HHs the leader of each community was interviewed and their permission was sought to start the HH level interviews.

Participatory Community Workshop

Two participatory workshops were conducted, one in each of the two communities. Around 10 persons from each community (representing community leaders, CODI and non-CODI households, and gender balance was ensured) were invited, and 13 from Community 1 and 11 from Community participated in



the workshops. The list of participants is attached as Annex: I
 Picture 3.3: Community Workshop during field work, November 2012

The community workshop was divided into the following four exercises:

Exercise 1: Participatory Problem Identification and Ranking

Exercise 2: Stakeholder Analysis

Exercise 3: What makes your community resilient?

Exercise 4: How resilient is your community?

The notes, transcripts and observations of all interviews, community workshops and meetings observed, once translated into English, were coded manually, and then analyzed to incorporate into the main writings of the thesis.

During the workshop in Saphan Mai-1 community the author noted that the community leader was dominating the discussion, whereas other participants were not participating. The author requested that all participants should contribute to the discussion and as the leader has a good knowledge he should talk later to add to discussions if something is missing. This approach worked well and everyone participated in the discussion. The discussion in the Saphan Mai -2 also ran successfully.

It was coincidence that the community election took place during the field survey and it was a positive opportunity for the author to observe the community election process of Saphan Mai 2. The election was conducted by Bangkok Metropolitan Administration (BMA) to elect the eight leaders to form the committee for the next two years. The brief description of the election process is presented in the chapter six.

3.4 Research timeline



3.5 Meeting challenges in the field

3.5.1 Role of the researcher

The role of the researcher was clarified from the very beginning; that he is an MSc student in Technical University Berlin and this research is a part of his MSc degree in Urban Management, not part of any government or NGO-supported project work. It helped to draw attention of the community in explaining that they are assisting a foreign student. However at the beginning of the survey at every HH the respondents were hesitant to share their true opinions, though after some time they openly shared all the positive and negative aspects of their life.

3.5.2 Limitations of the study

In the beginning the main challenge of this research was to connect with an urban poor community exposed to flood. However after becoming connected with CODI this challenge was overcome. The main challenge for the author was the language barrier, not only in interviewing community people but also in using local newspapers and all available reports, including some useful documents on the 2011 flood in Thai which was not possible to review. However CODI was

supported with one assistant who has been the community leader and actively involved in the community upgrading process over the last ten years. The assistant was able to speak English, and for written English translation of the questionnaires, this was conducted by a Thai professional working in Asian Disaster Preparedness Center (ADPC) working in the DRR field. The assistant then conducted the interviews in Thai. The author also took notes, recorded the interviews and took photographs. After finishing the HH surveys and community workshops the translator translated from the questionnaires with support from audio recordings. Throughout this translation process, the assistant and the translator discussed any confusion together with the author. It is the main limitation of this thesis that during translation some aspects of communications may have been lost from the original responses, however the combination of an experienced assistant and the translator having a similar DRR background have reduced this potential gap.

Another challenge for the author was building trust with the community. As an outsider and non Thai speaker initially the community people were not friendly and not willing to participate in the survey. With help from the assistant the author showed his student identity card and explained that all the information would be exclusively used for academic purposes and would not be shared with anyone in the community and any Thai government and non-government offices. Then the trust of the community was established and the author's Asian background helped to develop quick friendships with community leaders as well as community people. By the end, a great deal of exclusive information, especially many photographs of the community during the 2011 flood, were given to the author by the community leaders, which gave greater understanding of flood impacts and damages in the community during last flood.

The conclusions of this study are limited to the two communities studied and can also represent the Network of 21 Canal side communities, and are not fully representative of urban poor communities and their resilience in Bangkok. However to cover the whole of Bangkok is also not the scope of this thesis. Thus general conclusions for Bangkok will not be drawn. However this study may offer transferable understanding of similar canal side communities in Bangkok.

3.6 Conclusion

This chapter has outlined the analytical framework and research methodology for this study. The methods of data collection and analysis and different steps of the research phases have been outlined and also the limitations of this research have been noted. The next chapter will focus on contextual background of Bangkok focusing the urban poor communities and flood.

Chapter Four – Bangkok Contextual Background: History, Urbanization, Slums and Flood.

4.1 Urbanization in Bangkok

4.1.1 Introduction to Bangkok City: Brief History of Urban Development.

4.1.2 Are slums/urban poor communities a challenge for Bangkok?

4.1.3 Why do slums/urban poor communities exist in Bangkok?

4.1.4 Characteristics of Thai slums & slums in Bangkok. How are slums defined in Bangkok (Thailand)?

4.1.5 Relevant stakeholders for slum upgrading and their responsibilities

4.2 Floods in Bangkok, and vulnerabilities.

4.2.1 Why do floods happen in Bangkok City?

4.2.2 Impacts of 2011 floods

4.2.3 Impacts of 2011 floods on low income communities in Bangkok.

4.2.4 Why are Bangkok slums vulnerable to floods?

4.3 Stakeholder mapping

4.3.1 Relevant institutions for flood management and slum upgrading, and main responsibilities.

4.3.2 Ongoing Projects/Future Plans for flood protection in Thailand

4.4 Conclusion

Chapter two described the conceptual framework and chapter three developed the analytical framework and research methodology. Based on these frameworks this chapter analyzes the contextual background of Bangkok City, focusing on the history of urban development and how it relates with slums and flood vulnerability of the city. This chapter also discusses the relevant stakeholders in slum upgrading and flood management of Bangkok.

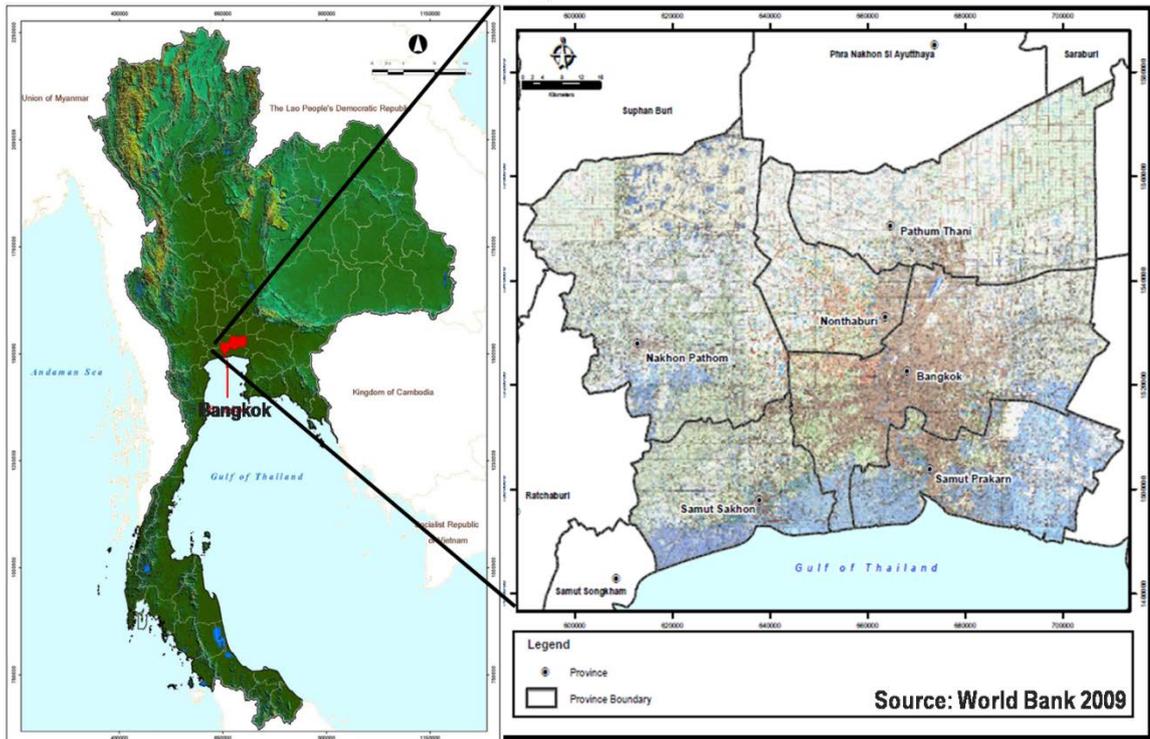
4.1 Urbanization in Bangkok

4.1.1 Introduction to Bangkok City: Brief History of Urban Development.

Introduction:

Bangkok is the prime capital as well as the political, economic and administrative centre of Thailand, and has also become a regional and global hub. It is located in the central part of the country on low lying plains of the Chao Phraya River, which is directly connected with the Gulf of Thailand. The total area of Bangkok is 1,568.737sq.km. The Bangkok Metropolitan Region (BMR) includes Bangkok and five surrounding provinces: Samut Prakarn, Samut Sakhon, Nonthaburi, Pathum Thani, and Nakhon Pathom. As of December 31, 2007, the total population of BMR was 10.07 million. According to the 2010 census the city of Bangkok has a population of 8,280,925 or 12.6% of the national population, and in 2010 Bangkok's registered population was 5.71 million inhabitants which count 36 times greater than the second largest city in Thailand (Usavagovitwong, 2012). The average population growth rate during the 2003-2007 was 0.64% with the highest rate in Pathum Thani (4.95%) (World Bank, 2009). The average population density of BMR was 1,297 per km² with the highest density in Bangkok of 3,644 per km². In 2006, the Gross Domestic Product (GDP) of the BMR was 3,352 billion baht, or 43% of the country's GDP (World Bank 2009).

Map:4.1, Location of Bangkok Metropolitan Region



Brief History of Urban Development

Bangkok became the official capital of Thailand on 21 April 1782. King Rama I (1782-1809) moved the capital from the west side of Chao Phraya River to the east bank (IDS, 2007). The purpose of relocating the capital from the east side of the river to the west was to use the river as the natural barrier for protecting the city from the possible attacks from Burma. The west side of the new capital was also connected by artificial canals with the river to isolate the capital from land. During the era of King Rama I to III (1782-1809, 1809-1824 & 1824-1851) waterways and canals were the main transportation mode of Bangkok and the settlements were expanded along the riverbank and canals.

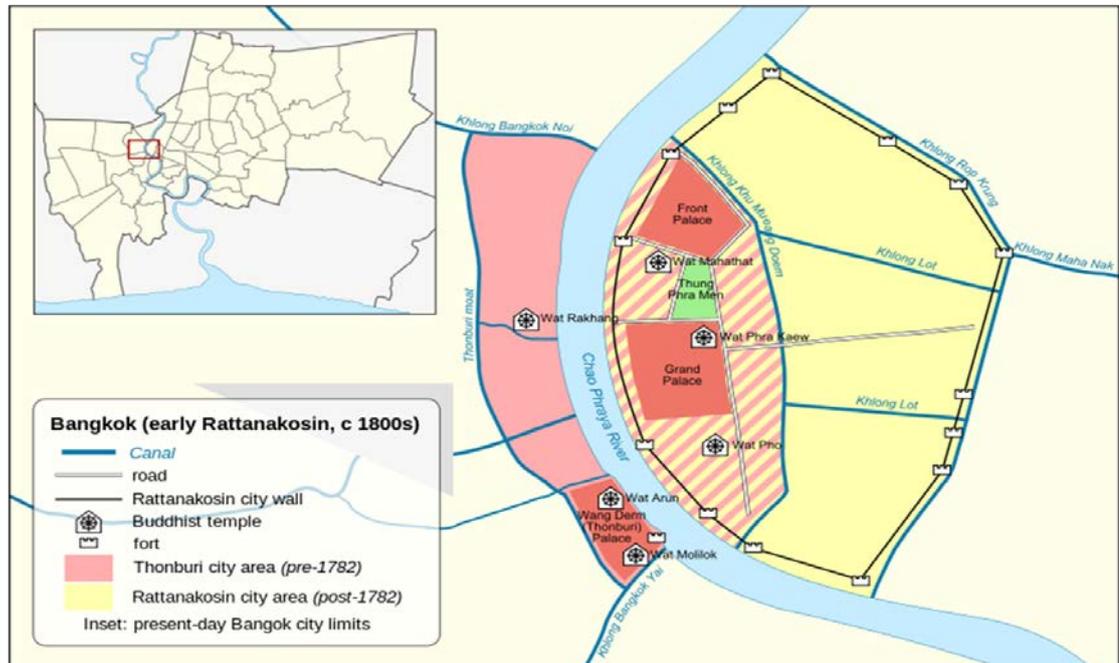
Bangkok experienced a radical modernization during the era of King Rama IV (1851-1868). Many roads were constructed and Bangkok was introduced to modern civilization and new technology. The modern reform was extensive, ranging from transportation and communication such as roads, railways, tramways, post, electricity, water supply, telephone, and telegraph to public health, education and government administration¹. The people of Bangkok were introduced to a greater array of modern consumer goods, foods and market places. Due to this force of modernization, land use was greatly influenced, and development was taking place along road sides instead of the banks of the river and canals. This trend of modernization was continued by the King Rama V (1868-1910) with construction of many new roads, railways, office buildings, public utilities, and facilities including a tram service,

¹ ibid

electricity and running water service². Bangkok was experiencing rapid urbanization and between 1890 and 1925, 135 roads were built rapidly and for the first time Bangkok began to move away from its connection with water and become a land-based city³.

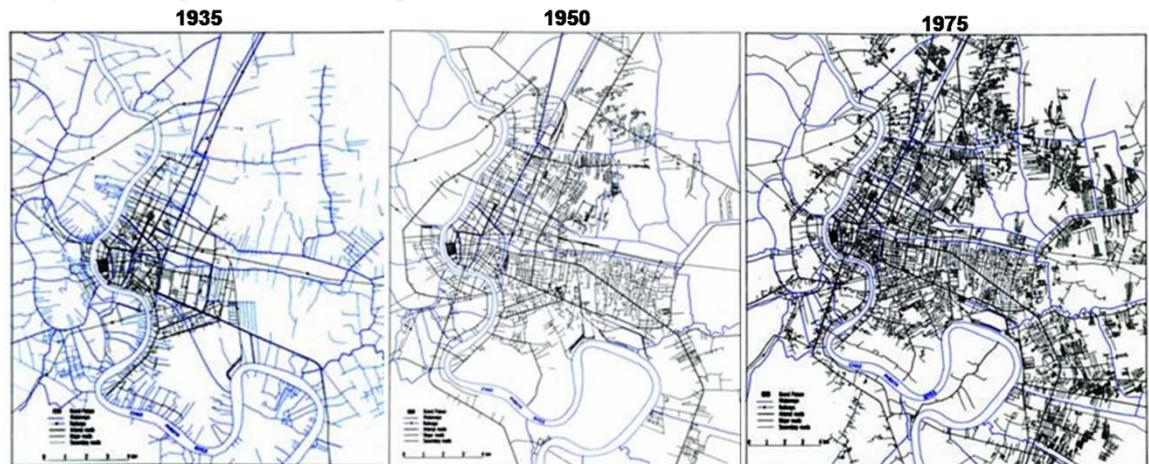
The following maps and population data shows the chronological development of Bangkok.

Map:4.2, Bangkok in1782 (Foundation)



Source: [http://en.wikipedia.org/wiki/File:Bangkok_\(early_Rattanakosin\)_map.svg](http://en.wikipedia.org/wiki/File:Bangkok_(early_Rattanakosin)_map.svg), retrieved on 31.12.2012

Map:4.3, Bangkok in different ages



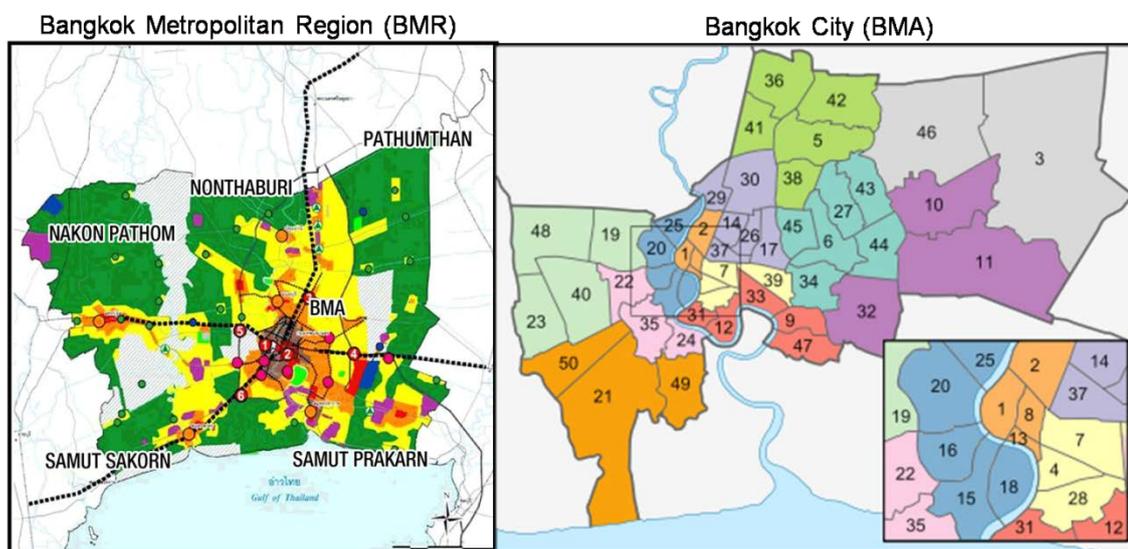
Source: Thaitakoo, Danai, and Brian McGrath, 2008

² ibid
³ ibid

Table: 4.1 Population of Bangkok⁴

Year	1919	1929	1937	1947	1960	1970
Population	437,294	713,384	890,453	1,178,881	2,136,435	3,077,361

Map: 4.4, Bangkok Today



Source: Bangkok Metropolitan Administration, <http://www.bangkok.go.th> cited by Lukmoeng Swangpol, 2012

Source: Heinrichsdamm, 2009-04-04T15:53:01Z available in http://en.wikipedia.org/wiki/File:Khet_Bangkok_12_groups.svg; retrieved on 31.12.2012

Table: 4.2 Population of Bangkok⁵

Year	1980	1990	2000	2010
Population	4,697,071	5,882,411	6,355,144	8,280,925

Due to the government policy on centralization; the 1st - 8th National Economic and Social Development Plan (NESDP) in 1961-2001, Bangkok became the centre of economic development in Thailand. During these decades Bangkok's economy underwent a significant economic transformation, encompassing extensive industrialization. Due to these economic forces Bangkok was extensively expanded and crowded by a mass population from all parts of the country, seeking better employment opportunities and education. With this rapid urbanization many canals were filled up and gradually turned into roads. The canals alongside the roads such as Silom Rd, Thonon Trong Rd (Rama IV Rd), Prajaechin Rd (Petchburi Rd), Ratchaprasong Rd also disappeared because of road expansion⁶. The remaining canals are not well maintained and most of parts of the banks are occupied by slums and used as drainage for untreated waste water.

⁴ NSO website. National Statistics Office-2010. Retrieved 18 September 2012 cited in <http://en.wikipedia.org/wiki/Bangkok>.

⁵ ibid

⁶ <http://www.bangkokinsights.com/history/bangkok-history.php>, accessed on 31.12.2012

4.1.2 Are slums/urban poor communities a challenge for Bangkok?

As a result of rapid and unbalanced urbanization urban Thailand, mainly Bangkok, has encountered many problems including traffic congestion, insufficient utility services, social and housing problems, flooding and environmental pollution (IDS, 2102). In addition to these, Bangkok is facing problems associated with slums as a result of the country's centralized focus on Bangkok's urbanization. In 1968 only 50 slum settlements were identified in Bangkok. By 1985, 943 slum settlements were found in the city, inhabited by 956,400 people in 173,890 households. In addition to these numbers, the immediately adjacent provinces of Nonthaburi and Samut Prakarn identified 77 slum settlements with 143,600 inhabitants (Pornchockchai, 1985, cited in Viratkapan et al., 2004). The latest reports from the National Housing Authority (NHA) reveals that in 2000 the number had grown to 1208 slum settlements with 243 204 households in the city alone (NHA, 2002, cited in Viratkapan et al., 2004).

In recent years it has been observed that slums are expanding into suburban areas and adjacent provinces of Bangkok. In 1998 there were 452 slum settlements in the five adjacent provinces of Bangkok, comprising 77452 households and 387125 persons (CODI, 2000, cited in Viratkapan et al., 2004, p-3). The main challenge of slum dwellers is security of tenure. The NHA reports 50% of slum dwellers in Bangkok do not have legal land title where they are living (NHA, 1997, cited in Viratkapan et al., 2004. P-4) and they are highly vulnerable to eviction. In the 1998 report from The Human Settlement Foundation (HSF, 1998; 36) it states 739 slum households had been evicted in 1998 alone (Viratkapan et al., 2004). The NHA has addressed the housing problems of 39 819 families evicted from 82 settlements during 1978–2001 (NHA, 2002 cited in Viratkapan et al., 2004, p-4). To tackle these challenges the Government of Thailand has established a country-wide low cost housing program called Baan Mankong Program (Secured Housing Program) in 2003. The program is implemented by CODI both in urban and rural areas.

