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UNIVERSITY OF GRONINGEN  
FACULTY OF SPATIAL SCIENCES  
ENVIRONMENTAL AND INFRASTRUCTURE PLANNING

# MASTER THESIS

## TOPIC

**INTEGRATING FLOOD RISK MANAGEMENT AND STRATEGIC SPATIAL  
PLANNING TO ADAPT TO CLIMATE CHANGE**

**CASE: DISTRICT 2, HO CHI MINH CITY, VIETNAM**

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## ABSTRACT

It is said that flood is a consequence of natural phenomenon and human effects. However, urban flood results more from rapid urbanization, raising population and weak management. Climate change is likely to increase flood risk in the future, which makes it a challenging task for the managers of today. For that reason, much research about flood is emerging to find out the most innovative approach in coping with flood risk. Integrated urban flood risk management appeared in that request. It can be considered as a multidisciplinary and multi sectoral intervention of flood control. In the same idea, Hutter (2006) has given more concrete answer by developing three dimensions of strategy for flood risk management. His research is about integration between flood risk management and strategic spatial planning - a non-structural measure - which is the decisive factor of long-term strategy coping with future flood risk in the sustainable way. The relationship between flood risk management and strategic spatial planning is also the main focus of this research. Linking flood risk management and strategic spatial planning also provide a wide-ranging understanding of integration and collaboration in attempt to manage fragmentation in strategic spatial planning and in flood measurement. To theoretical summary, strategies for flood risk management should be visionary and pragmatic, which takes into account all natural and societal factors with cooperation between different levels.

Based on the framework of Hutter, I develop three dimensions Context - Content - Process for my own case study - HCMC (District 2), Vietnam. With the purpose of applying theoretical framework into practical situation, I want to find out the innovative approach for the current flood management in HCMC and supplement the practical factors for theory. The current fragmentation in planning and flood management has appeared as a result of stronger vertical hierarchy than horizontal cooperation. With different methods in each dimension such as document analysis for context dimension, mapping analysis for content dimension and in-depth interview for process dimension, the research will be transparent and accurate in judgment and conclusion. The result of case study proves that the relation between flood risk management and spatial planning in HCMC is quite strong in vertical link instead of horizontal cooperation. This point reduces the effectiveness of flood risk management in HCMC.

Therefore, the expected outcomes of my thesis will be the strategic recommendations which could improve the current situation of traditional flood approach as well as some reflections for theoretical framework. With my effort in finding out the answer for flood risk management, I hope my research will be helpful for flood problem in HCMC at present and in the future.

## ACKNOWLEDGEMENT

First of all, I would like to show my gratitude to NUFFIC-NESO for financing my dream of studying in the Netherland. As I was a bachelor student, the sentence "God creates the world, but Dutch creates the Netherland" has stimulated me to learn more about the way the Dutch protect their country from water. From then on, Dutch water management has been my favorite specialist field of water-related issues. That admiration also inspired me to do the thesis about flood risk management with the hope of contribution for my country. Without this scholarship, I would never experience such a great time in Groningen which I will miss a lot.

Secondly, it is an honor for me to study at Faculty of Spatial Science, University of Groningen, and being taught by prominent professors. Although it is a short one-year program, I really appreciate all the knowledge and time when studying and staying here. They really contribute to my deep and innovative perspective in environmental and infrastructure planning. Furthermore, it is my pleasure to meet and make new friends when studying here, especially Vietnamese and Indonesian. It is a good chance to learn the different culture and custom and create good memory in my Master-student life. With their kindness and encouragement, they are like my second family

Thirdly, I would like to send my great thank to my supervisor Prof. Margo Van den Brink and PhD researcher Britta Restemeyer for their direct guide to my thesis. Your precious advisers and comments help my thesis go on the right track and get better by the time. Besides, I also to say thank to Prof. Johan Woltjer for your suggestions, time schedule and discussion; they has inspired and helped me to improve the quality of my thesis.

The fourth thanks I will give for Vietnamese contributors such as my former supervisor, friends and research interviewees in different institutions. Without their information provision and opinions, I cannot finish my thesis completely. The person who I'm grateful the most is my bachelor supervisor PhD Do Phu Hung for all the precious things he did for me; e.g. providing Vietnamese data, suggesting for my thesis, encouraging my studying spirit, etc. His enthusiasm has been my studying motivation during all the time I stay here.