4.1.3 Why do slums/urban poor communities exist in Bangkok?

A recent study by Nattawut Usavagovitwong (June 2012) on Successful Approaches to National Slum Upgrading and Prevention, Thailand (for Cities Alliance) identified the following reasons for the existence of slums in Bangkok City:

Box: 4.1 Why Slums/urban poor communities exist in Bangkok?

Urban-rural economic disparity: causes the development imbalance which brings on informal Settlements; it presents via the relationship between Bangkok and the rest of country. In 2009, Bangkok's GDP was counted as 26% of the national GDP, but it gains 72% of government spending. Urban-rural disparity has been generated, not only due to the urban economic concentration, but also due to the imbalance between central and local

development tracks. The country also does not have the comprehensive urban policy to guide and explore the potentialities of the urbanization.

Institutional and administrative platform paces are much slower than the economic growth, adaptation, and changes: People are driven economically in the vacant and ambiguous state of planning. The economic growth by the urban corridor and land speculation has created uncontrollable land use nationwide. Both interplay crucially toward slum generation.

Planning institutes have been displaced; Having been unequipped at the central government level, the public planning institutes are vertically separated in diverse Ministries. Urban Planning division, the most comprehensive planning unit, has been insignificant and subordinated to public works. Under the Ministry of Interior Affairs, it hangs the branch office in every province as a top down land use control without efficient enforcement apparatus. Due to poor comprehensive foresights, urban programs are displaced. And by economic activities, slums located as a nurture settlement influenced by market demand.

Land speculation has designed urban land use: The unclear land use planning has been a flaw of land speculation on the backdrop of economic growth. Operating upon the politics, transportation plan has become an instrument from politician and networking elites to land speculation. Urban corridor becomes a classic settlement which draws along urban economic activities. Vacant lands therefore have been filled by the informal settlements, especially in public lands. Imbalance in land occupancy and accumulation: Thailand has addressed a huge gap in land occupancy. Exemplifying in Bangkok, the first-fifty uppermost land occupants withhold at 14,930.

Source: Usavagovitwong N, 2012 pp 7-8.

4.1.4 Characteristics of Thai slums. How are slums defined in Bangkok?

Low income settlements/slums are defined by the Bangkok Metropolitan Administration (BMA) as “an overcrowded, non-orderly and dilapidated community with unample [sic] environment which can be harmful to health and lives and with a minimum of 15 housing units per rai”, while the NHA’s definition requires a minimum of 30 houses per *rai* (UN HABITAT 2006: 202, cited in Archer, 2009: 25).

The English word “slum” is frequently used in Thai with reference to low-income communities. Alternative phrases are *chumchon ae-ad* which literally translates to mean “crowded community”, or *chumchon buk ruk*, which means “squatter community” (Archer, 2009: 25). For this study one community with ongoing CODI upgrading program and one community without the CODI upgrading program has been selected which is used commonly as *Urban Poor Community*.

The overall situation in urban poor communities is quite advanced and well provisioned by better services and facilities. A 1994 survey shows that 89% of communities had a formal registration number, 99% had electricity supply,

97% water supply, 71% had a community committee, and 19% had a day-care centre (Sopon, 2003: 15, cited in Archer, 2009: 32), indicating that the majority of the urban low income communities/slums have good services and facilities.

4.1.5 Relevant stakeholders for slum upgrading and their main responsibilities.

The government of Thailand has been active in slum upgrading from the 1970s through establishment of the National Housing Authority (NHA), and in the early 2000s by establishing the Community Organizations Development Institute (CODI). Both CODI and the NHA play an important role in slum upgrading across the country, and in particular within Bangkok. The Bangkok Metropolitan Administration (BMA) is the city government, providing infrastructures and services. The following table summarizes the roles of relevant organizations in slum upgrading in Bangkok.

Table: 4.3, relevant stakeholders in slum upgrading in Bangkok.

Stakeholders	Role
Bangkok Metropolitan Administration (BMA)	The Bangkok Metropolitan Administration (BMA) was formed in 1972 for ensuring the city's comprehensive development. BMA has three central offices, 16 departments and 50 districts offices to run daily affairs. The District Offices are responsible for delivering local governance, community development, occupational training and promotion, registration, public works, health care, revenue collection, and education.
National Housing Authority (NHA)	The National Housing Authority (NHA) is a state enterprise attached to the Ministry of Social Development and Human Security. It was established on February 12, 1973 with the objectives to provide housing for low and middle income earners. NHA runs the Baan Eua-Arthorn (BEA) program; a low and lower-middle income housing program aimed at enabling the target groups to own their affordable housing. The program aims to enhance security in term of shelter ownership, targeting to complete 421209 units (70%) in the BMR and 180 518 units in other secondary cities.
Community Organizations Development Institute (CODI)	The Community Organizations Development Institute (CODI) was established July 27, 2000 under the Ministry of Social Development and Human Security. This was done by merging the Urban Community Development Office and the Rural Development Fund together. CODI runs the Baan Mankong program; a people-oriented housing program to secure lands and shelters. CODI is working within BMA, other secondary cities and also in rural areas.

4. 2 Floods in Bangkok and vulnerabilities.

4.2.1 Why do floods happen in Bangkok City?

Bangkok is located 33km north of the coast with an average ground elevation of only 1.0-2.0 metres above sea level, and some parts of the city are in fact at sea level as a result of land subsidence. Geographically it is naturally susceptible to flooding, both from large volumes of runoff from the north of the country and tidal inflows from the sea (APN, 2012).

Historically Bangkok has been vulnerable to floods, experiencing major floods in 1942, 1978, 1980, 1983, 1995, 1996, 2002, 2006 and 2011. The Asia Pacific Network for global change report (APN, 2012) states the main reasons of flood vulnerability for Bangkok is excessive rainfall, river runoff and tidal effects.

Rainfall: The city cannot drain the surface water from excessive rainfall due to the rapid urban development reducing drainage capacity. As previously noted regarding the history of Bangkok, since the 1851 reign of King Rama IV, heavy roads construction began and in the following years the canals were filled in.

River Runoff: For irrigation purposes during dry season, Thailand has developed a system to divert river water to its northern part. So, during rainy season water runoff plays a vital role in irrigating the paddy fields and agricultural plains to the north of Bangkok. The surplus runoff then passes through the city's canal network and into the Chao Phraya River and then to the Gulf of Thailand. As the average runoff capacity of the Chao Phraya is 2500 – 3000CMS, larger volumes cause flooding. For example, runoff in excess of 3500CMS will raise its water level to 2.1 metres above sea level – high enough to inundate the lowest lying areas of the riverside (APN, 2012, p-79).

Tides: As the Chao Phraya River is directly connected with the Gulf of Thailand the water level of the river also depends on tides. During high tide the water level rises and if the water level exceeds the water level of city canals, this causes floods.

All three flood types can happen simultaneously, worsening the flood event. Climate change is also adding new dimensions to these existing problems. Bangkok has already been recognized as one of the most vulnerable areas in Southeast Asia and has been identified by the IPCC as a future 'hotspot' due to the destabilizing effects projected on the city's hydrometeorology (ADB/JICA/World Bank, 2010). It is identified that 2615 km of Thailand's coastline, including Bangkok, is at risk of rising sea levels and global warming's impact on weather patterns has already resulted in Thailand's river levels becoming increasingly unpredictable, with flows becoming lower in the dry season and higher in the rainy season (BMA, GLF & UNEP, 2009).

Given Bangkok's low-lying elevation, the impacts of higher sea levels could substantially intensify the negative impact of flooding. For instance, a simulation of the effects of future flooding in Bangkok according to the worst-case sea level rise (SLR) scenarios used the baseline conditions of the 1995 flood as a comparator. It found that, in the event of a 0.32 SLR by 2050, the total flooded area would increase by 26% compared with 1995 (APN, 2012: 83). With an SLR of 0.88 metres by 2100, the increase would be as much as 81%. But the impacts of climate change to Bangkok in terms of flood vulnerability are likely to be exceeded by the costs of non-climate-related factors – in particular, the city's chronic land subsidence (Dutta, D. 2011 cited in APN, 2012: 84).

The land subsidence and sea level rises will have a combined impact and would increase the flood risk of Bangkok city. APN report states that if sea levels are assumed to rise by 12.3cm between 2009 and 2050, with land subsidence during this period totaling another 20cm, then the relative sea level rise will total 32.3cm. Another study estimated that, due to the effects of subsidence and sea level rise, Bangkok could potentially find itself submerged in 50-100cm of floodwater by 2025 (Phien-Wej et al., 2006; BMA, GLF & UNEP, 2009, cited in APN, 2012: 83).

4.2.2 Impact of 2011 Floods

In 2011 it was an exceptional case that Thailand was severely flooded and the World Bank estimated it was the world's fourth costliest disaster by 1425 billion THB. In the following table the rapid assessment of the flood impacts conducted by the Thai government in collaboration with the World Bank and other development agencies is presented:

Table: 4.4, Total Damages and Losses (THB, millions)

Sub Sector	Disaster Effects			Ownership	
	Damage	Losses	Total	Public	Private
Infrastructure					
Water Resources Management	8,715	-	8,715	8,175	-
Transport	23,538	6,938	30,476	30,326	150
Telecommunication	1,290	2,558	3,848	1,597	2,251
Electricity	3,186	5,716	8,901	5,385	3,517
Water Supply and Sanitation	3,497	1,984	5,481	5,481	
Production					
Agriculture, Livestock and Fishery	5,666	34,715	40,381	-	40,381
Manufacturing	513,881	493,258	1,007,139	-	1,007,139
Tourism	5,134	89,673	94,808	403	94,405
Finance and Banking	-	115,276	115,276	74,076	41,200
Social					
Health	1,684	2,133	3,817	1,627	2,190

Education	13,051	1,798	14,849	10,614	4,235
Housing	45908	37,889	83797	-	83,797
Cultural Heritage	4,429	3,076	7,505	3,041	4,463
Cross Cutting					
Environment	375	176	551	212	339
Total	630,354	795,191	1,425,544	141,477	1,284,066

Source: DALA estimates, NESDB, and Ministry of Industry mentioned in UN-ESCAP internal working paper - 2012

4.2.3 Impact of 2011 Floods on Low-income communities/Slums in Bangkok.

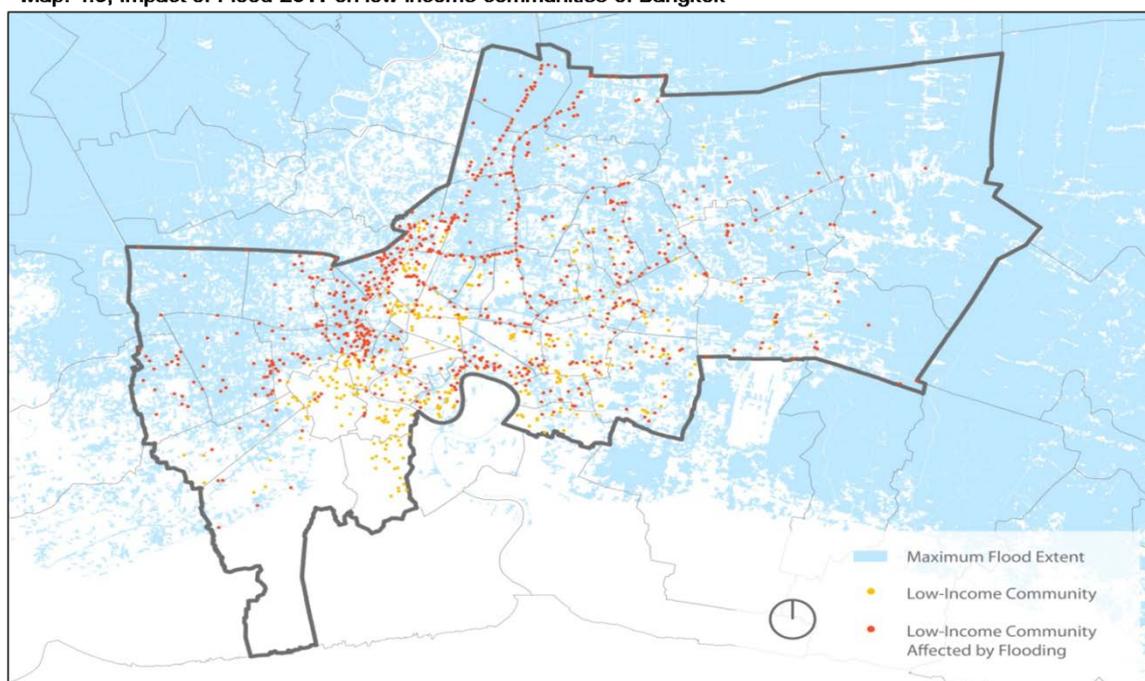
Many urban poor communities in Bangkok are located in flood prone areas and were the most vulnerable during the 2011 flood due to lacking adequate capacity for flood protection (UN-ESCAP, 2012). As per The National Housing Authority of Thailand 73% of urban, low-income populations were affected in Bangkok by the 2011 flood (NHA, 2012 cited in UN-ESCAP, 2012). The following table and map show coverage of the 2011 flood and the impacts on urban poor communities in Bangkok.

Table 4.5: Total urban low-income population in Thailand and flood-affected urban low-income population

	Total Population	Affected by Flood-2011	% of affected people
General	8,249,117	1,766,931	21%
Low Income	624,640	457,805	73%

Source: UN-ESCAP internal working paper, 2012

Map: 4.5, Impact of Flood-2011 on low income communities of Bangkok



Source: NHA 2012, cited in UN-ESCAP internal working paper, 2012

4.2.3 Why are Bangkok slums vulnerable to floods?

As mentioned in earlier sections, both sides of most of the Bangkok canals are occupied by slums. The following image shows a typical Bangkok canal encroached by low income communities, creating barriers to water runoff to the river, resulting in waterlogging/ flooding.

Figure 4.1. Canal side, low income communities in Bangkok



Source: NHA, 2012, cited in UN-ESCAP internal working paper, 2012

The following picture shows the impact of the 2011 flood on low income communities of Bangkok.

Picture: 4.1: Impact of flood-2011 on low income communities of Bangkok



Source: Prapas, 2011

4.3 Stakeholder mapping

4.3.1 Relevant institutions for flood management, and main responsibilities.

As flooding has historically been a challenge for Thailand several Ministries and Departments exist with different roles in flood management. The role of different stakeholders in flood management is presented in the following table:

Table:4.6 Role of stakeholders in flood management in Thailand

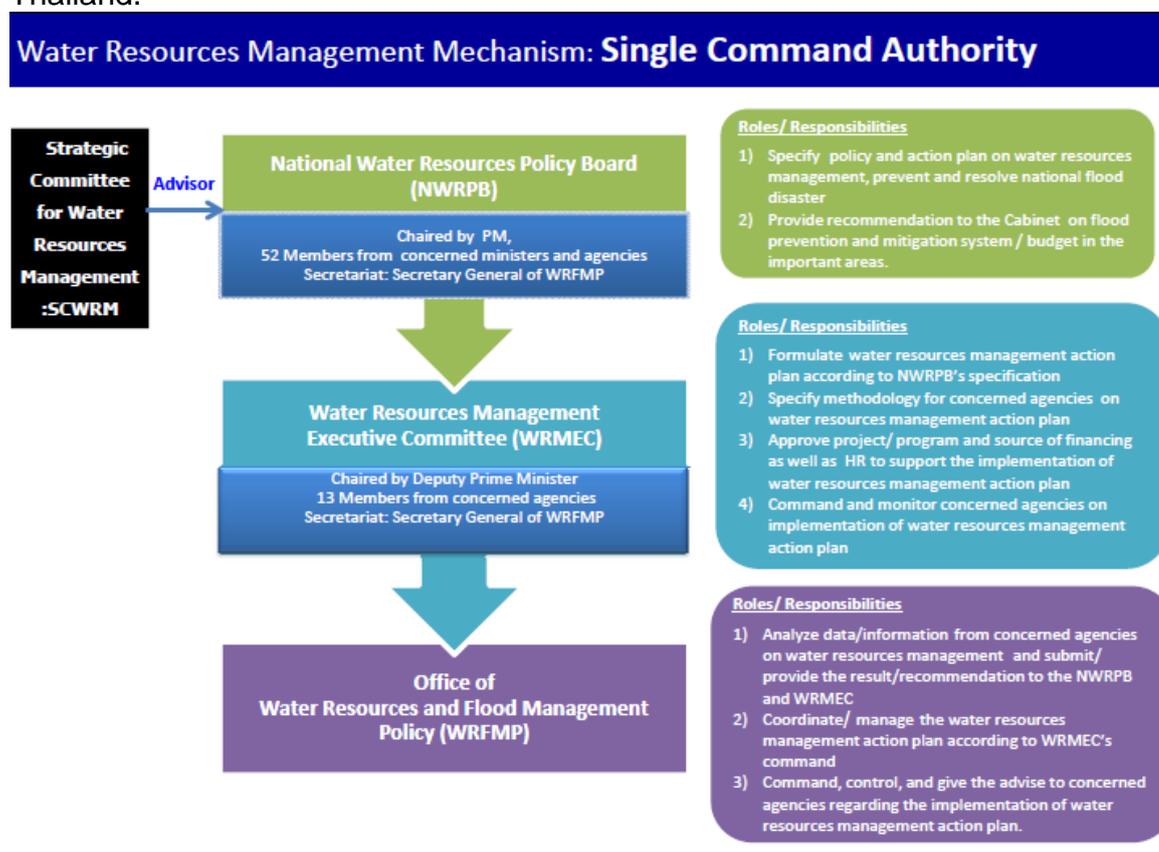
Ministry of Interior	Local Municipality	Provide rescue kits, rescue vehicles, goods, food, medical supplies, support staff
	Department of Disaster Prevention and Mitigation	Help and Information centre
Ministry of Natural Resources and Environment	Pollution Control Department	-Action plans for prevention and pollution reduction in flooding events. -Guidelines for prevention of flooding and pollution leaking in flooding events -Guidelines for rehabilitation of water resources in post disaster event.
	Department of Environmental Quality Promotion	Projects for rehabilitation of environmental damages in flood events.
Ministry of Agriculture and Cooperatives	Department of Agriculture Extension	Grant for farmers affected by flood
	Royal Irrigation Department	Computing Analysis of water situation center
	Warning Center on Agriculture in Natural Disaster	
Ministry of	Department of Mental	Guidelines for mental health

Public Health	Health	assistance in flooding events
	Medicine and Public Health operation center in flood event	Prevention and relief in diseases which are caused from flooding events.
Ministry of Transportation		Road Maintenance
City level		
Bangkok Metropolitan Administration (BMA)	Department of City Planning	Flood Prevention Plan
	Department of Drainage and Sewerage	Flood control center Bangkok, Action Plan to prevent and resolve flood.

Source: APN, 2012

Co-ordination of the many actors in flood management has been found problematic, as in the case of the 2011 floods, and as a result the Government of Thailand re-organized the structure to have a single command authority for efficient management of future floods. The following charts shows the structures and roles of single command authority:

Figure 4.2. Single Command Authority for flood management, Government of Thailand.



Source: Government of Thailand mentioned in Asia Foundation - 2012

4.3.2 Ongoing Projects/Future Plans for flood protection in Thailand

After the devastating floods in 2011, the Government of Thailand established the National Water Policy and Flood Committee (NWPFC), chaired by the Prime Minister, as the single command authority (shown in the above figure 4.2) responsible for coordinating water and flood policies. The committee undertook significant efforts to prepare and implement a nationwide Integrated Water Resources Management Plan for protection from future floods. This national plan is divided into the following 8 sectoral plans:

1. Restoration and conservation of forests and ecosystems
2. Annual water management plan for major water reservoirs and dams
3. Restoration and efficiency improvements of current infrastructure
4. Development of a data warehouse, forecasting, and warning system
5. Preparedness to emergency situation in specific areas
6. Assign water retention areas and recovery measures
7. Improving water management institutions
8. Develop stakeholders understanding, acceptance, and participation in large scale flood management

The tendering process is now on-going to select consultants in preparing the plans and the following government ministries and departments are responsible for the implementation of this plan.

Table 4.7: Government Agencies initially responsible for the implantation of the Master Plan⁷

Operational plan	Government department/s initially responsible
Restoration and conservation of forests and ecosystems	Ministry of Agriculture and Cooperatives Ministry of Natural resources and Environment Royal Irrigation Department
Annual water management plan for major water reservoirs and dams	Royal Irrigation Department Electric Generation Authority of Thailand
Restoration and efficiency improvements of current infrastructure	Ministry of Interior Ministry of Agriculture and Cooperatives Ministry of Natural resources and Environment Ministry of Transportation and Communication Office of the Prime Minister

⁷ Strategic Committee for Water Resource Management Office of the Strategic Committee for Water Resource Management Office of the National Economic and Social Development Board. (2012). Master Plan on Water Resource Management.

Development of a data warehouse, forecasting and warning system	Office of the Prime Minister
Preparedness to emergency situation in specific areas	Ministry of Interior Ministry of Agriculture and Cooperatives Ministry of Natural resources and Environment Ministry of Transportation and Communication
Assign water retention areas and recovery measures	Ministry of Interior Ministry of Agriculture and Cooperatives Ministry of Natural resources and Environment
Improving water management institutions	Office of the Prime Minister and related agencies
Develop stakeholder understanding, acceptance, and participation in large scale flood management	Office of the Prime Minister and related agencies

Source: Government of Thailand mentioned in Asia Foundation - 2012

4.4 Conclusion

Bangkok as an economic hub will continue to grow and attract migrants by offering enormous employment opportunities. Thus it can be assumed that urban poor communities will remain, and continue to grow. Though there are programmes are implementing by CODI and NHA those are not significant considering the total demands. As Bangkok hosts 30% of countries urban poor people who currently living in more than a thousand of Communities; CODI only covered few among those. Beside this growing challenges flood has been the historical challenge for Bangkok and it has been anticipated by different researchers that it will continue and probably with more frequency and severity because of Climate Change and sea level rising. It has been found that urban poor communities are the most victim of flood 2011 and canal side communities occupied some parts of canal by encroaching their houses. Though Bangkok demonstrated some best practice examples but it needs wide range of scaling up to meet the overall challenges. This chapter presented historical development of the city and the growing problems of urban poor communities and the challenges of flood vulnerability focusing the role of different stakeholders that enables this research to focus on specific communities and the challenges of floods. The next three chapters (chapters five, six and seven) will focus on the case study; the selected two urban poor communities of Bangkok.

Chapter Five – Location, Profile and Vulnerabilities of the Community

5.1 Community Profile

- 5.1.1 Location and Demography
- 5.1.2 Historical Background of the communities
- 5.1.3 Profile of the case study communities
- 5.1.4 Socio-economic characteristics of respondents

5.2 Vulnerabilities

- 5.2.1 Physical Vulnerabilities
- 5.2.2 Political-legal Vulnerabilities
- 5.2.3 Socio-economic Vulnerabilities
- 5.2.4 Problem Identification & Prioritization
- 5.2.5 Perception of the community people about floods

5.3 Conclusion

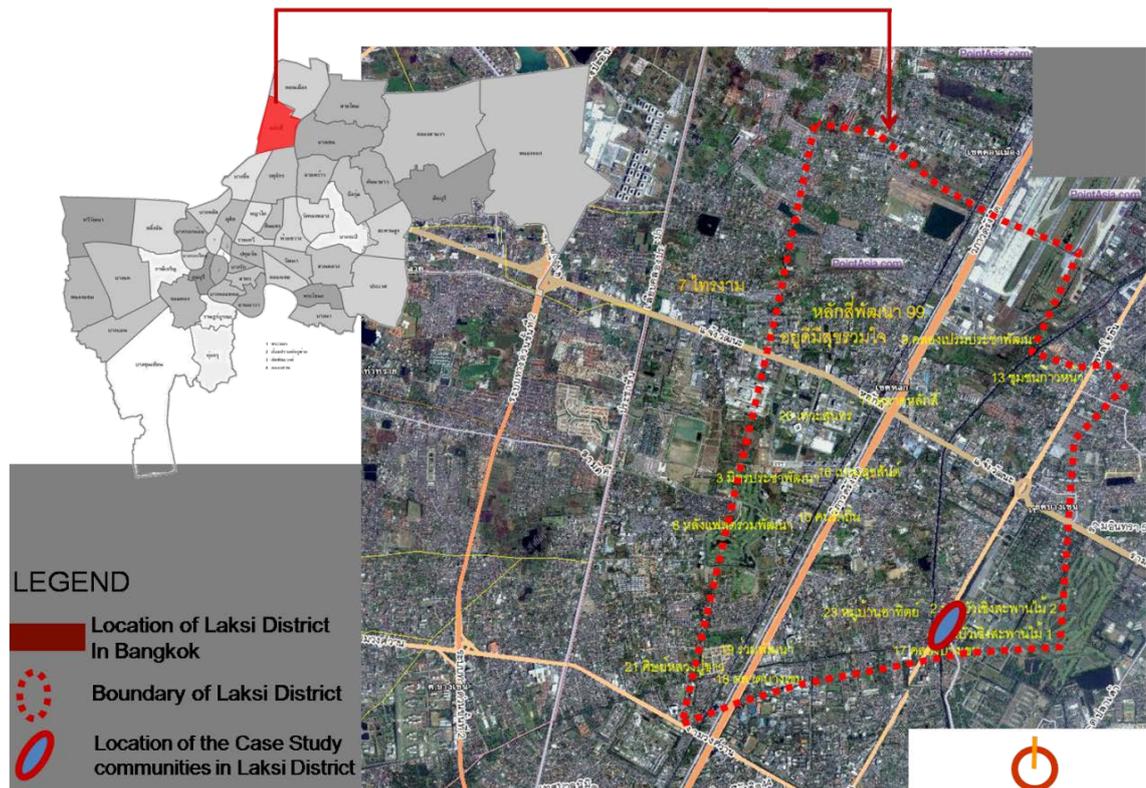
This chapter explains the profile, vulnerabilities, problems and the community perceptions of flood.

5.1 Community Profile

5.1.1 Location and Demography

The case study communities (Saphan Mai 1 and Saphan Mai 2) are located beside the Bang Bua Canal (Klong Bang Bua) in Laksi District, one of the 50 districts of Bangkok. Located on both sides of this canal are several urban poor communities. The following map shows the location of Laksi district in Bangkok and the location of the case study communities within the district, and the following photographs show the physical outlook of the Bang Bua canal side communities.

Map: 5.1 Location of the Case Study Communities



Source: CODI. 2008.

Picture 5.1: Layout of Bang Bua canal side communities



5.1.2 Historical Background of the communities

Klong Bang Bua canal is located in Northern Bangkok, and is 9km long and 80m wide. The canal runs through three districts: BangKaen District, Lak-Si District and Don Muang District. The Bang Bua canal was constructed during the reign of King Rama VI in 1927 for irrigation purposes (Prapas, 2006). As with other canals in Bangkok, settlements developed on both sides of the canal. According to an unpublished report from the community office of the Bang Bua community, people who lived nearby the canal would farm, make charcoal or bricks and would sell them at BangBua market by taking row boats (Prapas, 2006).

As described in chapter four of this document, urbanization has also had impacts on these canal side communities; many people migrated from different parts of the country as well as within Bangkok city since 1987.. During 1980s the overall environment of the area degraded, particularly the quality of the canal water. Discarding household waste directly into the canal, as well as the absence of waste water treatment, has degraded the environment and the canal side communities were blamed by the city authority for this poor canal water environment (Prapas, 2006). Beside this blame for damaging the environment, the canal side communities were also facing regular floods, and poor quality housing, infrastructure and services.

In 1997 people within these canal side communities came to organize themselves: six communities from BangKaen district and three communities from Laksi district, on both sides of the canal formed an Environmental Network to locally improve the overall environment (Prapas, 2006). The community people considered that the main causes of the canal water contamination could be attributed to the upstream communities, and also industries where waste and untreated waste water were disposed directly into the canal (Prapas, 2012 mentioned during study interview). However the Environmental Network of canal side communities took the challenge to prove they can live peacefully together with the canal as well as to improve the overall environmental condition of the area. The Network has now expanded from 9 communities to 21 communities and is collaborating with a further 9 canal side networks in the surrounding areas.

The following photographs show the Environmental Network of Klong BangBua and other networks from 9 canals, helping each other during cleaning of the canal.

Picture: 5.2. Environmental Network of Klong BangBua and other communities working together to improve the environment of the canal, through a canal cleaning campaign in 2006.



Source: Prapas, 2006

Since 2003 the Community Organizations Development Institute (CODI) has been working with these communities within the Klong BangBua network. 15 of the 21 communities have already received support from CODI to improve their housing and infrastructure conditions. So the case study communities (Saphan Mai 1 and Saphan Mai 2) have been selected from the 21 canal side communities of the Klong BangBua network.

5.1.3 Profile of the case study communities

The profiles of the case study communities are presented in the table below:

Table: 5.1, Profile of the case study communities

Issue	Saphan-Mai 1	Saphan-Mai 2
Age of the Community	Around 100 years	Around 100 years
Number of HH	106	600
Number of People living	401	2000 (estimated by community leaders)
Land owner	The Treasury Department	The Treasury Department
Land tenure	30 years-lease organized by the community cooperative.	Illegal
Saving group (CODI)	The saving group was established since 2004.	The saving groups was established with 40 households, however it failed because the community members and leader mostly did not agree to pay the rent fee and join the <i>Baan Man Kong</i> Project due to incomplete

		information they received from other people in the project.
Infrastructure	All people can access water supply and electricity legally.	200 HHs who have holding number can access water supply and electricity. Remaining 400 HH connect the water pipes and electricity meters illegally with their neighbours and pay their bills more than government rate.
Housing	They have capability to upgrade and improve housing conditions through <i>Baan Man Kong</i> Project.	No improvement
Impact	Because they have joined <i>Baan Man Kong</i> Project, the legal status of the community brings many opportunities to develop people's skills and community's well-being from government agencies and NGOs.	Due to the conflict of interest among people there, they are trapped in the poverty. More than 40 people are selling drugs. People are not self-resilient, but likely to depend on elites and local leaders.

Source: Field Survey, November 2012

5.1.4 Socio-economic characteristics of respondents:

The majority of the people in both these communities have lived here for a long time - during the field survey community members stated they are the permanent residents and that two to three generations of families live here. However both of these communities have informal tenants. Though as per the existing rule of BMA people without proper land title people cannot get the holding number; 200HHs from Saphan Mai 200 HHs out of 600 HHs managed their holding number. So the remaining 400HHs without BMA holding number do not have direct access to different services like electricity, water supply, etc. and thus they depend on their neighbors for informal connections/arrangements. The CODI officer mentioned that BMA took initiatives to formalize its informal settlements during the early 2000s, when BMA could not verify the land ownership of all households, and so took this opportunity. If these remaining informal settlements join the CODI housing project this will facilitate the process of long term leasing from the land owner (treasury department). It was observed that the majority of the people living in these two communities have similar kinds of livelihoods, socio-economic conditions and way of living. The monthly average income of the two study communities is 23350THB /month and 22544THB /month respectively. The following tables shows the income, occupations and profiles of the community respondents.

Table 5.2 Monthly Income

Income Range (in THB)	Saphan Mai 1	Saphan Mai 2
Less than 5000	0	3 (10%)
5001 to 10000	3 (15%)	5 (17%)
10001 to 20000	6 (30%)	8 (27%)
20001 to 35000	8 (40%)	8 (27%)
35001 to 50000	2 (10%)	3 (10%)
50001 +	1 (5%)	3 (10%)

Source: Field Survey, November 2012

From the above table it can be stated that the overall income pattern of these two communities are quite similar but they have very diversified income status. It was observed that around 50% HHs of both the communities are economically solvent and from the above table it is also reflected that more than 50% people are earning more than 20000 THB.

Table: 5.3, Respondents profile

	Saphan Mai 1		Saphan Mai 2	
Respondents	Female-13, Male-07	20 HH (86 people)	Female-13, Male-17	30 HH (117 people)
Occupations	Temporary Worker	7	Temporary Worker	5
	Small Business	7	Small Business	5
	House Wife	2	House Wife	3
	Taxi Driver	1	Taxi Driver	
	Traditional Thai Massager	1	Traditional Thai Massager	1
	Construction Worker	1	Construction Worker	1
	Private Service	1	Govt Service Holder	5
			Private Service	1
			Retired from govt service	3
			Un-employed	3
			Lawyer	1
		Flower Seller	1	
		Military Officer	1	
Average Income		23350TH B /month		22544THB /month

Source: Field Survey, November 2012

Regarding occupations both of the communities also have similar status. Most residents are temporary workers, work in small businesses, taxi drivers,

construction workers and traditional Thai massagers, indicating that the majority of residents are employed in the informal sector.

The majority of people living in these two communities work in nearby places within Laksi district and other parts of the city. In Laksi district there are a number of workplaces, i.e. Bangkok Metropolitan Complex, Universities such as Dhurakij Pundit University, Sripatum University, and the malls including Tesco-Lotus, Big-C supercenter, IT-square. These are within this district and the Muang Thong Thani area and Don Muang Airport outside of the district, though geographically closely linked with these communities, and generating many formal and informal employment opportunities for the urban poor communities (CODI, 2008).

Differences between these two communities are mainly due to the CODI-supported housing project which facilitated the land ownership and improvement of physical infrastructures, including better housing.

5.2 Vulnerabilities

Vulnerability is divided into two types; physical (external) and a social (internal) category. Moser et al. (2010) and Roy et al. (2012) modified the typology of vulnerability, dividing social vulnerability into political-legal and socio-economic vulnerabilities. Therefore in analyzing the vulnerabilities of the case study communities these three categories (physical, political-legal and socio-economic) of vulnerability have been used.

5.2.1 Physical Vulnerabilities

In Chapter four the vulnerabilities of Bangkok city have been described, with the city sinking and highly vulnerable to flooding, and with communities located beside the canals as the most exposed. Both case study communities are located beside the canal, though Saphan Mai 2 is more physically vulnerable as it has lower quality infrastructure than the Saphan Mai 2 community. As part of the CODI secure housing project most of the river side houses are shifted and new houses are constructed to make free the encroached land of the canal side, whereas Community 2 is still occupying major parts of the canal by constructing houses on the canal side. These houses are the most vulnerable and during any flood these houses are waterlogged for days. The community people of Saphan Mai 2 also use temporary materials for housing which are also relatively more vulnerable because of poor infrastructures. The roads inside the communities are also very narrow which creates access limitations. Both communities lack waste water and sewerage treatment facilities, though Saphan Mai 1 community has better sanitation facilities than Saphan Mai 2. Both communities have problems with Solid Waste Management, and household waste is disposed directly into the canal, and the canal bed is rising as a result of accumulating deposits. As a result this is reducing the volume of water that the canal can handle.

5.2.2 Political-Legal Vulnerabilities

Security of tenure is one of the main factors influencing the vulnerability of the community. As mentioned earlier the land is owned by the treasury department. Saphan Mai 1 has a 30 years leasing agreement but Saphan Mai 2 Community don't have any kind of legal arrangements for their land title.

5.2.3 Socio-economic Vulnerabilities

People living in the poor communities are not necessarily poor. In both the communities they have a similar level of income. From the survey it was found that Saphan Mai 1 has 23,576.00 THB per month as average income and Saphan Mai 2 community 22,568.00 THB per month, which is far above the poverty line. However most of the people have informal employment and number work as temporary workers in different markets, for example as motor cycle drivers, construction workers, mechanics, etc. People of these two communities also think they don't have financial crisis and they identified drugs as the main problem, as well as poor levels of education. In the following section the impact of the 2011 flood on different assets of the community people is analyzed.

5.2.4 Problem Identification & Prioritization

Problem identification and prioritization was conducted through two participatory community workshops. In the community 1 the total participants were 13 and in community 2 total participants were 11. The randomness was ensured in selecting participants representing male, female, different occupations and age group.

Table 5.4. Problem ranking of case study communities

Saphan Mai 1		Saphan Mai 2	
Problems	Ranks	Problems	Ranks
Waste management (in the canal and households)	1	There are no fire hydrants	1
Drugs	2	Drugs	2
Lack of volunteering	3	There are no fire hoses (water pipe)/ fire boats	3
Noise pollution	4	Waste Management	4
Lack of collective responsibility	5	An adequacy of light on the pathway in the community	5
Poor housing and environmental condition	6	Thieves	6
		No child centre	7
		Polluted canal water	8
		Lack of environmental awareness	9

Source: Field Survey, November 2012 (Community Workshop)

General Observations

Community 1: Before the *Baan Monkong* Project implementation, the community was defined as a slum with several major social problems including

drug abuse, environmental degradation, theft, and migrant workers¹ and poor housing conditions. However, the drug problem still exists. The waste management in the canal and household issues were raised by two people in the meeting. Also, it was stated that the lack of collective responsibility in the community caused firstly environmental degradation from littering and secondly caused a lack of unity. One woman raised the issue of poor infrastructure, with the community street problem². Another woman said that for her, poor housing and environmental conditions (waste) needed urgent action to improve the well-being of the community, wanting to see better housing for the whole community. Even though the Baan Monkong Project has vastly improved the community condition, some households which are not members of the project still have poor housing conditions. A man raised the issue of a lack of volunteering, and the last problem raised was noise pollution from the residents within the community.

To rank the community problems³, the community leader played a major role in ranking numbers 1- 2 as waste management (in the canal and households) and drugs, respectively. Lack of waste management within the community continues to reduce, however the problem still exists. Likewise, poor housing and environmental conditions are decreasing due to implementation of the Baan Monkong Project. Lack of volunteering and lack of collective responsibility are in the similar rank. Noise pollution was identified as coming from motorcycles, not from the residents.

Community 2: The focus group believed that theft is a consequence of the drug problem. The community is greatly concerned with fire protection because the canal water is their only means to extinguish fires. Also the street in the community is too narrow for fire trucks to access. So in the event of a fire it will potentially be difficult to control the blaze.

The child centre is very important for the community due to the increasing birth rate. The meeting stated that regarding the polluted canal water, this is not a problem exclusively for their community; it is a problem for everyone living along the canal. For them this problem needs a collective solution from all people and stakeholders in the area.

In ranking the list of problems, both the communities mentioned drug is the main problem and ranked as number-2 problem. In terms of the waste management problem due to the narrow streets, the community members only have the pier to get rid of wastes. So they need more strategies and alternatives to manage them. The problem ranked 5 was a need for adequate

¹ Before the Baan Monkong Project, there were many rental rooms for the migrants including Laotian, Burmese and Cambodian migrants. In the community leader's perspective these people caused a lot of problems for the community, but did not demonstrate any example.

² The community leader opposed this idea. He argued that the street has been improved twice.

³ In the beginning of the ranking of community problems, one man stated that lack of volunteering should be prioritized, however the community leader stated this problem was on the individual scale, not for the community scale. The community leader further said that this problem is exclusive to this community, but everywhere.

lighting on the pathways in the community. For the rest of the problems, they all agreed that their capacities are enough to handle them together.

5.2.5 Perception of the community people about floods:

It was very surprising that flood was not listed as a problem by both of the community. And to get the right impression different sources were revisited why community people don't consider flood as one of their problem? In one of the interview of Dr Apichart, the president of Thailand Water Resources Association (TWRA) on the 2011 flood, he mentioned that

“Thai people have a short memory. So after a while, probably people will forget it. In a way, I think one thing that is good about Thai people, is that you see them suffer a lot but they are still smiling. And the other thing is that lot of people are helping each other out. People help in times of hardship, but pretty soon, they will forget”.

It is probably for this reason people did not rank flood as one of their problems. From the interview of community leaders and key informants the following points have been identified:

1. The flood happened last year (2011). So, people are not currently facing any direct flood problems. Their positions to express their feeling in the past and present are not the same.
2. Beside the crisis of flood, there is also an opportunity. This was highlighted particularly in the case of the Saphan Mai community, strengthening relationships within their community during the flood.
3. The communities have lived along the canal sides for decades, and have frequently experienced flooding every year, with the 2011 flood the most devastating flood event in recent history. The communities live with floods and know basically how to cope with them.
4. People who stayed in the communities during the 2011 flood mostly lived in the upper floor of their housing as a coping strategy, and people who did not stay in the community went to stay with relatives outside BKK. People had assets to cope with it; knowledge, finance social capital with relatives and so on.

To get the community people's perception about flood it was asked why flood happen in Bangkok and what were the reasons for the 2011 flood. The following table summarizes the responses:

Table: 5.5, The community perceptions on reasons behind the 2011 flood.

Water level was high	2
Waste blocked the drainage	3
There was conflict between politicians/lack of coordination	4
It was a natural disaster	9
It was because of heavy rainfalls	9
I don't know/I can't explain	18
The flood was sudden and so fast	1

Inefficient water management	11
High water level from north of Thailand	1
Bangkok has drainage problem	1
Climate Change	1

Source: Field Survey, November 2012

Only one of the responded think there is a relationship with Climate Change is a contributing factor for 2011 flood and a quite number of responses were *I don't have any idea*. The community people have a common perception that this kind of devastating flood will happen again.

5.3 Conclusion

People of both the communities have lived for generations in this location; however they are not the legal land owners. The treasury department owns the land, and with the support of the CODI Baan Mankong Housing Program Saphan Mai 1 community has signed a long term leasing agreement with the Treasury department to upgrade their housing. The community therefore now has a legal arrangement for land title. However in case of Saphan Mai 2 the community does not have any legal arrangements for land title.

In the course of the community workshops it was unexpected that people did not mention flood as one of their problems, and then clarified that the people of these communities took flood as a part of their life and do not complain about it. Though community members mentioned the huge 2011 flood and that there had been significant negative impacts. The observation was made that both study communities have similar income status and living culture but different physical living conditions, due mainly to Saphan Mai 1 community's participation in the Baan Mankong Housing Program, involving a slum upgrade process. This chapter analyzed the community profiles, and different vulnerabilities and community perceptions for flooding. The next chapter will focus on the impacts of flood and responses, covering preparedness, emergency management and recovery.