Last but not least, I would like to thank to my family for all their spirit support when I struggle with the tough time here. For all the sacrifice of my parents, I just want to give them all my greatest respect, gratitude and appreciation. Thank you for trusting my way, giving the endless love and letting me live with my dream.

*Nguyen Doan Thu Ngoc*

*August 2013, Groningen*

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## ABBREVIATION

ADB	Asian Development Bank
AIA	Arata Isozaki company and Associates
DARD	Department of Agriculture and Rural Development
DOC	Department of Construction
DONRE	Department of Natural Resources and Environment
DOT	Department of Transport
DPA	Department of Planning and Architecture
DPI	Department of Planning and Investment
DSMO	Drainage System Management Office
GDP	Gross Domestic Product
HCMC	Ho Chi Minh City
HCMC PC	Ho Chi Minh City People's Committee
IPCC	Intergovernmental Panel on Climate Change
MARD	Ministry of Agriculture and Rural Development
MBD2	Management Board of District 2
MOC	Ministry of Construction
MONRE	Ministry of Natural Resources and Environment
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
ODA	Official Development Assistance
PC	People's Committee
PMB	Project Management Board
PMUUD	Project Management Unit of Urban Drainage
SCFC	Steering Center for Urban Flood Control
UMO	Urban Management Office
UPI	Urban Planning Institution
WMO	World Meteorological Organization

# CHAPTER 1 - INTRODUCTION

## 1.1 Background

Throughout history, flooding is a natural phenomenon, which causes many huge damages to human lives all over the world. It is basic knowledge that flood comes from natural features, such as heavy rains occur in some specific topography known as river basin, catchment area or watershed. However, urban flood results from both meteorological and hydrological factors, especially exacerbated by human actions such as invading water space, building along riverside, concreting absorbent surface or supplying inadequate drainage infrastructure, etc. It is also said that urban flood occurs as a consequence of population development. In other words, urbanization is implicated in flood risk by changing natural runoff pattern and accelerating transport of water, pollutants and sediment from the urban areas (WMO, 2008). Especially, in the developing world, a very high proportion of urban population growth and spatial expansion takes place in the dense, lower-quality informal settlements that are often termed “slums”. The concentration of the poor, especially along canal basins, who typically lack adequate housing, infrastructure and service provision, increases the risk of flooding and ensures that flood impacts are difficult to recover.

Furthermore, climate change is another large-scale global trend perceived to have a significant impact on flood risk. Climate change is making weather less predictable; rains and heavy storm rainfalls are unexpectedly high. While climate change has the potential to greatly increase flood hazard and the risk from flooding, it does not appear to be the main driver of the increased impacts seen at present (WMO, 2008). Moreover, the natural variability of the climate system and other non-climatic risks has a higher impact on flood risk over longer-term climate trends. However, both short-term and long-term prospects need to be considered in managing flood risk: “The basic issue is finding ways to build into near-term investments and choices an appropriate consideration of long-term trends and worst-case scenarios”<sup>1</sup>.

In order to find better ways to cope with flooding, many researches and measures have been emerging (World Bank, 2012; Hutter, 2006; Oosterberg et al, 2005; Klein et al, 2003; etc). One of the primary concepts of flood management is Integrated Flood Management (WMO, 2007) which originates from overall Integrated Water Resources Management (Biswas, 2008). It is an advanced concept, which highlights the integrated and holistic approach to flood management. From this basic idea, more specific concepts of flood are developed in order to find out proactive approach to cope with complexity and uncertainty of flood in the future. One of those concepts is Integrated Urban Flood Risk Management (World Bank, 2012) which is designed to fit in with urban flood-related issues. It can also be part of a wider agenda such as urban regeneration or climate change adaptation. One of the crucial actions to reduce flood risk here is carried out through a participatory process which involves all those stakeholders having an interest in flood management, including those people at risk or directly affected by flooding (World Bank, 2012). Moreover, land use planning and the

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<sup>1</sup> Revkin A. “On Dams, Gutters, Floods and Climate Resilience”. Dot Earth blog in The New York Times, August 30, 2011

regulation of new development are other key aspects of integrated urban flood risk management (WMO, 2008). Therefore, the need of integrating strategic spatial planning into flood risk management is important in order to minimize risk and manage the impacts of flooding.