Chapter Six – Impacts of 2011 Flood and Responses of Community People

6.1 Impacts of 2011 flood

6.1.1 Impacts on different assets of the community members

6.2 Response for 2011 Flood

6.2.1 Preparedness

6.2.2 Emergency Management

6.2.3 Recovery of different assets of the community people

6.2.4 Long term prevention

6.4 Role of different stakeholders during 2011 flood (focusing the case study area)

6.4.1 Who played which role?

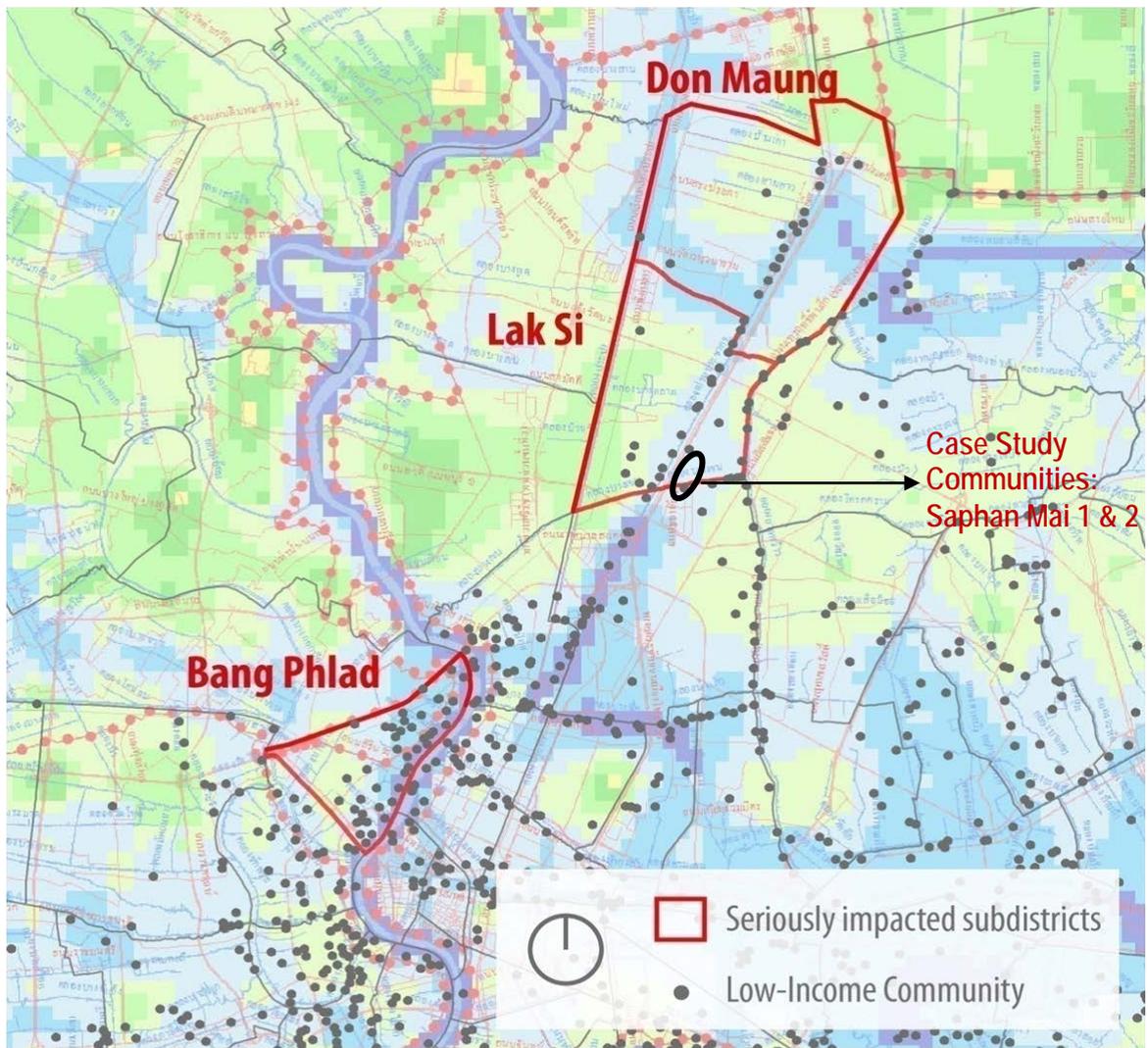
6.5 Conclusion

This chapter will describe the impacts of 2011 flood and the responses of the community people based on the field survey. The analysis is based on the theoretical framework developed in the chapter-2. The major impacts on the different livelihood assets and their recovery have been focused for the analysis of this chapter.

6.1 Impact of 2011 flood

Laksi district was one of the most affected districts in the 2011 floods, and both case study communities were severely affected. The following map shows the severely affected sub-districts and urban poor communities during the 2011 flood.

Map 6.1. Severely affected sub-districts and urban poor communities during 2011 flood



Source: NHA, 2012, cited in UN-ESCAP internal working paper, 2012

Map 6.1 shows the location of both case study communities, which were within a severely affected district of Bangkok. The flood was very sudden and during one night the communities were flooded. The whole area was waterlogged for more than two months and people used to travel by boat which was costly. During this flood the community people faced hardships, particularly with loss or disruption of their livelihoods for a long period of time. The following tables show the impact of the 2011 flood on different assets of the community people.

6.1.1 Impacts on different assets of the community members

Respondents expressed that the duration of the 2011 flood was around two months which was unusual and unexpected. The water level was very high and major highways were flooded. The following pictures show the comparison of regular conditions in the community and during the 2011 flood.

Picture: 6.1, Water level in Saphan Mai-1 community during 2011 flood



The impacts of 2011 is analyzed by researching the available photographs from the community office and through interviews with community members, with responses grouped in order to understand the impact on different assets within the livelihood framework. The interview questions were asked in order to gather information from the community members about the damage of different assets (physical, economic/financial, human, social and natural) by the 2011 flood. The major findings are presented in the following section.

Impacts on Physical Assets: Physical assets are HH equipment, infrastructure and housing owned by individual HHs and by the community. The following table shows the impact of the 2011 flood in terms of number of respondents who experienced damage to physical assets.

Table: 6.1, Impacts of 2011 flood on physical assets

	Description	Saphan Mai-1 (20 respondents)	Saphan Mai-2 (30 respondents)
HH equipment,	Bed, furniture, cabinets, closets, sofa	17 (85%)	30 (100%)
Damage of House(Partially)	Floor, door, partition wall, stairs, kitchen	17 (85%)	29(97%)
Damage of full Houses	Everything was damaged	2 (10%)	2(6%)

Infrastructure	The roads inside and outside the community, toilets were damaged	5 (25%)	11(37%)
Other Assets	Motor cycle, Bi cycle, electric appliances: washing machine, refrigerator, Television	11(55%)	7(23%)
Nothing damaged		1(5%)	0

Source: Field Survey, November 2012

The above table shows that only one respondent from Saphan Mai-1 answered that they did not have any physical damage. Apart from this exception all other respondents mentioned that they had severe physical damages due to the 2011 flood. Differences observed were that 55% of respondents from Saphan Mai-1 stated that the flood damaged their motorcycle, bicycle, electric appliances (washing machine, refrigerator, television), while only 23% from the community 2 stated about this type of physical damages. For all other damages the picture is quite similar. The following photographs show damages of physical assets due to the 2011 flood

Picture: 6.2. Damages of physical assets due to 2011 flood.



Source: Somchai,2011

Impacts on Financial/Economic Assets: Financial/Economic assets refer to the financial resources available to people (savings, supplies of credit). For this study it was also asked about if there were any disruptions to their regular income. All responses are summarized in the following table.

Table: 6.2 Impact of 2011 flood on financial/economic assets

	Saphan Mai-1 (respondent 20)	Saphan Mai-2 (respondent 30)
I didn't have any problem; managed to go to my workplace every day because I was living outside the community during the flood	4(20%)	0
My workplace was not flooded; so I could go there	2 (10%)	1(3%)
I could not go to my workplace. So no income during flood but I used my savings during the floods	1(5%)	5(17%)
I had no income, just depended on relief/aid	4(20%)	11(37%)
My work place was also closed due to flood. So, I was in financial crisis and my small savings were finished by the first week during flood.	6(30%)	7(23%)
Sometimes I was able to go out of the community and find some temporary work to earn some money but it was not sufficient.	2(10%)	4(13%)
As the city was severely flooded; the opportunities of temporary work were also limited (all the construction sites were closed during flood)	1(5%)	2(7%)

Source: Field Survey, November 2012

Only four respondents from Saphan Mai 1 mentioned that they did not have any problems and they could manage to go to their workplaces and did not have any disruption to their income and financial assets. All other respondents stated disruptions happened to their regular income and impact on their financial resources. In Saphan Mai1 community 20% of respondents said they did not have any income during the 2011 flood and they were 100% dependent on relief goods, while in Saphan Mai 2 this figure was 37%.

Impacts on Human Assets: Human assets include efforts related to education, health and nutrition which determine the productivity of individuals. Labour is linked to investments in human capital; health status influences people's capacity to work, and skill and education determine the returns from their labor. How the 2011 flood affected these assets was the question to the community and their answers are organized in the following table.

Table: 6.3, Impact of 2011 flood on human assets.

	Saphan Mai1 (respondent 20)	Saphan Mai-2 (respondent 30)
We were sick, couldn't go out to get medicine, stressed and I couldn't sleep during flood	14 (70%)	16 (53%)
I couldn't adjust myself with the situation and I was very weak because I didn't have enough food	7 (35%)	11(37%)
The schools were closed during flood and children stopped their education.	11 (55%)	9 (30%)
My feet and my skins were infected by waste water during flood	3 (15%)	13 (43%)
I was very afraid of some wild animals (crocodile, snakes etc) in the canal	7 (35%)	2 (7%)
It was difficult for us to get enough food and drinking water.	4 (20%)	23 (77%)
I am very healthy and have strong mentality so I didn't have any sickness and was not stressed much as I can adjust myself with the situation	8 (40%)	7 (23%)
I had enough food to eat as I was living in an aid center during flood.	2 (20%)	5 (17%)

Source: Field Survey, November 2012

It was observed during the field survey that all of the responded were mentally shocked and stressed for this long flood. 70% of Saphan Mai-1 respondents and 53% from Saphan Mai-2 stated they were sick and could not go out to collect medicine. The majority of respondents said the sickness was mainly skin diseases due to waste water and 77% of Community 2 respondents mentioned that limited availability of safe drinking water also caused some diseases. 40% from Community1 and 23% from Community2 stated they were healthy during the flood. The schools were closed for a few months during the period flood which hampered children's education.

Impacts on Social Assets: Social assets are intangible assets focused on the social relationships among the members and HHs of the community. It is also linked with the relationships and networking with other communities and different

stakeholders. This social asset very much depends on social structures and cultures of a particular society. To understand the impact of the 2011 flood on social assets, open ended questions were used and the responses are summarized in the following table.

Table: 6.4, Impact of 2011 flood on social assets.

	Saphan Mai 1 (respondent 20)	Saphan Mai2 (respondent 30)
I live alone in the community and I don't care about social assets.	3 (15%)	6 (20%)
I was very upset for the sufferings of my family members and relatives.	17 (85%)	26 (87%)
I was very upset for the sufferings of the community people	11 (55%)	13 (43%)
My cousin was sick before and during the flood he died. So I was shocked and stressed.	1 (5%)	0 (0%)
I was worried about the sufferings of the people in the community specially for the children and old people	8 (40%)	10 (33%)
People were upset but they were concerned about each other's feeling as we shared foods and helped each other.	7 (35%)	2 (7%)
I was living with lot of people in the aid centre and made new friends.	2 (10%)	5 (17%)
I don't have good relationships with others	1 (5%)	3 (10%)
Flood made the community feel stronger.	3 (15%)	9 (30%)
Now we have good relationship with different organizations that provided us relief goods.	1 (5%)	3 (10%)

Source: Field Survey, November 2012

It was observed that the majority of respondents were worried about their own families. 85% of Community 1 respondents and 87% from Community2 mentioned this. People were also concerned about their neighbors and community, and it was observed that 15% of respondents from community1 and 30% from community2 expressed strong opinions about the positive impacts of the flood, particularly the effect of strengthening community relations. The communities are also now connected with some of the external organizations who provided relief during the flood.

Impacts on Natural Assets: Natural assets are provided by nature as soil, atmosphere, forests, minerals, water and wetlands. In the context of the case study communities the major natural assets are land, trees and the canal as a waterway. The responses around impacts of the 2011 flood on the natural resources of the community are summarized in the following table.

Table: 6.5. Impact of 2011 flood on natural assets.

	Saphan Mai1 (respondent 20)	Saphan Mai-2 (respondent 30)
The water level of the canal was high and it was full of waste and dirty.	20 (100%)	28 (93%)
The environment in the community was full of waste, wastewater and dangerous animals in the canal water(crocodile and snake)	12 (60%)	11(37%)
The trees were fallen in the canal	3 (15%)	5 (17%)
The land was displaced (due to erosion) and my house collapsed.	2 (10%)	3 (10%)
When the water level went down there was Waste everywhere and all the places were muddy due to the sedimentation and waste.	13 (65%)	17 (57%)

Source: Field Survey, November 2012

It is observed that the responses from both communities were similar. 100% from Saphan Mai1 and 93% from Saphan Mai 2 stated that the water level of the canal was high and the quality of the water was very bad due to waste contamination. When the flood waters receded the communities were left layered with dirt, mud and waste.

6.2 Response for 2011 Flood

6.2.1 Preparedness

The 2011 flood impacted the whole of Thailand and continued from July 2011 to January 2012, with the two study communities flooded from during October to December 2011. The majority of people were aware of the flood and received information in advance that the flood may reach Bangkok city. Different forms of preparation were noted from the responses. The following tables and pictures shows the responses related to preparedness for the 2011 flood.

Table: 6.6 Preparedness for 2011 flood

	Saphan Mai 1	Saphan Mai 2
I had prepared the dried food and some medicine and kept it on the high shelves but all the food finished during first few days	6 (30%)	6 (20%)
I made the water wall and used the sand bags in front of my door to block flood water	5 (25%)	1(3%)
I kept belongings on the high shelves	3(15%)	12 (40%)
I underestimated the flood situation and expect the student flood so I didn't take any preparation.	11(55%)	13 (43%)

Source: Field Survey, November 2012

Picture: 6.3. Preparedness for 2012



It was observed that around half of the people in both communities (55% of respondents in Saphan Mai1 and 43% in Saphan Mai2) underestimated the severity of the flood and did not take any kind of preparation. However following the severe 2011 floods the majority of community people took different approaches to preparation in case of flooding in 2012. The above pictures were taken during the field survey. Some of the HHs also constructed permanent walls in front of their gates.

6.2.2 Emergency Management

For understanding the responses of the community people, open ended questions were asked and photographs from the community office collected. The following table summarizes the community emergency responses during the 2011 flood.

Table: 6.7 Responses of the community people during 2011 flood.

	Saphan Mai 1	Saphan Mai 2
Constructed concrete wall in front of the door. But couldn't protect. Water entered to the house from every possible place (toilet) and flooded.	5 (25%)	3(10%)
Evacuated water with buckets	13 (65%)	22 (73%)
Sand filling inside the rooms	7 (35%)	13 (43%)
Ground floor was flooded and moved everything to upstairs and was living in upstairs.	9(45%)	12(40%)
I did nothing because the flood was sudden and I didn't have the capacity to protect and was very helpless to the flood and everything was damaged and I moved outside the community and was living in the relief center	4(20%)	8(27%)
I was very afraid to see flood water, kept some important HH materials with the plastic bag and moved outside the community.	3 (15%)	6 (20%)
I stayed two weeks inside the community and then moved outside and rented house to live temporarily	0	5(17%)
I stayed few days inside the community and then moved outside Bangkok	1(5%)	1(3%)
Moved everything's upstairs and helped the people, connected with outside peoples	0	1(3%)

Source: Field Survey, November 2012

It was very useful to view the photographic documentation by the community leader in his personal collection to get an impression of overall emergency management situation. The leader of Saphan Mai community, Mr Somchai is a retired army officer who led the emergency management together with the community people and different organizations who were active in helping communities. Most of the pictures below are from Saphan Mai1. From the above table it is interpreted that the overall emergency management situation of the two communities was similar. The main difference observed during the field work that community people from Saphan Mai 2 stated they did not receive the substantial relief that Saphan Mai1 was provided. The main reason was Saphan Mai2 is directly connected with main road, resulting in most of the external organization coming to Saphan Mai1. Therefore

volunteers from Saphan Mai2 were collecting the relief from outside and then distributing among themselves. The following pictures show different responses by the community people during 2011 flood.

Picture: 6.4. Responses during 2011 flood



Source: Somchai, 2011

Living with water: feeling stressed.	Living with water: cooking on the bed	Trying to protect by putting sand bag in front of the door
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Picture: 6.5. Responses during 2011 flood



Source: Somchai, 2011

Constructed concrete wall in front of the door.	Constructed wall in front of the door and using flood water for washing.	This stick was used to check if the water is electrified or not. This technology was developed and supported by one of the local universities during the flood.
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Picture: 6.6. Responses during 2011 flood



Source: Somchai, 2011

<p>Relief materials received from different organizations were stored in the community centre and then distributed by the leaders.</p>	<p>Minister, CODI director with others distributing the relief from ActionAid operated relief distribution centre.</p>
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Picture: 6.7, Responses during 2011 flood



Source: Somchai, 2011

<p>Relief distribution point</p>	<p>People are collecting relief packets from Relief center</p>	<p>Evacuation centre: people were living here as their temporary accommodation during flood.</p>
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Picture: 6.8. Responses during 2011 flood



Source: Somchai, 2011

<p>This mobile toilet was installed by BMA for the community people</p>	<p>Waste collection by BMA during flood</p>	<p>Waste Transportation by BMA during flood.</p>
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All the responses by these two communities were similar to other disaster affected places. Interesting innovations were the electrical testing stick and the floating toilet. These two appropriate technologies appear to be low cost and very efficient for emergency management, and can be easily replicated for use in other places.

6.2.3 Recovery of different assets of the community people

In earlier sections the flood impact on different assets within the livelihood framework were analyzed, and this section will elaborate the different ways taken by the community for the recovery of the same assets (physical, financial/economical, human, social and natural).

Physical assets recovery: As the community was inundated for around two months, when the flood water receded the area was left with dirt, waste and damaged goods. With assistance from the military and volunteers the community people operated the cleaning work. The recovery process was long term, as after one year some respondents stated they still need to buy some equipment, furniture, and to repair their housing. The following table summarizes the responses regarding the recovery of physical assets after 2011 flood.

Table 6.8, Recovery of Physical Assets

	Saphan Mai1	Saphan Mai2
I just cleaned the house and nothing in my house was damaged	3 (15%)	0
I cleaned up my house by myself and there were some volunteers in the community who helped us in small repairs and painting	7 (35%)	6 (20%)
I renovated the damaged part of my house (fixed up to windows and doors) by myself.	2 (10%)	4 (13%)
I hired people to clean up my house and renovated everything in my house	4 (20%)	7 (23%)
I bought some HH appliances and furniture and repaired some of the damaged furniture.	4 (20%)	12 (40%)
I disposed all the damaged furniture and bought full set of new HH appliances and furniture.	7 (35%)	6 (20%)
I just cleaned the house and repaired some from the damages but couldn't buy any new HH appliances and furniture because I don't have enough money after the	3 (15%)	11 (37%)

flood happened.		
I still need to construct my house as it was fully damaged due to the flood.	1 (5%)	2 (7%)
Military and volunteers from the community did the community cleaning (roads, canal, open spaces etc.)	2 (10%)	3 (10%)

Source: Field Survey, November 2012

Differences observed from the above table are that 20% of Saphan Mai 1 respondents bought HH appliances and furniture, whereas this was 40% in Saphan Mai2 - and 35% of Saphan Mai1 respondents disposed of their whole set of HH appliances and furniture and bought new sets, whereas this was lower in Saphan Mai2 at 20%. However similarity was observed in that the fully damaged houses from both communities are still not reconstructed. In Saphan Mai1, 1 respondent from Saphan Mai1 and 2 from Saphan Mai 2 mentioned that they still need to reconstruct their houses. Major infrastructure including roads was reconstructed by BMA and by the community's own fund from the community office.

Financial assets recovery: Financial recovery was mainly dependent on the allocation from governments. As part of the government's recovery program BMA gave 5000Baht per family who have the holding number and also to those who have a tenancy agreement with their landlord. The families without a holding number or tenancy agreement did not receive the money from BMA. Apart from the BMA funds, the Prime Minister had a special fund as a compensation for flood damage to the urban poor income. Under this program the amount of payment was a maximum of 20000 Baht (\$630) which was determined by official loss and damage assessments. The following table summarizes the responses of the community people about financial recovery.

Table 6.9, Recovery of Financial Assets

	No of HHs	
	Saphan Mai 1	Saphan Mai 2
Received 5000 baht from BMA and 15000 to 20,000 baht from government for the recovery from flood damage.	3 (15%)	6 (20%)
Received 5000 baht from BMA and 12000 to 15000 baht from government and used my own	5 (25%)	3 (10%)

savings for the flood recovery		
Received 5,000 baht from BMA and 8000 to 12,000 baht from the government, took some loan and I also used my own savings	4 (20%)	7 (23%)
Received 5,000 baht from BMA and 5000 to 8,000 baht from the government, took some loan and I also used my own savings	2 (10%)	0
Received only 5000 baht from BMA but no money from government.(still waiting for government money)	2 (10%)	6 (20%)
Didn't receive any money from BMA, I only got some money from Government	0	1 (3%)
Didn't receive the relief money from the government because my house didn't have the address number yet so I took loan from the cooperative for the recovery	2 (10%)	5 (17%)
Didn't receive any government supports; I used my own savings and took some loan for the recovery	0	2 (7%)
Don't have any financial problems so I don't need to recover	1(5%)	1 (3%)

Source: Field Survey, November 2012

It was observed during the field survey that some severely affected families did not receive the government assistance as they do not have a holding number. From the above table 10% of respondents from Saphan Mai1 and 17% from Saphan Mai2 did not receive any government assistance. In addition to this there were several reports in newspapers about inconsistent compensation payments to businesses and households that suffered similar financial impact (Santi et al., 2012)

Human assets recovery: How the impacts on human assets were recovered was the open question to the community people and the responses are summarized in the following table.

Table 6.10. Recovery of Human Assets

Human assets recovery	Number of HHS	
	Saphan Mai 1	Saphan Mai 2
I am still sick after the flood and need to see the doctor once a month	1 (5%)	3 (10%)
I was fine after few days and don't need to see the doctor anymore. After the flood was gone and everything is back to the normal condition	7 (35%)	12 (40%)
When everyone went back to work and study, everything was better and having normal life.	9 (45%)	17 (57%)
I still have some skin diseases but I don't go to the doctor.	0	1(3%)
The school, college is opened after the flood and had some extra classes	2 (10%)	3 (10%)
I am still stressed as I don't have enough money to recover.	1 (5%)	4 (13%)
No one in my family had any problem and we can live our normal life	1 (5%)	1 (3%)

Source: Field Survey, November 2012

A similarity is observed from the above table that 5% of the respondents from Saphan Mai1 and 10% from Saphan Mai2 are still sick and need to meet their doctors regularly. 35% of Saphan Mai1 respondents and 40% from Saphan Mai-2 were fine a few days after the flood receded. The majority of the respondents, 45% from Saphan Mai1 and 57% from Saphan Mai2 expressed that after a few days when the community started their routine jobs everything was better and returning to normal life.

Social assets recovery: It was a bit challenging to explain the concept of social assets, but after explanation the community people gave some surprising responses, for example, that the flood led to positive impacts on social life, as expressed by 45% of respondents from Saphan Mai1 community and 40% from Saphan Mai 2.

Table 6.11, Recovery of Social Assets

Recovery of Social Assets	Number of HHs	
	Saphan Mai 1	Saphan Mai 2
During flood the social relations improved because people stopped fighting in receiving relief goods from outsiders.	3 (15%)	5 (17%)
People felt good when flood went down and they came back to their normal life	13 (65%)	22 (73%)
The community life is similar than the previous. People live separately and they don't care about social relations and I didn't care of my neighbor much as I had to look after my family first.	2 (10%)	7 (23%)
Everyone was stressed and suffered during flood and we tried our best to take care of each other but now we didn't talk to each other much	5 (25%)	8 (27%)
We suffered a lot but flood gave us a great thing of living together. I think we care each other more than ever as we had faced the bad situations together. Now our community is more organized.	9 (45%)	12 (40%)

Source: Field Survey, November 2012

From Saphan Mai2 respondents explained that they had really gone through a bad time during the flood but that it gave them a good thing, learning naturally how to live together and how to tackle challenges together as a community.

Natural assets recovery: The natural assets recovery was done with support from the military and community volunteers. They cleaned the community and the canal water. The responses from the community people on natural assets recovery is summarized in the following table.

Table 6.12, Recovery of Natural Assets

Recovery of Natural Assets	No of HHs	
	Saphan Mai 1	Saphan Mai 2
With help from military and some volunteers from outsiders we did the canal dredging and put some medicine to make clean the water.	13 (65%)	17 (57%)

We helped each other to clean the community. We threw the damaged trees outside and planted new trees inside the community.	8 (40%)	13 (43%)
The environment in the community was damaged but it gradually improved but still we have some environmental problems inside our community. Some people still through waste to the canal directly.	4 (20%)	6 (20%)
The environment is still very bad. Nothing has been improved.	2 (10%)	9 (30%)
I didn't do anything with the environment in the community	4 (20%)	3 (10%)
I have no ideas about it.	1 (5%)	0

Source: Field Survey, November 2012

There is similarity observed in that 40% of Saphan Mai1 respondents and 43% from Saphan Mai2 stated that community people helped each other to clean the community. They also mentioned that they planted new saplings after cleaning the community. However 10% of respondent from Saphan Mai1 and 30% from Saphan Mai2 think that the overall environmental status still needs more improvement.

6.2.4 Long Term Prevention

In response to the 2011 flood, the Government of Thailand implemented the three-stage national strategy for reconstruction focusing on immediate flood relief and recovery measures, the third phase involving the pursuit of long-term solutions (Santi et al., 2012). In chapter four the long term flood prevention plan was explained – the government constituting a single command authority for national water management and 350 billion THB is allocated to prepare the country-wide water management master plan. However the pro-poor aspect of this plan remains a significant question as the planning practices in Thailand are mostly physical and focused mostly on engineering solutions (mentioned by Dr Nattawut Usavagovitwong during the study interview on November 27, 2012)

6.3 Role of different stakeholders during 2011 flood

6.3.1 Who played which role?

During the flood emergency management government agencies, the private sector and NGOs play very important roles. From the responses from both communities the following stakeholders and their roles are summarized in the following table.

Table: 6.13, Role of different stakeholders during 2011 flood for the case study communities

	Who	What
Internal	People inside the community	Food and drink, items for surviving during flood, cooked food, medicine, helped each other to collect food from outside and distribute among themselves, helped to moved HH materials to upstairs
External	Bangkok Metropolitan Administration (BMA)	Relief packets, cooked & dry food, drinking water, boats, mobile toilets,
	Laksi District Office	Waste Management, 5000 THB for each family after flood.
	Military (Evacuation Center)	Relief packets, cooked & dry food, drinking water, accommodations in some people in relief center
	World Vision	Relief packets, cooked & dry food, drinking water, medicine
	Action Aid	Relief packets, cooked & dry food, drinking water, medicine, accommodations in some people in relief center
	Princess Pa foundation	Relief packets, cooked & dry food, drinking water, medicine,
	Political Parties	Relief packets, cooked & dry food, drinking water
	Sripatum university	Relief packets, cooked & dry food, drinking water, Student Volunteer
	Chulalongkorn University	Relief packets, cooked & dry food, drinking water, Student Volunteer
	Chulalongkorn hospital	Medicine& treatment
National red-cross of	Relief packets, cooked & dry food,	

	Thailand	drinking water, medicine,
	Coca-Cola company	Relief packets, cooked & dry food, drinking water

Source: Field Survey, November 2012

From the above table it can be interpreted that during the flood there many organizations who helped both the communities mainly with different relief goods. But after the flood in the phase of recovery it is only BMA and the government of Thailand provided some financial supports to the community people.

6.4 Conclusion

The duration of the 2011 flood was more than two months in both of the case study communities and impacted severely. A number of people were evacuated and provided temporary accommodation support by the cantonment located close to the communities. It was found that the people from Saphan Mai-1 received more relief goods because of their physical accessibility to external parts of the city. Some people were affected by disease, however there were not vector-borne diseases or outbreaks because of the availability of sufficient potable drinking water received together with relief goods (Nindang and Allen, 2012).. From the analysis it is found that most of the HHs received financial aids from the government for their recovery, however the amount was not proportionate to their damages and the distribution of the money is still due in many areas of Bangkok. This chapter described the impact of the 2011 flood and the responses. The analysis was focused on the different assets within the livelihood framework. The next chapter will elaborate the community capabilities in the framework of community resilience characteristics developed by IFRC (2012).

Chapter Seven – Community Resilience

7.1 What makes a community safe and resilient?

7.2 Resilience Characteristics and the status of the community.

7.2.1 How is a community knowledgeable and healthy?

7.2.2 How is the Community organized?

7.2.2.1 Selection/election of community leaders

7.2.2.2 Role of the Community Leaders as Networkers/Negotiator

7.2.3 How the community is connected

7.2.3.1 How is the community connected with external actors and power structures?

7.2.3.2 How does the community interact with formal city development administration?

7.2.4 Infrastructure and Services

7.2.4.1 Quality of infrastructure and services

7.2.4.2 Who provides which services? How are communities involved with the process?

7.2.5 Economic Opportunities

7.2.5.1 Income status and opportunities for livelihood diversification.

7.2.6 Managing natural assets.

7.3 How resilient is the community?

7.4 Conclusion

In chapter 6 the impacts of flood have been analyzed. The focus was on analysis of the impacts on different assets within the livelihood framework, and the preparedness, emergency responses and recovery of the different assets. Chapter 6 was divided into three parts covering how they prepared before the 2011 flood, what they did during the flood and how they recovered afterwards. Chapter 7 is divided into two sections. The first section of the chapter will focus on what makes the community resilient, with the second section discussing the different characteristics of community resilience, based on the IFRC Community Resilience framework (2012) which is the basis of the conceptual framework of this study.

7.1 What makes a community safe and resilient?

To understand what makes a community safe and resilient an exercise was conducted during the participatory community workshop where the following questions were asked:

- What helps your community **prepare for** or **prevent** a disaster **before** it happens?
- What helped your community **cope** while being **affected** by the 2011 flood?
- What helped you community **recover** from the 2011 flood?
- Which of these factors are **inside** the community and which are **outside**?

The main findings are presented in the following Tables for the **Saphan Mai 1** and **Saphan Mai 2** case study communities.

Table: 7.1 Factors influencing the Community Resilience during 2011 Flood – Saphan Mai 1 Community

Inside the community		
Before (Prepare & Prevent)	During (Cope)	After (Recover)
<p>-The community radio announced the flood forecasting and requested for necessary preparation. (food storage, etc).</p> <p>-The community members volunteered to fill sand bags and lay bricks at the front gates to be used as flood preventions. They also moved items to the upper floor of housing.</p> <p>-Teamed the community volunteers to monitor the water level.</p> <p>-The community prepared the place for evacuation.</p> <p>-The community organized the event 'donation of food to Buddhist monks (temple)' to distribute in other flood affected communities.</p> <p>-The community designed the evacuation plan.</p> <p>-The volunteers surveyed the number of elderly, ill people and disabled people in order to prepare the evacuation.</p>	<p><u>Individual strategy</u></p> <p>-Some people could live with the flooding, in their upper floor due to their food and water storage.</p> <p>-Some people left the community and stayed at their relative's houses outside Bangkok because they had children and their houses could not cope with the flood.</p> <p>-People who stayed in the community drained the water out together, lay more bricks and built the clay wall to prevent the run-off.</p> <p>-Some people had an alternative money source by laboring in clay wall building.</p> <p>-Neighborhood support in sharing information and labor to move things and build clay wall.</p> <p><u>Community strategy</u></p> <p>-The community members use the boats which were donated by CODI, their community distributed the life support bags. Mostly they were male.</p> <p>-'Spy volunteers' were teamed up to observe the food and others necessity distribution from the government agencies or private sectors.</p> <p>-Provided a community shelter</p> <p>-Created the organizing system for internal distribution.</p> <p>-Community radio announcement.</p>	<p><u>Individual strategy</u></p> <p>-The community members individually cleaned their houses and the street in the community and removed the waste from the community.</p> <p><u>Community strategy</u></p> <p>-Coordinated with Laksi District Office to manage the wastes.</p> <p>-Provided food and beverages to the outside volunteers who came to fix and improve housing and environmental conditions after the flooding.</p>

Outside the community		
Before (Prepare & Prevent)	During (Cope)	After (Recover)
<p>-Military assisted in evacuation</p> <p>-Bang Bua Canal Environmental Development Network organized a meeting for community evacuation plans and shelters.</p> <p>-CODI organized a meeting for community preparedness on flooding and gave one boat.</p>	<p>-Princess Pa Foundation¹ donated the necessities every 2 days.</p> <p>-Many public television stations provided updated information and some relief goods i.e. food and other necessities to the community including Thai PBS, channel 3, channel 5, channel 9 (Modern 9 TV) and channel 11 (Government TV Broadcast).</p> <p>-Laksi District Office gave a floating toilet to the community.</p> <p>-The main political parties, Democrat Party and Pheu Thai Party donated food.</p> <p>-Sripathum University donated food.</p> <p>-Soldiers provided transportations from the main road to the community regularly.</p>	<p>-The government assisted the community members through the flooding compensation scheme (5,000 baht for everyone and 20,000 baht for further damage- this compensation depended on how much the households lost)².</p> <p>-Laksi District Office managed all the wastes.</p> <p>-Some technology colleges (from Nakorn Sir Thammarat province, Suratthani province, Songkla province, Buriram province and Rayong province) provided the technical assistances to fix houses in the community.</p> <p>-The Siam Cement Public Company Limited or SCG³ assisted housing material.</p> <p>-Military helped to improve the housing condition.</p> <p>-There was foreign aid given to the community through BMR to improve the community infrastructures.</p>

Source: Field Survey, November 2012 (Community Workshop)

¹ <http://www.princess-pa-foundation.or.th/index.html>

² All people in the community already received 2,000 baht from the government, but for 20,000 baht are still pending.

³ http://en.wikipedia.org/wiki/Siam_Cement

Table: 7.2 Factors influenced the Community Resilience during 2011 Flood – Saphan Mai 2 Community

Inside the community		
Before (Prepare & Prevent)	During (Cope)	After (Recover)
<p>-The preparedness entirely was in the individual scale.</p> <p>-Community members did not believe that the flooding was coming.</p> <p>-No community preparedness.</p> <p>-The community committees had no meetings.</p> <p>-Followed the news on TV.</p> <p>-More than 50%⁴ left the community before flooding.</p>	<p>-Monitored the water level.</p> <p>-Moved household items to the upper floor.</p> <p>-The community committees distributed food 3 times per day.</p> <p>-The community volunteers were formed and led by Mr. Suchit Ard-pru⁵. The team, 5-6 people, was divided into 3 sub-group based on the community zones and sometimes they were divided into sub-groups based responsibilities including external coordination, internal coordination and necessity distribution. Later, the team set up the distribution point for people who had boats.</p> <p>-Some people had an alternative money source by laboring in sailing and cooking.</p>	<p>-The community members helped with a population survey in order to equally distribute the necessities.</p> <p>-The community members helped each other in cleaning the street and community.</p>

⁵ Mr Suchit Ard-pru was elected as community leader for his voluntary role during the 2011 flood

Outside the community		
Before (Prepare & Prevent)	During (Cope)	After (Recover)
<p>-Laksi District Office informed the flooding situation to the community by posting the notice on the board.</p>	<p>-Laksi District Office gave one boat.</p> <p>-Police Department gave one boat.</p> <p>-Forestry Department donated food, a raft and medicine for the water-borne diseases.</p> <p>-Chulalongkorn University gave life support bags (1 time).</p> <p>-Department of Lands provided Effective Microorganisms (EM) to improve the quality of the canal water.</p> <p>-Red Cross Society gave life support bags.</p> <p>-Military-Infantry Division11 provided transportations in every two day.</p> <p>-Sripathum University provided food in every two day.</p> <p>-The village chief of Khura Buri, Phang-Nga province donated food.</p> <p>-One woman, named Khun Duan who lived in the same area, coordinated between the community and other organization/institution for more food.</p>	<p>-Laksi District Office provided one set of cleaning equipments.</p> <p>-Osotsapa Company⁶ provided the technical assistance to fix and improve housing conditions.</p> <p>-The Office of the non-formal and Informal Education provided the technical assistance to fix and improve housing conditions.</p> <p>-Infantry Division11 provided the technical assistance to fix and improve housing conditions.</p> <p>-The government assisted the community members through the flooding compensation scheme (5,000 for everyone and 20,000 for further damage- this compensation will depend on how much the households have lost)⁷.</p>

Source: Field Survey, November 2012 (Community Workshop)

The above tables 7.1 and 7.2 are the result of exercise-3 of community workshops during the field survey in November 2012. These tables summarize the factors influencing the resilience of the communities during the 2011 flood. These factors have been divided into factors inside and outside of the community, and focused on before (preparing and prevention), during (coping) and after the flood (recovery). The main differences observed are that Saphan Mai 1 community implemented better preparation, and even donated relief goods during

⁶ <http://www.osotsapa.com/>

⁷ All people in the community already received 5,000 baht from the government, but for 20,000 baht are still pending.

the flood. A number of respondents from both communities did not believe that flood was coming and therefore did not take action to prepare. These tables show an outline of the real case of how the two communities managed a mega flood event, and also explain their capacity to deal with flood. Focusing on their experiences of managing the 2011 mega flood, participants put marks in against the resilience characteristics of their communities, and this exercise data is used to analyze community resilience status in following sections.

7.2 Resilience Characteristics and the status of the community.

In this section the following characteristics (developed by IFRC, 2012) of a safe and resilient community have been used to analyze the resilience status of the two case study communities:

- 1.. ...is knowledgeable and healthy. It has the ability to assess, manage and monitor its risks. It can learn new skills and build on past experiences
2. ...is organized. It has the capacity to identify problems, establish priorities and act.
3. ...is connected. It has relationships with external actors who provide a wider supportive environment, and supply goods and services when needed.
4. ...has infrastructure and services. It has strong housing, transport, power, water and sanitation systems. It has the ability to maintain, repair and renovate them.
5. ...have economic opportunities. It has a diverse range of employment opportunities, income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
6. ...can manage its natural assets. It recognizes their value and has the ability to protect, enhance and maintain them.

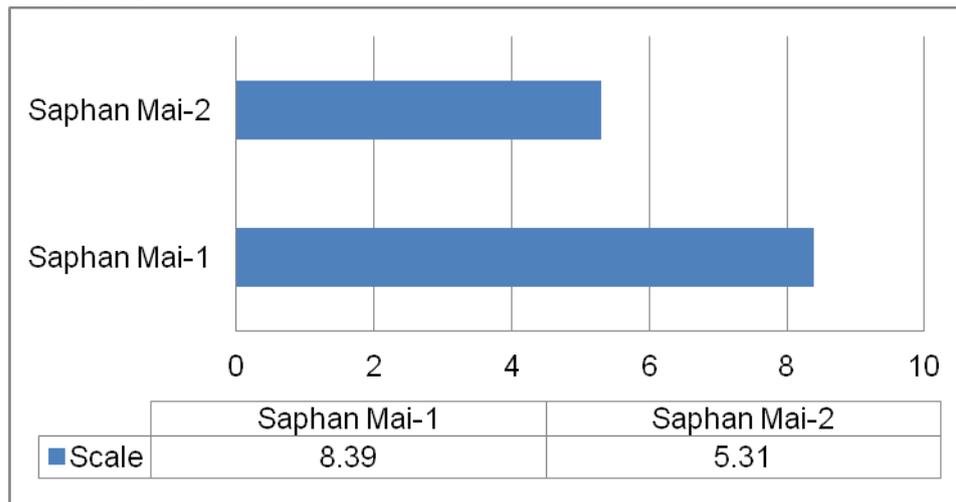
IFRC (2012) identified 68 influencing factors, and the above six characteristics were used for assessing the situation of both case study communities as Exercise 4 of community workshops (please see Annex-H), where participants of the community workshop graded these factors for their community.

7.2.1 How is a community knowledgeable and healthy?

It is identified in the IFRC 2012 report that for a community to be knowledgeable and healthy is the most important characteristic for a safe and resilient community. This has been put at the centre of all the characteristics (see Chapter 2, fig 2.2). Knowledgeable and healthy means that a community can take all preparatory measures, practices good standards of hygiene and has the knowhow of responding to disasters.

Participants from the community workshops graded the 68 factors, which are clustered into the six characteristics, in a scale from '10'-very good to '0'-very bad/poor. These grades were calculated and averaged to develop the scale and the findings are shown in the following figures 7.1 and 7.2.