As stated above, integrated urban flood risk management is an inherently holistic approach. Hence, it also emphasizes the combination of structural and non-structural measures (World Bank, 2012). Structural measures aim to reduce flood risk by controlling the flow of water both outside and within urban settlements. They are complementary to non-structural measures that intend to keep people safe from flooding through better planning and management of urban development. Non-structural measures such as early warning systems can be seen as a first step in protecting people in the absence of more expensive structural measures. It does not usually require huge investments upfront, but they often rely on a good understanding of flood hazard and on adequate forecasting systems.

However, over the time with the impact of climate change, flood risk management has highlighted the need for an adaptive strategic plan (Mirfenderesk and Corkill, 2009). It is proved that non-structural methods are more adaptive than alternative structural methods and therefore more sustainable under climate change. Strategic spatial planning is one of the non-structural methods "for professional leadership regarding the future", which improve long-term strategy coping with flood risk. "Strategic planning for long-term flood risk management is not only about looking at distant futures of flood risks; it is also about a continuous effort to balance multiple forces within a complex social process that is prone to manifold interruptions and limitations" (Hutter 2007a: p274). Strategic spatial planning can be deployed not only at regional level for formulating new ideas for long-term flood risk management through scenario analysis; but also at local level for political decision-making that exploits the results of regional scenario analysis. In whatever level it is, a comprehensive integrated strategic spatial planning should be linked to contextual urban planning with policy-making process (WMO, 2008). Hutter (2006) presents a framework with three dimensions to satisfy this requirement.

*"The framework is a multidimensional model which encompass the content ("Deciding what to do"), process ("Deciding how to do it"), and context ("Aligning strategic decisions with internal and external conditions") of strategies for flood risk management." (Hutter 2006: p.231)*

## **1.2 Problem statement**

This thesis examines Vietnam and HCMC because according to the investigation of the World Bank about the impacts of multiple sea-level rise scenarios in 84 coastal developing countries, Vietnam was ranked within the top five countries which are most affected by climate change. HCMC is also among the top five cities in terms of the largest exposed population by the year 2070. Climate change is already very evident in Vietnam with average temperature increasing by 0.5 °C and sea level increasing by ca.0.20 m over the last 50 years (ADB, 2010).

The urbanization of HCMC has been starting from Doi Moi reforms of 1987, which led to the process of industrialization. From 1997 to 2003, with the pressure of booming population, the HCMC government was forced to expand the urban boundary; six new urban districts have been establishing. However, most of the newborn districts develop and expand in the low wetlands which are former agricultural areas. Moreover, urbanization in last 15 years has filled 14 canals with losing 16ha of surface-water area (Do, 2012). On the one hand, HCMC has high annual precipitation – average of 2000 mm, but concreting 50% surface has decreased 13% capacity of absorbing water in rainy season (Ho, 2008). On the other hand, old drainage network system is not capable of meeting demand for 8 million populations at present.