Figure: 7.1, the status of the case study communities in the area of knowledge and health



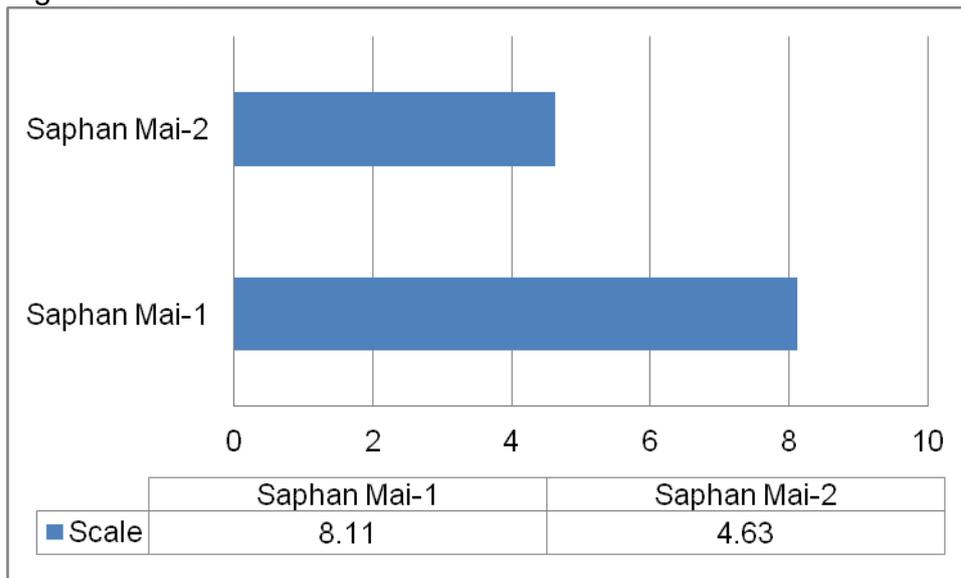
Source: Field Survey, December 2012 (community workshop)

All of the residents are covered by government health insurance in Thailand. As part of this insurance the citizens have to pay 35 Baht per month which covers almost any kind of sickness. So in terms of health insurance there are no differences between Saphan Mai-1 and Saphan Mai-2 communities. The key difference is mainly in the knowledge area, in how the communities are knowledgeable in managing disasters like flooding. The reason for this difference is due the part of CODI Baan Mankong Housing project in Saphan Mai 2community, who received skills through development training, including housing construction and alternative livelihood options. This community also took part in awareness development activities and campaigns (CODI, 2008).

7.2.2 How is the Community organized?

Community resilience is dependent on how organized the community is. It means that the community has formal community organizations and is capable of selecting democratically within this organization. The community organization can prepare their own plans and explore resources to implement their community upgrading plan themselves. Based on the responses from the participants of the community workshops the values were calculated and shown in the following figure.

Figure: 7.2. Status of the case study communities in the area of community organization



Source: Field Survey, December 2012 (community workshop)

Both communities have community organizations. As stated by the BMA (1991) in Article 1 clause 5, the BMA is responsible for organizing community elections every two years, for election of community leaders. In addition the community has to be registered as a cooperative to receive support from the CODI housing project, as CODI signs the agreement with the cooperative to transfer the money and provide technical assistance to the cooperatives to implement the project activities. Thus Saphan Mai 1 has better community organization because of participation in the CODI housing project. The following pictures show the community office and the community leader of Saphan Mai 1. They constructed this office as part of the CODI project. Saphan Mai 2 does not have a community office; they hold meetings at the community leader’s house.

Picture: 7.1. Community Office and the leader of Saphan Mai 1



7.2.2.1 Selection/Election of community leaders

During the field work coincidentally the BMA conducted the bi-annual community election of Saphan Mai-2 during this time, and the author took the opportunity to observe the election in Saphan Mai 2 community, to understand how the community elects their leaders and the overall structure of the community organization. The election took place on 2nd December. Laksi district under BMA conducted the election and one Social Development Officer was in charge overall for the election. All the residents above 18 years old are eligible to vote in this election. The role of BMA is that of election commissioner and they publish the voter list at least one week before the election. The candidates submit their nomination to BMA. During the election the community members showed their ID card and then cast their votes. The following pictures show the community election process of Saphan Mai 2.

Picture: 7.2, Community leader election in Saphan Mai 2 on December 2nd 2012



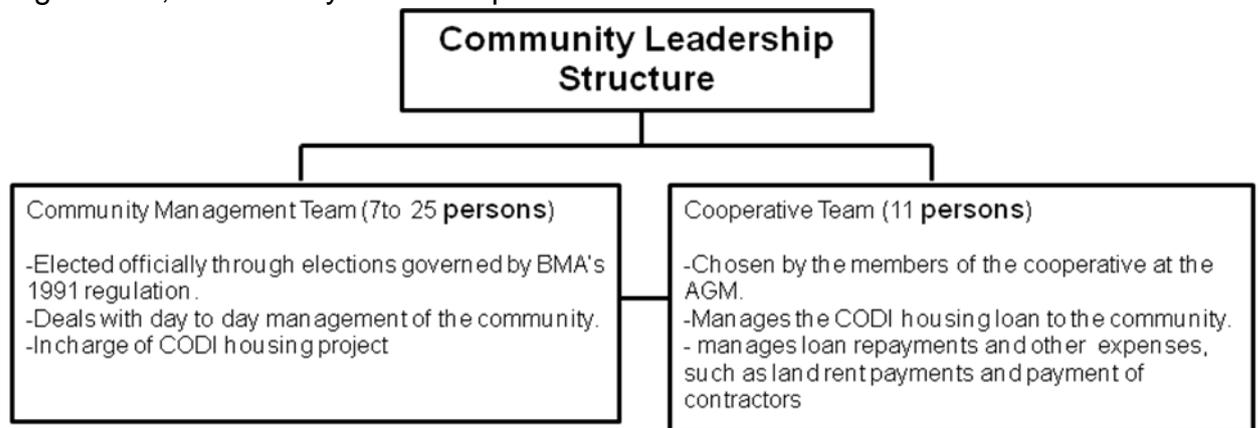
The total number of voters in Saphan Mai2 community is 800 with 231 (28.9%) casting votes. It appears that voter attendance was quite low in this election, however the BMA explained that this attendance rate is good compared with other communities. The main reason given for the low voter presence was of places of work being outside the community, limiting attendance. For the 8 positions in the executive committee, 13 candidates contested.. This 8 person committee comprises president, vice president, secretary, accountant, registrar, community relations and two executive members.

Each community under BMA has the similar practice for electing the leaders. So Saphan Mai 1 also has a similar kind of committee. These community committees work closely with district offices of BMA. The main responsibilities of this committee are overall development of the committee and specifically controlling different problems like drugs, waste management, operation and maintenance of community infrastructures and overall security of the community. They get 5000 baht every month from BMA to run the activities of the committee. BMA transfer the money to the bank account of the community and the committee member decide the priorities in their monthly meetings and manage the overall development of the community.

If any community joins the CODI supported housing project then they have to be registered as a cooperative. As per the cooperative law they have to have a separate committee of 11 members. They need to have a transparent accounting system and to formalize all the activities of the community. The accountant from the government office checks the monthly report and conducts the annual audit.

So in Saphan Mai 1 both of the committees existed. As the cooperative system is more formal and systematic the community organization in Saphan Mai 1 community is stronger, formal and systematic. The structure of these two types of community leadership is presented in the following figure:

Figure: 7.3, Community Leadership Structure



Source: Archer, 2009

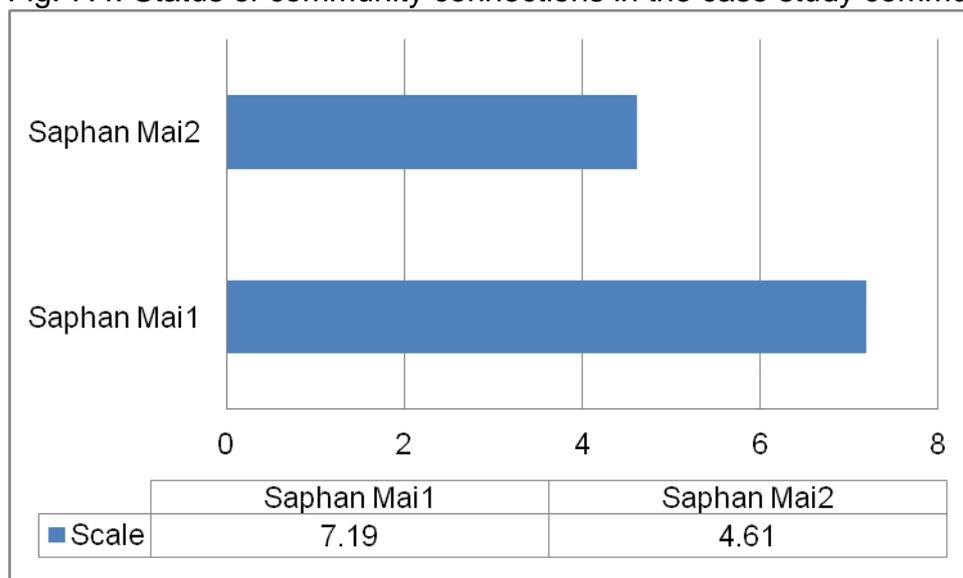
7.2.2.2 Role of the Community Leaders as Networkers/Negotiator

As part of the CODI housing project community leaders are also part of different committees at district level and also part of national network National Union of Low Income Community Organisations, NULICO. This network has already demonstrated numerous successful campaigns nationally. The leader of Saphan Mai 1 community actively participated with the Klong BangBua Environment Development Network and also achieved the long term leasing agreement with the Treasury Department.

7.2.3 How the community is connected

Community resilience is dependent on how well the community is connected with different stakeholders. It means that the community can communicate internally and externally and has access to different service providing institutions. It is able to coordinate different government and non government organizations. Based on the responses from the participants of the community workshops the values were calculated and shown in the following figure.

Fig: 7.4. Status of community connections in the case study communities



Source: Field Survey, December 2012 (community workshop)

7.2.3.1 How is the community connected with external actors and power structures?

Both of the case study communities are connected with different external actors and power structures. The following tables show different external actors their roles and the relationship with Saphan Mai 1.

Table: 7.3 Connection of Saphan Mai 1 with external actors.

No	Organization/institution	Role	Rank of relationship ⁸
1.	World Vision	Child development such as skill training	2
2.	Ministry of Public Health	Health centre, health services	2
3.	Community Organizations Development Institute (CODI)	Housing loan, housing subsidize and infrastructure supports	1
4.	Laksi District Office	Monthly financial support for community development activities (5,000 baht per month)	1
5.	Sripathum University	Provide assistance during the process of housing improvement such as house plans, community	3

⁸ 1= close relationship, 2= medium and 3 = Loose relationship

No	Organization/institution	Role	Rank of relationship ⁸
		maps and technical knowledge in housing development (<i>Baan Mankong Project</i>)	
6.	Cooperative Promotion Department	Promote cooperative establishment and educate community workers in cooperative and accounting	2
7.	Treasury Department	Land owner	2
8.	Bangkok councillor and District councillor	Financial supports for several community activities (particularly for special occasions; Thai New Year Day and National Children Day)	
9.	Soldiers (from the army-based in the area)	Community security (some soldiers usually come to the community to patrol)	2
10.	Police	Community security	3
11.	Community police network	Community security	3
12.	Bang Bua Canal Environmental Development Network	Environmental development cooperation and social welfare for elders in the community	1
13.	Kroek University	Community history research and disaster preparedness	3
14.	Phranakhon Rajabhat University	Environmental development activities in the community such as organizing a meeting to solve environmental problems.	3
15.	Laksi Community Council	Housing development, social welfare, community development fund	3
16.	Urban Resilience Network	Provide assistances in infrastructure development for community fund, housing development and budget disbursement	1
17.	Community Organization Network Center	Flood relief assistance	1

Source: Field Survey, December 2012 (community workshop)

It has been observed that Saphan Mai 1 is connected with the Community Organizations Development Institute (CODI), Laksi District Office, Bang Bua Canal Environmental Development Network, and the Urban Resilience Network have very close relationships with the community through development projects. The Community Organization Network Centre played a crucial role in the beginning of the CODI Baan Monkong housing project. World Vision and the

Ministry of Public Health have a medium cooperation with the community. Locally based army soldiers regularly coordinate with the community for community security. Connection with Sripatum University⁹ recently now is not as strong as during the period of assistance with the Baan Monkong Project 3-4 years ago. Community connections with the Bangkok councillor and District councillor, and police are ranked lowest.

Saphan Mai 2 has a different picture. The following table shows the different external actors their roles and the relationship with Saphan Mai 2.

Table: 7.4 Connection of Saphan Mai 2 with external actors.

No.	Organization/institution	Role	Rank of relationship ¹⁰
1.	The Department of Community Development, Laksi District Office	-Financial support for community development activities -Social welfare for elderly and disable people -Considered as a community facilitator	1
2.	Bangkok councillor and District councillor	intermediaries between Laksi District Office and the community for infrastructure development (e.g. street repairs)	2
3.	Politicians (from all parties in the area)	Provide the wreaths and donation in funerals only	3
4.	World Vision	Child education (in the past)	3

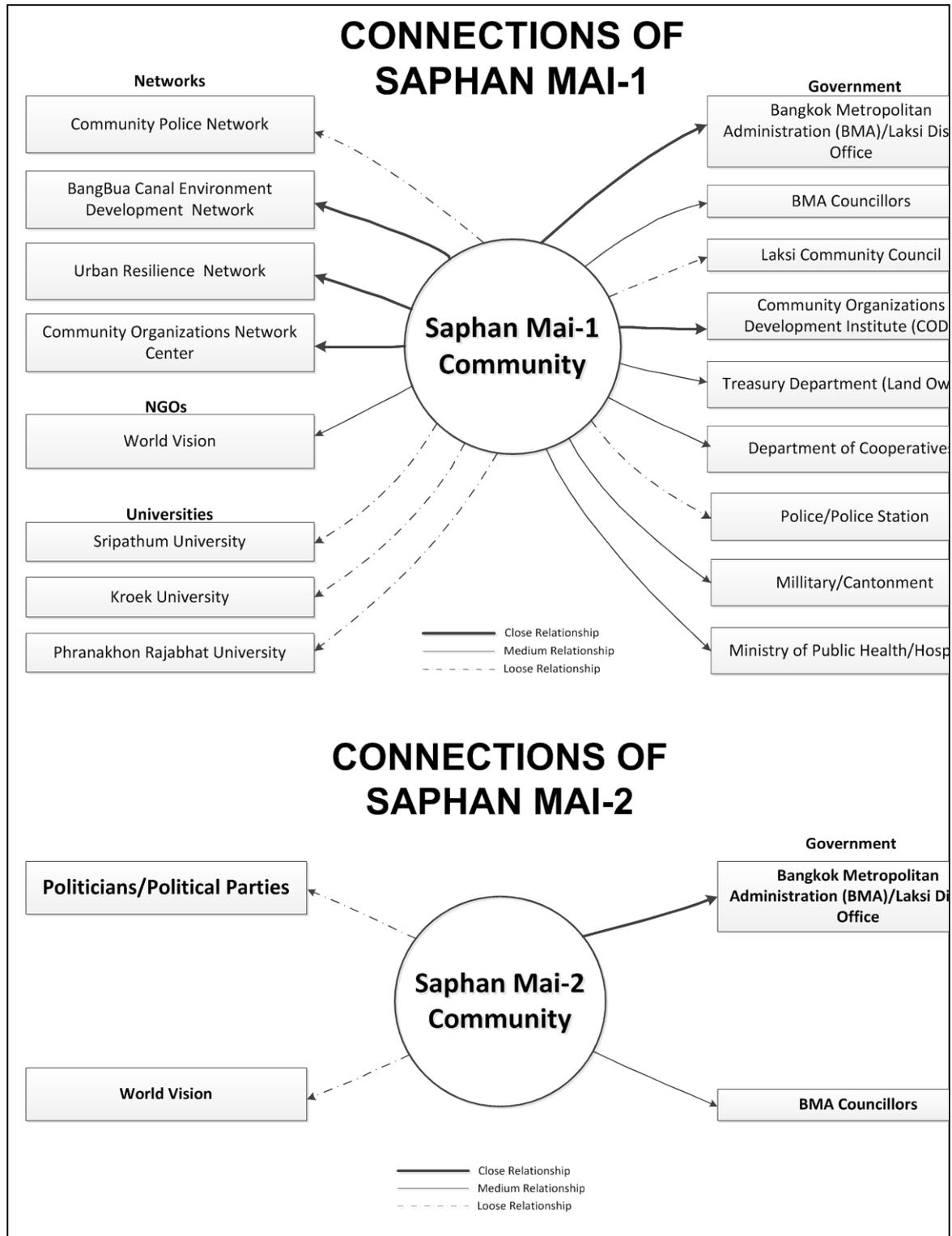
Source: Field Survey, December 2012 (community workshop)

The main difference observed is that Saphan Mai 1 is connected with 17 external actors while Saphan Mai 2 is only connected with 4. This difference is mainly due to the CODI supported housing project in Saphan Mai 1 providing different capacity development supports and platforms for developing the relationships with different actors. CODI facilitates the relation with different government agencies, especially with land owners, and in case of Saphan Mai-1 it is the treasury department for long term leasing. The following Fig 7.5 shows the connectedness of Saphan Mai-1 and Saphan Mai-2 communities and the level of relationships with external stakeholders.

⁹ The community leader mentioned that during that time, Sripatum University was the most important institution in the community.

¹⁰ 1= close relationship, 2= medium and 3 = Loose relationship

Figure: 7.5, Connections if Saphan Mai-1 and Saphan Mai-2 with different external stakeholders



Source: Author based on Community Workshop, November- 2012

7.2.3.2 How does the community interact with formal city development administration?

Bangkok Metropolitan Administration (BMA) is the formal city development administration. BMA is a special administration in Thailand with provincial government status. BMA has two branches working together, the administrative branch and the legislative branch (Bangkok council). The administrative branch is led by the Bangkok Governor, elected directly every 4 years. Each district (50 districts) has an administrative office led by a district director, appointed by the Governor. Each district has district councils, elected to four-year terms; serve as advisory bodies to their respective district directors. There are currently 36 district councils (some smaller districts are combined with the bigger ones). Urban poor communities interact with district level administration. As both the case study communities are located in Laksi district the Department of Social Development under the Laksi district office plays a major role as community facilitator in development work, as well as providing social welfare and financial support. The community members regularly coordinate with the department.

Urban poor communities in Bangkok have important interactions with another government administration which is CODI, as part of the Ban Mankong Program (secured housing project). As stated in a CODI updates (2008):

“The Baan Mankong Program was launched by Thai government in January 2003, as part of the efforts to address the housing problems of the country’s urban citizen. The program channels government funds, in the form of infrastructure subsidies and soft loans for housing and land, directly to poor communities which plan and carry out improvements to their housing, environment, basic services and tenure security and manage the budget by themselves”.

The main pre-condition to join a new community to this program is the people living in that community should be self-organized. It started from savings groups and then formalized by registration with department of Cooperative. After getting the registration the community needs to operate as per the cooperative rules maintain and documenting all the files and records, regular auditing by the officials from cooperative department and conducting election after two years interval. When this cooperative established then CODI provide financial supports to this cooperative for preparing the upgrading plan and following by the implementation. All these process are lead by the community people and CODI provides the technical supports. The community got the loan from CODI and is responsible for the repayment so manage to distribute and collection of repayments from the members. This is a long term (upto 15 years) repayment process for the community people. As part of the upgrading fund CODI also provides some sub-sidy for infrastructure improvement and land development.

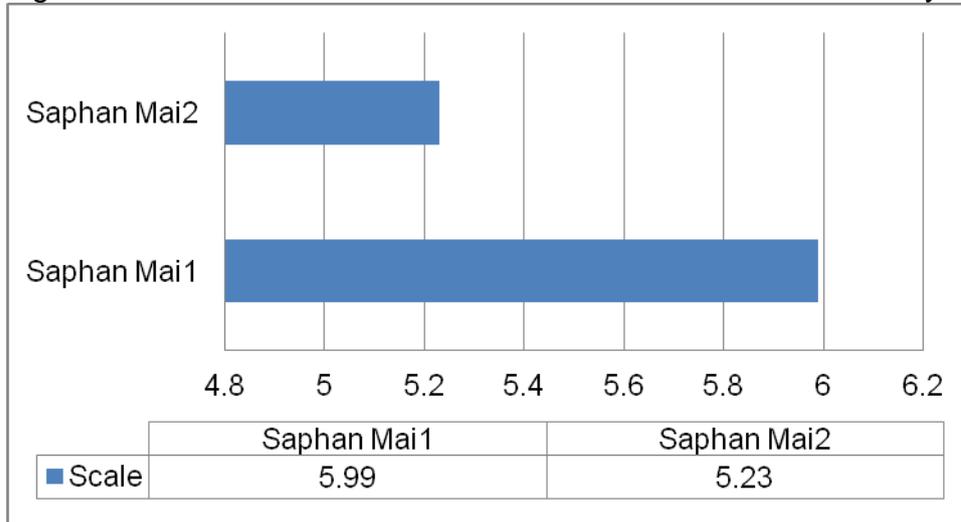
The main learning for CODI from this project is that when communities are in charge it is cheaper, better, more appropriate and it can reach a very big scale (CODI, 2008). So this project formalized the interactions of urban poor

communities with formal city governments. However the coverage of this program is still not significant.