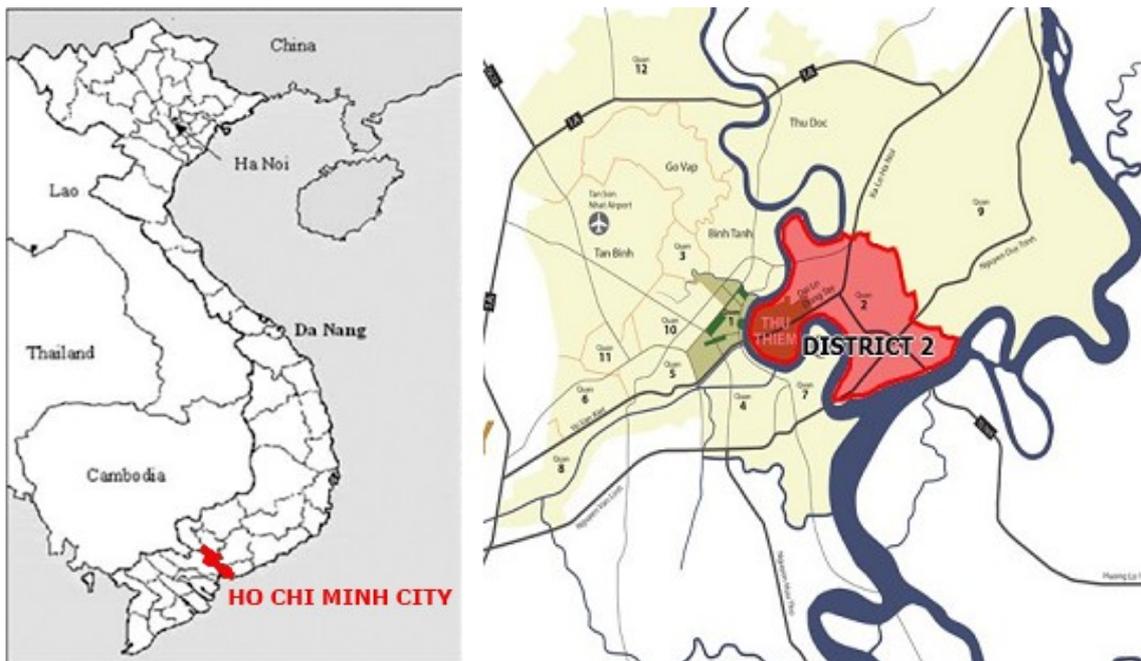


Figure 1 - Location of District 2 in HCMC [Sasaki Associates, Inc]

*"As developments in HCMC over the past two decades have commonly not adhered to land-use designations and planning itself has either not been implemented or not kept pace with development, planned land-use designations can be very different to those in reality" (Storch, 2011).*

In other words, the practical implementation of a planning project usually does not follow the original drawing for certain reasons, which causes many conflicts and inverse results. Most of current land-use has been determined by economic development which creates advantageous markets for investors. However, according to Storch and Downes (2011a) climate change related urban adaptation decisions require the rational characterization of the current urban landscape according to vulnerability relevant features .The most significant impacts of climate change on HCMC are identified as flood risk, thermal stress, energy security and water resources (Ho, 2007, 2008; ADB, 2010; Storch, 2009, 2011).

Currently, many conferences have been widespread in Vietnam, which aim to develop adaptive solutions, especially in the field of planning, coping with flood risk management. To gain deeper insights into the relation of flood risk management and spatial planning in

HCMC, I will look at District 2 in particular. Examining planning in District 2 - a small typical area which is not only a potential area for economic development, but also one of the sensitive areas in HCMC affected strongly by climate change - will be a good case to research urban planning and flood management in HCMC.

District 2 is well known as a new urban area in the decentralized strategy of the government (Figure 1). Based on decision 6566/QĐ-UBND date 27/12/2005 of the HCMC People's Committee, the master plan of Thu Thiem new urban center, designing by Sasaki Inc, was approved. Sasaki's master plan focuses on development of Thu Thiem as a sustainable, dynamic, mixed-use central business district. However, District 2 is a low land with 24.7% area of surface water. So how does this master plan consider the influence of climate change? Besides, District 2 has Cat Lai industrial zone and major Southern harbor, which may be affected strongly by sea level rising when they are located in the vulnerable area. With the complexity in land-use including new central, agricultural, residential and industrial area, development of District 2 needs a strategic orientation where flood risk management and spatial planning are integrated.

### 1.3 Research objective

The central issue of this study is to explore the relationship between flood risk management and strategic spatial planning in theory and practice in HCMC. To do that, the study will consider all relevant studies as well as the current planning and flood management approach in HCMC (District 2) incorporating future effects of climate change. In the final outcome, this study will present some strategic recommendations that can help to improve the formal cooperation (at management level) between planning and flood risk management.

### 1.4 Research questions

To obtain the research objective above, a series of questions are formulated as a guideline for carrying out the research. The main research question will explore both theoretical and empirical aspects, in order to find out the relationship between spatial planning and flood risk management and reach the final suitable recommendation for the research case:

"How to integrate urban flood risk management into spatial planning in HCMC (District 2) at present to make it more adaptive in the future?"