7.2.4 Infrastructure and Services

Infrastructure and services play important roles in building community resilience. Basic infrastructure includes housing, transport, power, water and sanitation systems, and any safe and resilient community has the capacity to construct and maintain the basic infrastructures and services. Based on the responses from the participants of the community workshops the values were calculated and shown in the following figure 7.6.

Figure: 7.6. Status of infrastructure and services in the case study communities



Source: Field Survey, December 2012 (community workshop)

7.2.4.1 Quality of infrastructure and services

From the above table it has been found that the differences of infrastructure between Saphan Mai 1 and Saphan Mai 2 are not very significant. However the observations made by the author during the field survey differ from those suggested in the above graph. The main difference between these two communities is found in infrastructure and specifically housing. The following photograph shows the overall infrastructural conditions of both Saphan Mai 1 and Saphan Mai 2. The first photograph in the row was taken in front of the main gate of Saphan Mai 1, which does not look like a slum or urban poor income community. The second photograph shows inside the community. Both communities are linear along the canal side, and connected by the narrow pathway shown in the second and third photograph. Photograph 3 is the entry point in Saphan Mai 2 community.

Picture:7.3 Comparison of physical structures



Entry point of Saphan Mai 1 Inside of Saphan Mai 1 Entry point of Saphan Mai 2

The photographs below show the inside view of Saphan Mai 2 community. The first and second photographs in the following row indicate that the settlement is developed on the canal water by raising the plinth level of housing and the level of the road. The third photograph shows the common practices of solid waste disposal, and the fourth shows the water supply network which is similar in both the communities.

Picture: 7.4, Physical infrastructures in Saphan Mai-2



Inside of Saphan Mai 2 (housing) road on canal Waste Water Supply

The following row of photographs shows the settlement view of the Saphan Mai 2 community. In the first, here the narrow pathway is the continuation of the road inside both the communities, the second and third photographs show the housing on the canal water.

Picture: 7.5 Physical Infrastructures in Saphan Mai-2



Inside of Saphan Mai-2 Housing on the canal Canal Side view

The physical appearance of Saphan Mai 1 and Saphan Mai 2 was quite similar before the Baan Mankong Program. As part of the project all the canal side houses were shifted and constructed as part of the physical layout plan developed. So differences can be very easily identified in that the overall infrastructure condition of Saphan Mai 1 is much better than in Saphan Mai 2.

7.2.4.2 Who provides which services? How are communities involved with the process?

The following table 7.5 shows the main infrastructure and service providing agencies and their roles in improvements and operation and maintenance.

Table: 7.5 Basic Infrastructure and service providers for the community.

Name of the Infrastructure	Who is responsible to plan & to construct? /Who is the service provider?	Who is responsible for Operation and Maintenance?
House	Co-operative of community/ Owner/ CODI	Co-operative of community/ Owner
Water Supply	Co-operative of community/ BMA /Metropolitan Waterworks Authority (MWA)	Co-operative of community/ MWA
Road	Co-operative of community/ Owner/ CODI	Co-operative of community
Drainage	Co-operative of community/ Owner/ CODI	Co-operative of community/ BMA
Solid Waste Management/Garbage Management	Co-operative of community/ BMA	Co-operative of community/ BMA
Sanitation	Co-operative of community/BMA	Co-operative of community/ BMA
Electricity	Co-operative of community/BMA/ Metropolitan Electricity Authority (MEA)	Co-operative of community/ MEA
Education	BMA	BMA
Health	Hospital under Ministry of public health	Hospital under Ministry of public health

Source: Field Survey, November 2012

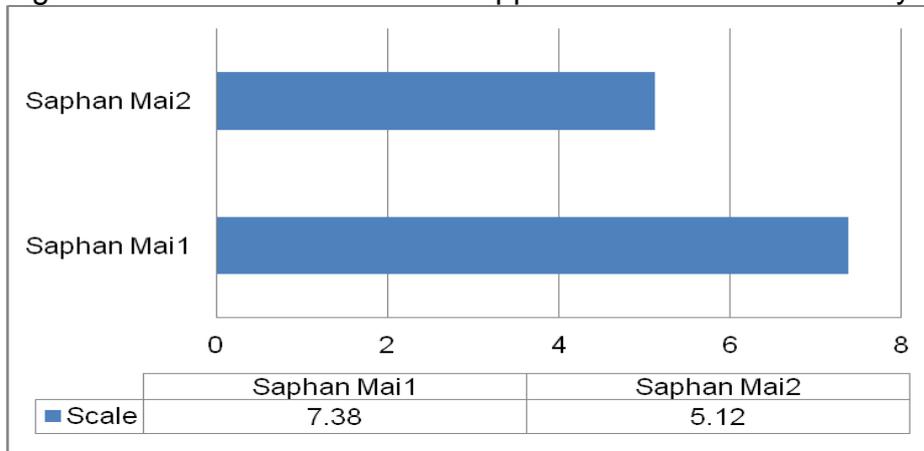
The main observation during the field survey was that many HHs without the formal holding number do not have direct connection to the electricity and water supply system in Saphan Mai 2. They have to depend on their neighbours to get the connections for these services. Regarding health services everyone enjoy the insurance system developed by Thai Government paying 35 THB per month which covers almost all sickness/diseases.

7.2.5 Economic Opportunities

7.2.5.1 Income status and opportunities of livelihood diversification.

The characteristic of a safe and resilient community through economic opportunities is through the community having a diverse range of employment opportunities, income and financial services. The community is also flexible, resourceful and has the capacity to accept uncertainty and respond proactively to change (IFRC, 2012). In the chapter 5 it has been analyzed that the main occupations of the community members are; temporary worker, taxi driver, traditional Thai massager, construction worker, and in private service and small business. Therefore the majority of the HHs are economically not poor and importantly there is no difference in this status between the two case study communities. Based on the responses from the participants of the community workshops the values were calculated and shown in the following figure.

Figure: 7.7. Status of economic opportunities in the case study communities



Source: Field Survey, December 2012 (community workshop)

Apart from the employment opportunities in Bangkok there are also economic opportunities within the communities. The following photographs show the different economic opportunities available in the communities.

Picture: 7.6, Employment opportunities within the communities



Preparing Toy



Fishing and floating garden

Corner shops inside



Boat use for floating garden

Ice-cream seller



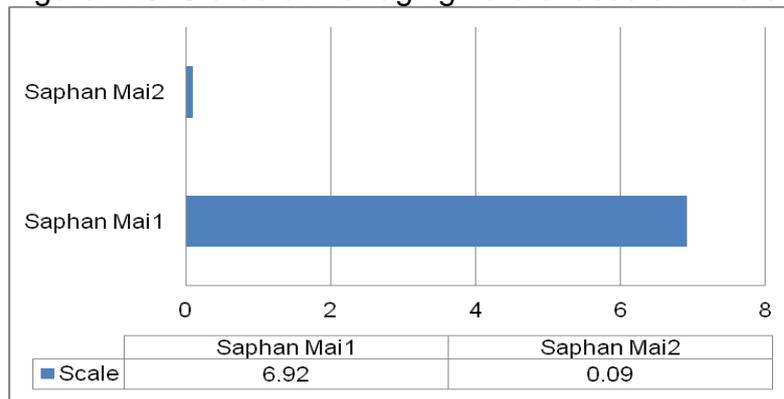
Motor mechanic

Similarities in economic opportunities in both communities were observed during the field survey. Difference observed between these two communities are mainly due to involvement of Saphan Mai 1 in the CODI supported Baan Mankong Program. Formation of savings groups is one of the conditions to join this program. This saving funds turns into revolving fund with addition from project subsidy and grows as the resource of the community. The members of the community then take loan from it for expanding their livelihood opportunities. As Saphan Mai-2 is not part of this project so the result in the graph 7.6 shows the differences between the communities.

7.2.6 Managing natural assets

Safe and resilient communities can manage their natural assets, with the ability to protect, enhance and maintain the natural resources. In the context of the case study communities the main natural resources are the canal, drainage system, trees and the land. Based on the responses from the participants of the community workshops the values were calculated and shown in the following figure.

Figure: 7.8. Status of managing natural assets in the case study communities



Source: Field Survey, December 2012 (community workshop)

Due to the upgrading process; most of the canal side houses are shifted and the embankment of the canal improved as part of the CODI supported Baan Mankong Program. On the other hand there are number of houses are still on the canal and they don't feel responsible to take care about their environment. So the difference result in fig 7.7 is significant between these two communities.

The following photographs show cage culture (fish) and a floating garden

Picture: 7.7 Case culture (fish) and floating garden on the canal

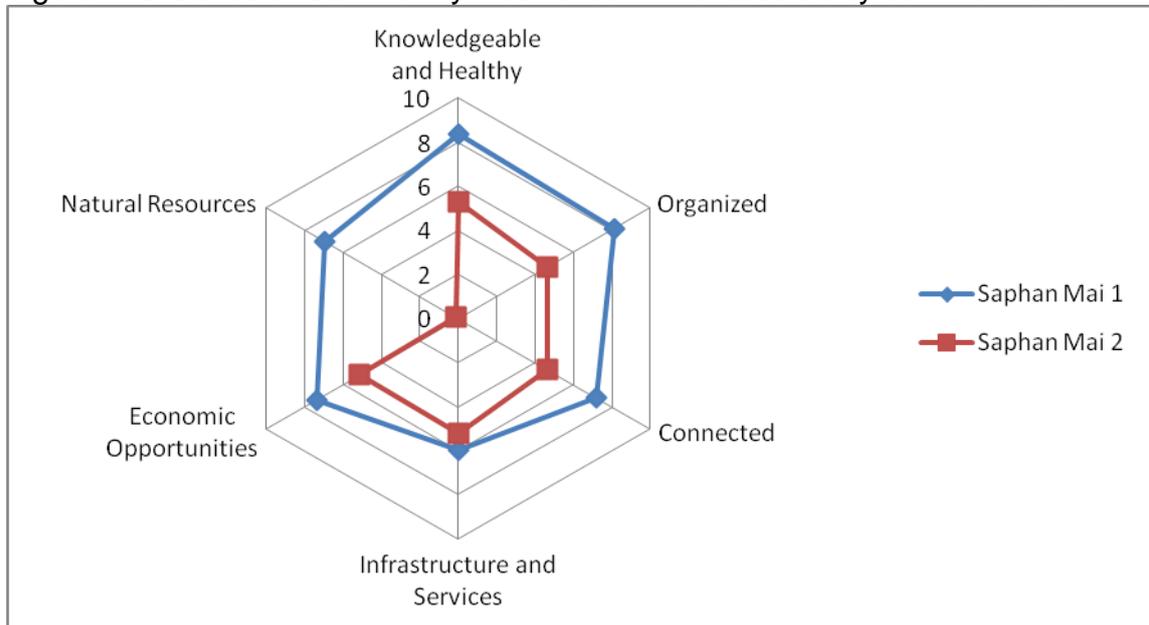


Observing these activities indicates some community residents are using the canal as a natural asset for alternative earning options. Beside this there is exploitation of the canal, being used for household waste disposal.

7.3 How resilient is the community?

The following figure shows the status of Saphan Mai 1 and Saphan Mai 2 in terms of safe and resilient communities by summarizing all the scores.

Figure: 7.9 Status of Community Resilience in the case study communities.



Source: Field Survey, December 2012 (community workshop)

Figure 7.8 plots the status for the six resilience characteristics ranked within the two communities, and indicates that Saphan Mai 1 is safer and more resilient than Saphan Mai 2. The major factor contributing to this difference in Saphan Mai 1 community is the CODI-supported Baan Mankong housing project. Residents in both of the study communities have similar income status and socio-cultural background but different pictures of resilience in the communities, notably due to participation in the program. This project has enabled Saphan Mai 1 to be more capable and empowered with better knowledge, with organized community

structure and practices, connections and networking with different actors, improved infrastructure and services, better economic opportunities and better management of natural assets. During the field work the question was explored that why Saphan Mai 2 had not joined the CODI housing project, and conversely why CODI does not work in Saphan Mai 2 community. The responses are summarized in the following table 7.6

Table: 7.6., Why Saphan Mai 2 community has not joined the Baan Mankong Program.

Reasons	No of Responses out of 30
I am fine with my house. I don't need a new house	4 (13%)
I am interested in the CODI housing project but don't want to join because I am not able to repay the loan	18 (60%)
I like the project and would like to join but inside the community we don't have consensus about this	6 (20%)
I don't have any opinion	2 (7%)

Source: Field Survey, November 2012

It is a surprising result that 60% of respondents claimed that they were not able to repay the loan to CODI, while both communities have a similar income status. This difference in view within Saphan Mai 2 community indicates the community has a limited awareness about this project. It was also observed that in Saphan Mai 2 community there are some influential households who occupy more land and extended their housing by constructing new rooms. The renting out of these houses is one of the main income sources of these influential peoples. So this influential group does not want the project because if they join CODI project they will lose this additional land and additional income from their tenants.

According to the response from a CODI official that initially Saphan Mai 2 community also started to form saving groups to join this Programme but at the end the community couldn't come out a consensus and the CODI officials were not welcomed to start the facilitation process. As one of the major pre-conditions to join this project is to registrar community under the cooperative society and Saphan Mai didn't follow that so it was not possible to start working with this community. However CODI plans to work with Saphan Mai 2 community in the future.

7.4 Conclusion

This chapter analyzed the factors within community resilience of the case study communities during the 2011 flood, and the status of the communities in the area of six characteristics of safe and resilient communities. The key finding was that involvement of the Saphan Mai 1 community in the Baan Mankong housing project strongly differentiated the communities in terms of housing and physical infrastructure, as well as capabilities to deal with flooding. This is reflected in the findings of the resilience status, with the characteristics of community resilience

ranked by the community participants in workshop exercises. It is observed that Saphan Mai 1 is connected with 17 external organizations whereas Saphan Mai 2 is only connected with 4 external organizations. This indicates that Saphan Mai 1 has significant links for support and services from different service providers; however Saphan Mai 2 has significant weakness in this area. The next chapter will focus on the general discussions, conclusion and set of recommendations for improving resilience of both case study communities.

Chapter Eight – Discussion and Conclusion

- 8.1 Conclusions: Key points to address the research questions
- 8.2 Areas for further improving resilience in the case study communities
 - 8.2.1 Recommendations for Saphan Mai 1
 - 8.2.2 Recommendations for Saphan Mai 2
- 8.3 Areas for further research.
- 8.4 Final Remarks

The last three chapters have presented the urban poor community preparedness, impacts, responses and recovery from the 2011 flood, and the community resilience status of the two case study communities based on information collected from the field. This chapter summarizes the key conclusions about Resilient Cities for the poor and by the poor, and also provides recommendations for areas of further improvement in the resilience of the case study communities.

The following research questions and hypothesis were explored in this thesis:

1. *What are the key challenges facing urban poor? How does flooding influence their daily challenges? What are the impacts of flood to the lives of urban poor people?*
2. *What are the responses by individuals and communities to build, protect and maintain their livelihoods in the face of these challenges? How do they take preparations before the events; how do they respond during the flood, and recover after the flood?*
3. *What makes poor communities in urban areas resilient to flooding?*
4. *How can the city contribute to the resilience of the urban poor? Conversely, how can the urban poor influence the resilient city development process?*

Hypothesis:

The urban poor have their own concepts for building a resilient community and are able to contribute to the Resilient City development process, provided that city governance actors provide an enabling environment.

8.1 Conclusions: Key points to address the research questions

What are the key challenges facing urban poor? How does flooding influence their daily challenges? What are the impacts of flood to the lives of urban poor people?

Rapid urbanization pressures shifted Bangkok's development trend, from canal-based development to road-centric development that ultimately increased the city's flood vulnerability. Bangkok has a frequent history of flooding, and experienced a mega flood from October 2011 to January 2012 that caused significant damage, with an estimated cost of over 1.4 billion THB. Urban poor communities were the most affected, with the NHA (2012) calculating 73% of people in urban poor communities (out of a total of 624 640) were affected by the 2011 flooding. Bangkok hosts 30% of Thailand's urban poor, living in more than a thousand communities, and the CODI program is working only in 195 of these

communities. With the growing challenges of urban development and flood risk in Bangkok, it is anticipated that flooding will affect the city with increasing frequency and severity due to climate change and rising sea level. This means increasing flood impacts on urban poor living in canal side communities, who are the most vulnerable to flooding.

People of both the Bang Bua canal side case study communities (Saphan Mai 1 and Saphan Mai 2) have lived here for generations, though importantly they do not own the land; the Treasury Department owns the land within both communities. However through the CODI-supported Baan Mankong Housing Program, Saphan Mai 1 community has signed a long term leasing agreement with the Treasury department that enables legal land tenure. In the case of Saphan Mai 2 they remain with no legal arrangements for land title.

One of the most interesting findings was that none of the community respondents mentioned flooding as one of their problems during the “problem identification & ranking” session in the community workshops. The reason is these communities are relatively used to the occurrence of flooding, but they highlighted that the vast 2011 flood was very damaging. Some respondents from both communities mentioned that there were positive aspects around the 2011 flood in their community: now they felt more connected with their neighbors and they have learnt how to manage a mega disaster.

2. What are the responses by individuals and communities to build, protect and maintain their livelihoods in the face of these challenges? How do they take preparations before the events; how do they respond during the flood, and recover after the flood?

In terms of response by individuals and communities, before and during the flood there were announcements via community radio about the flood forecasting, requesting the community people to take necessary preparation (food storage, etc). As part of preparation some people volunteered to fill sand bags and lay bricks at the front gates to be used as flood preventions. They also moved items to the upper floors of housing for storing dry food and water. Some people left the community and stayed at their relative’s houses outside Bangkok because they had children and their houses could not cope with the flood, and a number of people were evacuated and provided temporary accommodation supported by the cantonment located close to the communities.

There were a number of organizations that provided support including food, water, medicine and other essential products and both of the communities developed their own system to collect, organize and redistribute of relief goods among the community members. The community leaders were also coordinated with Laksi District Office for waste management. It was found that the Saphan Mai 1 community received more relief goods because of their physical accessibility to external parts of the city. There were not vector-borne disease outbreaks because of the sufficient availability of potable drinking water. For the recovery, the BMA and government provided financial aid, however the amount was not

proportionate to the damage and the distribution of financial aid is still due in many areas of Bangkok (Nindang and Allen, 2012).

3. What makes poor communities in urban areas resilient to flooding?

Through the field work it is observed that Saphan Mai 1 is ahead of Saphan Mai 2 in all six key characteristics of community resilience (IFRC, 2012). The key differences are the level of community organization: Saphan Mai 1 is more organized and connected with external stakeholders than Saphan Mai 2 and Saphan Mai 1 has better infrastructure and facilities including permanent housing, through the CODI housing program. The strong community organization influenced all other factors of resilience for Saphan Mai 1 community. Specifically it was found that Saphan Mai 1 is connected with 17 external organizations, mainly through participation in the CODI housing program - whereas Saphan Mai 2 is only connected with 4 external organizations. This indicates that Saphan Mai 1 has significant links for support and services from different service providers, and Saphan Mai 2 has a significant weakness in this area. Though in Saphan Mai 2 there is a community committee as per BMA rules, they are not capably dealing with different sub-groups of residents.

Urban poor communities in Bangkok and in Thailand as a whole had a new platform as part of the CODI Baan Mankong Program initiated in 2003. This program involves a people-driven slum upgrading process in which poor people themselves are the main actors, the main solution finders and the main delivery mechanism (CODI, 2008). This has contributed significantly to changing the government's attitude towards urban poor communities and empowering them through municipal governance structures. The main focus of the Baan Mankong Program is to develop the community as a self-help group and provide access to different service providers and networks (Archer, 2009). A success of this program has been in the better organization of communities, with systematic leadership accessing different services, and also development of a nationwide network of community leaders. This illustration of community empowerment in Bangkok is also valued by the wider political system, receiving attention as urban poor constitute a significant share of the voting bank. As Gaventa states;

“...when participatory approaches are scaled up from projects to policies, they inevitably enter the arena of government, and find that participation can become effective only as it engages with issues of institutional change” (2004: 27; cited in Archer 2009, p-222).

Archer (2009) states that the Thai government agencies are realizing it is advantageous for them to allow urban poor communities to provide their own solutions to problems, with the agencies providing a degree of support. It indicates one kind of enabling environment for the urban poor, however there is still much scope for further support.

4. How can the city contribute to the resilience of the urban poor? Conversely, how can the urban poor influence the resilient city development process?

The Government of Thailand has implemented numerous flood protection projects and has undertaken a large-scale plan for protecting the whole of Thailand from future floods. Thailand has also demonstrated an innovative and successful model of slum upgrading through the CODI-supported Baan Mankong Housing Program. However these multiple projects are implemented by different government organizations and as result coordination is the biggest challenge. From the experience and lessons from the 2011 flood disaster, the Government established a single command authority for achieving coordinated future flood management.