To answer this main research question, there will be many sub-questions for each chapter:

- What are the important aspects to integrate flood risk into strategic spatial planning and what are the benefits of this integration?
- What constitutes the flood risk in HCMC and District 2 in current planning management system?
- To what extent are spatial planning and flood risk management already integrated in HCMC, District 2?

- How can the integration of spatial planning and flood risk management be improved in HCMC and what are general lessons from this research?

### 1.5 Research strategy

The framework of this research has two main parts: a theoretical study and an empirical one (Figure 2). This thesis mainly uses qualitative analysis methods to analyze current urban planning practice in HCMC. In this research framework, the structure of this research will be divided into 6 chapters following from theoretical study to empirical one. Chapter 1 introduces some general information such as background, problem statement, objective, research questions and methodology of the research. Chapter 2 will be the theoretical part with the review of strategic approaches for flood risk management. A conceptual model for this research will be created in this chapter. Chapter 3 will illustrate the methodology which explains the way to analysis the integration between planning and flood management in HCMC (District 2). Chapter 4 will introduce the general information about planning and flood management in HCMC, District 2. Based on the conceptual model, Chapter 5 will analysis the empirical problems of case study. Finally, chapter 6 will reflect the theory and give the strategic recommendation for the case study.

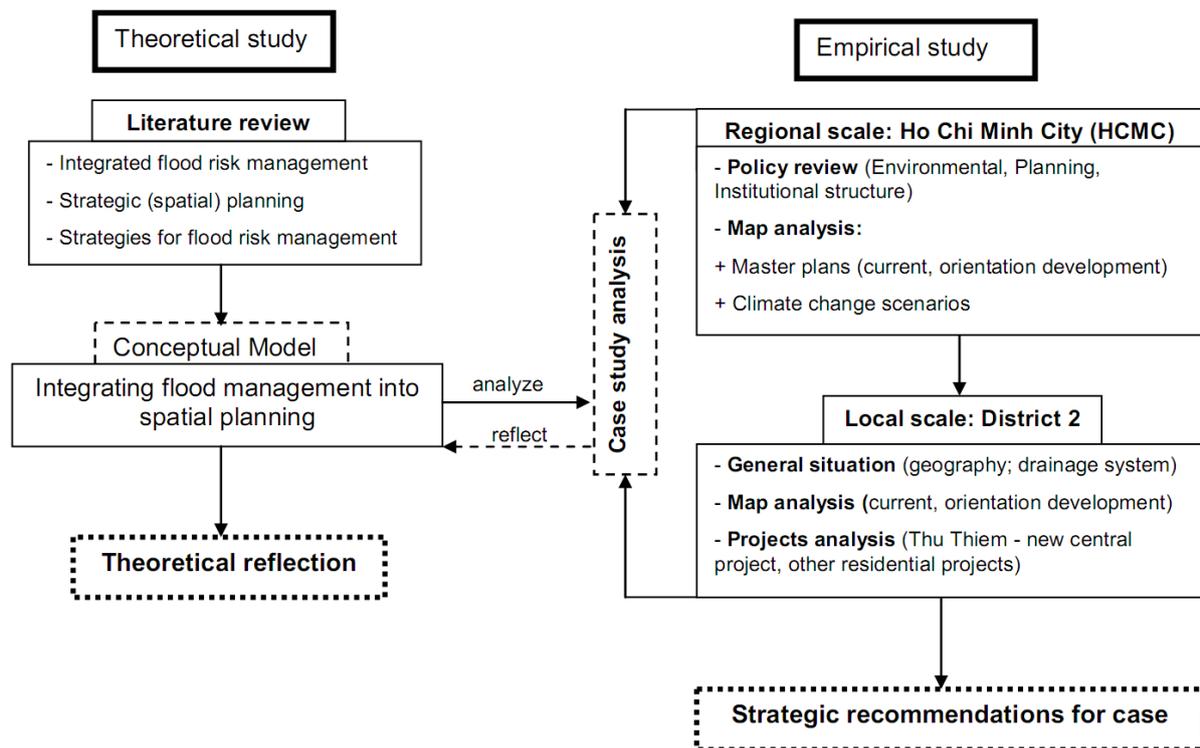


Figure 2 - Research framework

In the theoretical part, the thesis aims to find a suitable approach for the case study by reviewing the former literature. Based on this literature review, the study will identify some definitions about flood risk management and integrated approaches which lead to strategies for flood risk management. These analyses will be the theoretical orientation for the research development. Data for literature review are mostly attained from the literature (articles,

journals, books) which is available in many sciences studying website (e.g. SAGE, SpringerLink, Sciencedirect, Taylor& Francis Online, etc). It can be said that half of the conceptual model is formed in this step.

To complete the conceptual model perfectly, the empirical study will help to adjust the conceptual model how to suit local situation of research case - District 2. In this part, whole information of HCMC and District 2 will be analyzed in depth. Because District 2 belongs to larger scale - HCMC, it will be influenced by municipal policy and urban master plan. Hence, the laws, regulations, manuals and guidelines have to collect from the crucial institutions at national level and municipal level. With the help of document analysis, legislations and institutional structure are analyzed to understand limitations of present policies/planning in coping with flood as well as the role of key institution in practice.

The study also considers experts' perspective via interview with key stakeholders. Their opinions will reveal their attitude about cooperation. Interview's data will help to confirm the judgment on paper and to learn more opinions of relevant stakeholders.

Furthermore, climate change scenarios of the Ministry of Natural Resources and Environment (MONRE) in macro scale will be used to analyze in order to recognize the impact of sea level on District 2. To examine the impacts of urban land use expansion and climate change on the surface water and topography, mapping analysis with the support of AutoCAD and MapInfo is used to overlap layers (topography, existing land use, spatial planning and maps of climate change scenario). This work helps to classify flood-prone areas and to consider possible developing strategies for HCMC, District 2.

Finally, the interaction between theoretical and empirical studies will help to give strategic recommendations for the case as well as to reflect back to the theory.

## CHAPTER 2 - THEORETICAL FRAMEWORK

This chapter will provide insight into flood-related concepts in order to understand explicitly about holistic approach and adaptive measures coping with flood. Firstly, the basic concepts are about the reasons of urban flood and how to improve it under condition of climate change. Secondly, to find out a comprehensive flood measure coping with it, the concept of Integrated Urban Flood Risk Management will be learnt. Third step is about strategic spatial planning which is considered as a promising measure for controlling flood exposure at present and in the future. Finally, based on Hutter's framework, the thesis will elaborate how to integrate flood risk management into strategic spatial planning and define the own framework for the case study.

### 2.1 The underlying factors of increasing urban flood risk and the need for a holistic approach

Flooding is a global phenomenon which causes widespread devastation, economic damages and loss of human lives. Urban floods typically stem from a complex combination of causes, resulting from a combination of meteorological and hydrological extremes, such as extreme precipitation and flows (World Bank, 2012). However, they also frequently occur as a result of human activities, including unplanned growth and development in floodplain (Table 1).

<b>Meteorological Factors</b>	<b>Hydrological factors</b>	<b>Human factors aggravating natural flood hazards</b>
<ul style="list-style-type: none"> <li>• Rainfall</li> <li>• Cyclonic storms</li> <li>• Small-scale storms</li> <li>• Temperature</li> <li>• Snowfall and snowmelt</li> </ul>	<ul style="list-style-type: none"> <li>• Soil moisture level</li> <li>• Groundwater level prior to storm</li> <li>• Natural surface infiltration rate</li> <li>• Presence of impervious cover</li> <li>• Channel cross-sectional shape and roughness</li> <li>• Presence or absence of over bank flow, channel network</li> <li>• Synchronization of run-offs from various parts of watershed</li> <li>• High tide impeding drainage</li> </ul>	<ul style="list-style-type: none"> <li>• Land-use changes (e.g. surface sealing due to urbanization, deforestation) increase run-off and may be sedimentation</li> <li>• Occupation of the flood plain obstructing flows</li> <li>• Inefficiency or non-maintenance of infrastructure</li> <li>• Too efficient drainage of upstream areas increases flood peaks</li> <li>• Climate change affects magnitude and frequency of precipitations and floods</li> <li>• Urban microclimate may enforce precipitation events</li> </ul>

Table 1 - Factors contributing to flooding [WMO, 2008]

In most of developing countries like Vietnam, uncontrolled urbanization contributes significantly to urban flooding. In crowded cities, residential land becomes scarcer. That leads to many problems related to the fluctuating price of real estate; and of course, the poor has to live in small space or even occupy canal basin to build illegally - named slums. Supplying habitation is a crux for these developing cities. That results in reducing green

space, urbanizing surface (streets, parking lots, yards, parks), etc. which limit water absorption or change river current and water runoff. One more common problem in developing countries is lacking finance to fulfill drainage infrastructure. Many urban drainage facilities are not in good shape due to lack of cleaning and maintenance. Rubbish and debris tend to clog the bottlenecks of drainage facilities, thus reducing the drainage capacity and leading to increased surface runoff and back up effects, causing local floods.