This single command authority may be too focused on a top-down approach to coordinate grassroots activity, for example integrating the main stakeholders of urban poor community upgrading. Evaluation of this model provides an interesting area for further research. It was mentioned by several key informants that other than the considerable community-level successes of the CODI-supported Baan Mankong Housing Program, major government agencies do not give proper attention to the interests of urban poor people. Therefore it is very important to develop a coordination mechanism at every level of the government to protect the interests of urban poor communities.

8.2 Areas for further improving resilience in the case study communities

8.2.1 Recommendations for Saphan Mai 1

Building on the current community resilience status, the following areas should be considered for further attention:

- Incorporation of remaining households in the Baan Mankong Housing Program. It was observed during the field work that a number of respondents not yet participating in the housing program have some complaints against the community leader; they feel they are the minority group within the community and that they do not have a role in the community upgrading process. Their main complaint is that the community leader is very influential because 80% of people within this community are family and relatives, with most of his decisions favoring this 80% of the community. The CODI organization can play a key role in overseeing a democratic and fair planning process in order that this minority group people feels that their opinions are properly valued.
- Flood Management Skills: Based on the experiences and lessons of the 2011 flood, CODI together with the community people can develop information toolkits and provide proper training and equipment for managing future floods in Bangkok.

8.2.2 Recommendations for Saphan Mai 2

For achieving community resilience the following areas should be considered:

- **Creating a strong Community Organization:** The most important area for further improvement for Saphan Mai 2 is in developing a strong community organization. As the example exists in neighboring communities (participating in the CODI program) they can adopt their system, including starting a savings group and registering under the Department of Cooperatives, to make it more formal and systematic. The community organization can then develop good working relationships with different external organizations, for example CODI, BMA, and Treasury Department.
- **Land Tenure:** a key challenge in this community. After the 2011 flood the government identified this type of canal side community who were encroaching into the canal and obstructing the normal water flow, as one of the challenges. Therefore if the community can negotiate with the Treasury Department and join the CODI housing program, this will solve their land tenure problem, and as part of the community upgrading, the barriers to canal water flow can be removed by relocation of some housing here.
- **Joining CODI Program:** 15 communities out of the 21 members of the Klong Bang Bua canal have joined the CODI Baan Mankong Housing Program, and a few have already completed full scale upgrading. One of the major findings of this research is that the CODI housing project has had a very significant influence in building community resilience, with notable differences in the physical infrastructure and housing in Saphan Mai 1 and Saphan Mai 2 community. It is therefore recommended that following creation of a strong community organization, the community should join the housing project.
- **Community mobilization support from CODI:** It is recommended that community mobilization for promoting public education focusing community harmony would play a significant role in organizing the community to move towards building resilience.

8.3 Areas for further research

It is understood the two case study urban poor communities investigated in this research cannot represent the full scope of Bangkok's urban poor, as each community has unique socio-economic, physical and geographical contexts and challenges. However this research does present a comparison of the two communities, to show the differences in community resilience by analyzing the communities' context and capabilities. This study focused on community resilience in terms of flood hazard. There is interesting scope in exploring other

hazards and the impacts of Climate Change. The author identified the following areas for further research:

1. Mainstreaming the concept of Resilience in CODI's community upgrading process, the Baan Mankong Program.

This community upgrading program is not yet focused on the concept of resilience; however this study found that the program has contributed significantly to developing community resilience. Therefore there is a future research area on mainstreaming the resilience concept in the community upgrading process, and integration of the resilience concept in formal urban planning practices of Bangkok.

2. Role of Urban Poor Communities in Municipal Governance of Bangkok.

As the developing community empowerment shifts from the housing project boundary to policy arenas, this highlights a research area for exploring the role of Urban Poor Communities in Municipal Governance of Bangkok, with a comparison between participating and non-participating Baan Mankong project communities, following on from the observation that after completion of the upgrading process the physical infrastructure of the Saphan Mai 1 community was significantly changed and improved.

8.4 Final Remarks

From this study it has been highlighted that to build the resilience of urban poor communities it is important to place them at the centre of development planning and implementation, and to have enabling support from the city government. Saphan Mai 1 community is a best practice example, with a strong community organization and connections with a network of external support organizations, and support from the CODI Baan Mankong Housing Program. All these key features have enabled Saphan Mai 1 to build stronger community resilience than in Saphan Mai 2, which does not have these key features. Therefore the hypothesis; *the urban poor have their own concepts for building a resilient community and are able to contribute to the Resilient City development process, provided that city governance actors providing an enabling environment;* is validated with this finding.

As poor people are the most vulnerable to disasters it is important to focus the resilience concept in mainstream development interventions, from different actors including city government. Though Bangkok has achieved success in slum upgrading projects, the concept of resilience is new and has not been considered and integrated by the government agencies (CODI, BMA and others). Facing frequent floods and increasing vulnerability due to climate change, it is recommended that Bangkok adopt the concept of resilience within the broader level of the city development process, as well as community upgrading projects.

ANNEX: A

Technical University of Berlin, Germany
MSc research on: "Resilient cities for the poor or by the poor? A Case study from Bangkok"

Questions for semi-structured interview for the slum dwellers/community

1.Name of the HH Head:							
2.Name of the Respondent:							
3. Type of housing (Permanent/good structure, semi-pucca, katcha):							
4. Year of Construction:							
5. HH Profile							
SL	Name	Relationship with HH Head	Age	Sex	Education	Occupation	Monthly Income
6. Monthly income/Major Income sources and expenditures							
Income sources				Expenditures			
7. How long you are living in this settlement :							
8. Where did you live before you came to this settlement :							
9.Why do you live here? Where do you work?							
HH Assets							
10. How much land does your HH owned?							
11. What type of Latrine does this HH use?							
12. Do all children go to school?							
13. What are the main construction materials for the house?							
14. Do the HH have electricity connection?							
15. Does the house have separate kitchen?							
16. How many rooms does the house have?							
17.List of HH assets (Radio, Television, Fridge, Mobile/telephone, Bike cycle, Motor Cycle, Tube well etc)							
Flood Experiences							
18.Have you ever experienced of flooding in your community?							
19. What are the reasons of flood?							
20. Duration of flood 2011:							

What were the major damages/flood impacts?	
Damage Area	Damages
Physical (equipments, housing, infrastructure and other productive resources)	<i>What physical assets damaged during last flood?</i>
Financial/economic(financial resources available to people (savings, supplies of Credit), what was the impacts on employment.)	<i>What ere the financial and economic damages? What were the impacts on financial and economic resources?</i>
Human (Impact on education, health and nutrition of individuals).	<i>What were the indivial sufferings? How you suffered personally during the flood?</i>
Social (social relations, social structures, and societies' institutional arrangements)	<i>What were the social sufferings? And what were the social impacts (how you felt about your other family members, relatives , neighbours and other community people?)</i>
Natural (atmosphere, waterbody/river/canal, land for shelter and livelihood etc)	<i>What were impacts on natural assets and resources?</i>

21. What do you do to prepare for the flood? (**Before flood**)

22. What you did when flood happens? What were your **responses during the flood**?

23. Who (inside & outside) helped you **during the flood**?

Who (inside or outside?)	What

24. How flood effected to your family? What happens **after flood**? How did you recover?

Recovered Area	Actions
Physical (equipments, housing, infrastructure and other productive resources)	<i>How did you recover your physical damages?</i>
Financial/economic (Financial resources)	<i>How did you recover your financial and economic loss?</i>

<i>available to people (savings, supplies of Credit), what was the impacts on employment.)</i>	
<i>Human (Education, health and nutrition of individuals)</i>	<i>How did you recover from personal sufferings?</i>
<i>Social (social relations, social structures, and societies' institutional arrangements)</i>	<i>How did you recovered from social sufferings?</i>
<i>Natural (atmosphere, waterbody/river/canal, land for shelter and livelihood etc)</i>	<i>How the natural assets are recovered?</i>

Community Organization/Social Networks and participation

25. Do you have any community Group? Are you a member of this community group? Why or why not? How your opinion reflects in community decision making process?

26. What is the decision-making process in this community? Who gets involved?

27. What are the main problems of this community? How are you going to solve those problems?

28. Do you have any plans to leave the community in the near future? Why or why not?

29. Did you help your neighbor during last flood? What are those?

30. Did you take any actions in a group to protect your community from flood? If yes what are those? If not why?

31. What is your relationship with outside communities? (please focus the relationships/linkages with different institutions)

ANNEX: B

Questions for Community Leaders & Slum Networks

Name of the Leader:

Position:

Name of the Community:

No of People/HH live in this community:

1. Were you selected or elected as a community leader? What were the modalities for either option?
2. How long you have been the community Leader?
3. Why the community organized? What are the main purposes? What do you want to achieve?
4. What are your roles and responsibilities as the leader?
5. How do you represent the views of general members of the community? How you consider the opinion of a landowner and tenants?
6. How strong and bonded do you think your community is?
7. What joins community members together? E.g. do they come from the same region, work in the same place?
8. Do you think people in this community trust each other?
9. Do you have any forum/federation/network of Slum Dwellers? If yes how did they help?
10. Do you think the community has strong links with these outsiders?
11. How your demand represented in different government meeting (i,e CODI, BMA, NHA etc)? How do you communicate with Government Agencies?
12. What are your main achievements? What are your ongoing activities?
13. What are the main challenges of this community?
14. Do you consider Flood as a problem in this community? What happened during last flood?
15. What kind of preparation you take as a community to protect/cope with flood?
16. How you responded **during flood** as a group?
17. Who helped you **during the flood**?
18. How you recovered after flood as a group? **(after flood)**
19. How are you going to solve these flooding problems of this community?
20. Do you know other communities who have the same flooding problem? Do you have any joint plan for tackling future floods?

ANNEX: C

List of interviewed community leaders

Name	Position	Name of the Community
Mr.PrapasSangpradab	President	Bang Bua Community
Mr.VilaiRuengma	President	Roonmaipatana Community
Mr.SomchaiJanprayoon	President BMA and CODI.community	Sapanmai 1
Mr.SukijAdpru	President	Sapanmai 2 (BMA Community)
Miss TuyPloykeaw	President	Bang Bua Community- Housewife Group
Miss AmpanKongpitak	Vice President	Sapanmai 2
Mrs. SrisudaTongjan	Committee	Sapanmai 2

ANNEX: D

Questions for Governments Agencies/Institutions

Name of the Officer:

Position:

Name of the Institution:

1. Is flood considered as one of the main challenges of Bangkok City? Why?
2. Why Flood happens in Bangkok?
3. What is the plan for responding to flood?
4. Who is responsible for managing Flood (which institution)?
5. How many slums are in Bangkok? Why and how Slums generates in Bangkok?
6. How Slums are affected by Floods?
7. How slums are supported during flood?
8. Who is responsible for slum upgradation in Bangkok (which institution)? What are their roles and responsibilities?
9. What are the ongoing slum improvement projects in Bangkok?
10. What are the ongoing flood protection and drainage improvement projects in Bangkok? How the interests of slum dwellers are considered in those projects?
11. How Climate Change issues considered in Project Planning and Implementation?
12. How Slum dwellers are involved in project planning and implementation?

ANNEX: E

Questions for Experts/Researchers

Name of the Expert:

Position:

Name of the Institution:

1. Is flood considered as one of the main challenges of Bangkok City? Why?
2. Why Flood happens in Bangkok?
3. Which Ministry/Department(s) are responsible for flood management in Bangkok?
4. How many slums are in Bangkok? Why and how Slums generates in Bangkok?
5. Is there any network of slum dwellers in Bangkok? How they work?
6. Which Ministry/Department is responsible for slum improvement/urban poverty reduction in Bangkok?
7. How Slums are affected by Floods?
8. What are the ongoing flood protection and drainage improvement projects in Bangkok? How the interests of slum dwellers are considered in those projects?
9. How government considers the potential contribution of research communities in public policy formulation?
10. Is there any platform/network of researchers/experts who work on slum improvement in Bangkok? Who and how they work?
11. How research communities and universities are contributing in public policy formulation?
12. Is there any interactions between slum leaders/federation/networks and the research community?

ANNEX: F

List of Interviewed officials and experts

Name	Position	Name of the Organization
Miss Nicha Tantivess	Architect	CODI
Mr Virat	Adviser – Architect Team	CODI
Miss Pechroong	Social Development Officer	Laksi District under BMA
Dr Nattawut Usavagovitwong	Associate Professor	Faculty of Architecture, Sripatum University Bangkok, Thailand
Dr Wijitbusaba Ann Marome	Associate Dean	Faculty of Architecture and Planning, Thammasat University, Bangkok, Thailand
Teigan Allen	Environment Program Fellow	The Asia Foundation, Bangkok
Santi Nindang	Program Officer	The Asia Foundation, Bangkok
Warittha Wannathong	Project Coordinator	ADPC, Bangkok
Dr Richard Friend	Senior Staff Scientist	ISET Bangkok

ANNEX: G

List of participated official meetings

Meeting/organizer/participants	Date
<p>Joint meeting: CODI, ACHR, UN-ESCAP & Hilti Group Germany</p> <p>UN-ESCAP is working with homeless federation in Philippine on low cost housing by sustainable low cost materials supported by Hilti Group Germany. The purpose of this meeting was for replicating the learning through CODI & ACHR networks.</p>	20.11.2012
<p>Community Council (network of all CODI supported communities in Bangkok): The community leaders from all 50 districts are organized as community council. The purpose of this meeting was to sign a MoU between Bangkok Police and Community Council for achieving community safety and security.</p>	22.12.2012

ANNEX: H

Community Workshop Guide

The characteristics of community resilience developed by IFRC have been adjusted and tested in the community workshops

What are the characteristics of a Safe and Resilient Community?

Source: Characteristics of a Safe and Resilient Community 1224200 E 05/2012, International Federation of Red Cross and Red Crescent Societies, Geneva, 2012

A safe and resilient community...

1. ...is knowledgeable and healthy. It has the ability to assess, manage and monitor its risks. It can learn new skills and build on past experiences
 2. ...is organized. It has the capacity to identify problems, establish priorities and act.
 3. ...is connected. It has relationships with external actors who provide a wider supportive environment, and supply goods and services when needed.
 4. ...has infrastructure and services. It has strong housing, transport, power, water and sanitation systems. It has the ability to maintain, repair and renovate them.
 5. ...have economic opportunities. It has a diverse range of employment opportunities, income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
 6. ...can manage its natural assets. It recognizes their value and has the ability to protect, enhance and maintain them.
- To understand about community Resilience the following three exercises have been conducted.

Exercise 1: Participatory problem identification and ranking exercises (45mins): encourage them to open their minds, exploring more problems and rank them

Problems	Ranking

Exercise 2: Mapping of important institutions (30mins): the different stakeholders who take part in the community development in general.

Institutions	Roles

Exercise 3: What makes your community resilient? (45 mins): “main focus on flood”

What helps the community to prevent or prepare for flood; cope with it whilst it is happening and recover afterwards? It prioritized the top five factors and identified whether these were inside or outside the community.

	Before (Prepare & Prevent)	During (Cope)	After (Recover)
Inside the Community			
Outside the Community			

Exercise 4: How much the community is Resilient? (90mins)

In the workshop every participants was given a translated form of this checklist; participants graded themselves in scale 1 to 10 (10 is very strong.....1 is very weak)

Characteristics		Grades
Knowledgeable and healthy It has the ability to assess, manage and monitor its risks. It can learn new skills and build on past experiences	Can assess how prepared it is	
	Practices good personal hygiene	
	Does not put itself at greater risk	
	Can undertake search and rescue activities	
	Has had training on shocks and stress	
	Has a high level of awareness about maintaining good hygiene and sanitation practices	
	Has a high level of awareness about	
	Can undertake damage assessment	
	stays calm and does not panic	
	The adaptive capacity knowledge transferring	

Characteristics		Grades
Organized	has community organisations, internal support mechanisms and coordination mechanisms	

It has the capacity to identify problems, establish priorities and act.		
	select/elect leaders democratically for a certain period	
	Community Organization has transparent decision making process	
	Have regular meeting.	
	Reflect the opinions of all members	
	Can prepare and implement community development plans organizes community recreational activities	
	exchanges information with the government and other actors	

Characteristics		Grades
Connected.	can communicate, internally and externally	
It has relationships with external actors who provide a wider supportive environment, and supply goods and services when needed.	has access to technical advice and support from external agencies	
	Able to coordinate with external actors	
	Able to coordinate with government agencies	
	can request assistance from a number of different actors when required	
	has support from external actors who provide equipment to prevent or recover from shocks and stresses	
	Networked with other communities	

Characteristics		Grades
infrastructure and services	clean water, typically from multiple sources outside the community	
It has strong housing, transport, power, water and	constructs, maintains and renovates infrastructure to a variety of reliable	
	water sources e.g. canals, wells, reservoirs and rainwater collection	
	a waste management system	

Sanitation systems. It has the ability to maintain, repair and renovate them.	access to veterinary assistance	
	permanent shelter	
	sanitation facilities	
	access to medical transport e.g. ambulance	
	a back up source of lighting	
	savings or access to grants and loans	
	good footpaths and roads for transport	
	access to education and vocational training	
	access to...medical treatment	

Characteristics		Grades
Economic opportunities It has a diverse range of employment opportunities, income and financial services.	can take alternative employment	
	is entrepreneurial	
	work longer/harder hours; take greater risks	
	has livelihoods support from district or national government	
	take a job with lower pay than skills	
	Has credit facility and able to repay the loan	
	Is solvent	
It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.	Can protect fire hazard	
	uses water efficiently	
	cleans its homes and environment to mitigate water and vector borne disease	
	undertakes mitigation activities to address vector borne disease (e.g. fogging, nets or repellent)	
	builds strong houses to mitigate against wind and rain	
	plants trees to mitigate against wind, rain	
	undertakes mitigation activities to address social problems	
	observes natural changes or environment to provide early warning	
	receives early warning from external media sources	
	has an established place to evacuate to	
	has an early warning communication system	
	has experience and knowledge of evacuation procedures	
	has a pre-prepared 'pack' of valuables and important documents	
	has a pre-prepared evacuation route	
	can evacuate people and property	
can take shelter in a safe place in houses		
stockpiles food and medical supplies		

	stores water	
	can provide relief items (food, shelters, medical etc) to affected people	
	can request assistance to provide water when required	
	can administer first aid	
	has access to food from external agencies	
	can cook and distribute food internally	
	has access to general relief items (food, shelters, medicine etc)	
	cleans its homes and environment as part of the recovery process	
	can repair damaged houses	
	can replant crops and plants if they are damaged	
	has external support to assess and repair the damage of and repair infrastructure e.g. roads and power connections	

Characteristics		Grades
Can manage its natural assets . It recognizes their value and has the ability to protect, enhance and maintain them.	has and maintains rivers, drainage and irrigation systems	
	undertakes mitigation activities to address soil erosion	

ANNEX: I

List of participants of the Community Workshop

Workshop 1: Saphan Mai 1 Community

Date: December 1, 2012

Time: 1 – 4.30 pm.

Place: Community centre

No.	Name	Age	Sex	Occupation	CODI membership
1	Ms. PornsriThongaram	36	F	Community cooperative staff	No
2	Mrs. AreerutReunjaimun	34	F	Labor	No
3	Mr. Ar-saJongkeaw	18	M	Jobless	No
4	Mrs. WanneeReraikeaw	52	F	Housewife	No
5	Ms. Boonloam Sa-bai	60	F	Labor	Yes
6	Ms. PanissaraThonglib	50	F	Government Officer	No
7	Mr. BoonlitBoonsom	18	M	Student	No
8	Ms. MajraWorrakhan	47	F	Labor	Yes
9	Ms. BenchawanSooksang	24	F	Student	No
10	Mr. Somchai	60	M	Retired Soldier	Yes
11	Mr. BoonruangChooboon	54	M	Government Officer	Yes
12	Mrs. Chit-ananSairut	47	F	Shopkeeper	No
13	Ms.Thittaya	38	F	Temporary worker	Yes

Workshop 2: Saphan Mai 2 Community

Date: December 2, 2012

Time: 1.30 – 3.30 pm.

Place: Mrs. Um-phanKongpitak's house (One of the community Leaders)

No.	Name	Age	Sex	Occupation
1	Ms. WipapornMonsawang	23	F	housewife
2	Mrs. WassanaChumachue	51	F	company staff
3	Mrs. Um-phanKongpitak	52	F	company staff
4	Mr. SanongSubprathum	72	M	jobless
5	Mr. BanyatLangchareon	50	M	jobless due to physical problems
6	Mr. SuchitArd-pru	46	F	soldier
7	Mr. ChaturongPanyachuen	44	M	officer
8	Mrs. SompornSawatkin	73	F	housewife
9	Mrs. SrisudaThongchan	40	F	shopkeeper
10	Mr. BoonlertChookan	53	M	shopkeeper
11	Mrs. PiphaPanuphan	52	F	laborer

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