In short, urbanization is implicated in and compounds flood risk. Poorly planned and uncontrollable urbanization also contribute to the growing flood hazard due to unsuitable land use. It may change natural runoff pattern and accelerated transport of water, pollutants and sediment from the urban areas. Klein, Nicholls and Thomalla (2003) assumed that urbanization in the developing world is also concentrating poor populations in potentially hazardous areas, which raises the vulnerability of these groups. Hence, the coastal megacities in the developed world might be seen as more resilient than in the developing world whose adaptation is dynamic and not fully understood. Developing nations may have the political or societal will to protect or relocate people who live in low-lying areas, but without the financial capacity and other resources or capacities, their vulnerability is much greater than that of a developed nation (Nicholls and Wong, 2007).

Furthermore, climate change and sea-level rise increase the challenge of achieving sustainable development in coastal areas, with the most serious impediments in developing countries because of their lower adaptive capacity. The alterations in meteorological patterns which are associated with a warmer climate are potentially drivers of increased flooding, with its associated direct and indirect impacts. Observed and projected patterns of climate change can have an amplifying effect on existing flood risk (World Bank, 2012), for example by:

- Augmenting the rate of sea level rise, which is one of the factors increasing flood damage in coastal areas.
- Changing local rainfall patterns, that could leads to more frequent and higher level of floods from rivers and more intense flash flooding.
- Changing the frequency and duration of drought events, that leads to groundwater extraction and land subsidence which compounds the impact of sea level rise.
- Increasing frequency of storms leads to more frequent sea surges.

Over shorter time scales the natural variability of the climate system and other non-climatic risks are in fact expected to have a higher impact on flood risk than longer-term climate trends. Accelerating urbanization and urban development could also increase significantly the risk of flooding independent of climate change. On longer time scales, climate change might play a more significant role. Climate change and the alteration of land-use require slow but continuous adaptation. Long-term urban planning calls for an integrated, area-oriented approach: such integration requires that planners, water managers and designers adopt a new approach. In brief, both short-term and long-term prospects need to be considered in managing flood risk: “The basic issue is finding ways to build into near-term investments and choices an appropriate consideration of long-term trends and worst-case scenarios.”(Revkin, 2011)

In recent flood risk management and in future planning, a balance must be struck between common sense approaches, which minimize impacts through better urban management. The maintenance of existing flood mitigation infrastructure and far-sighted approaches anticipate and defend against future flood hazard by building new flood mitigation infrastructure or by radically reshaping the urban environment (World Bank, 2012). In reaching decisions on the appropriate prioritization of flood risk management effort, an understanding of both current and future flood risk is needed.

## 2.2 The concept of integrated urban flood risk management

An integrated urban flood risk management is a holistic combination between structural and non-structural measures with urban issues how to minimize the damage of flood in urban area (World Bank, 2012). Structural measures range from hard-engineered structures such as flood defenses and drainage channels, which require considerable upfront investments. This makes them often less flexible and irreversible (Penning-Rowse & Peerbolte, 1994). In contrast, non-structural measures such as land use, flood warning systems and evacuation planning are necessary for the safeguarding of the population of cities and towns already at risk from flooding, whether protected by defenses or not. Structural and non-structural measures do not preclude each other, and most successful strategies will combine both types. These measures are suitable for adaptation strategies of climate change by providing a high level of flexibility, which fit well with the uncertain characteristic of flood caused by climate change.

Figure 3 corresponds to the notion that flood risk management encompasses measures to control the flood hazard (the water that produces the flood), vulnerability by controlling land use (e.g. discouraging new development on floodplains through strategic (spatial) planning).

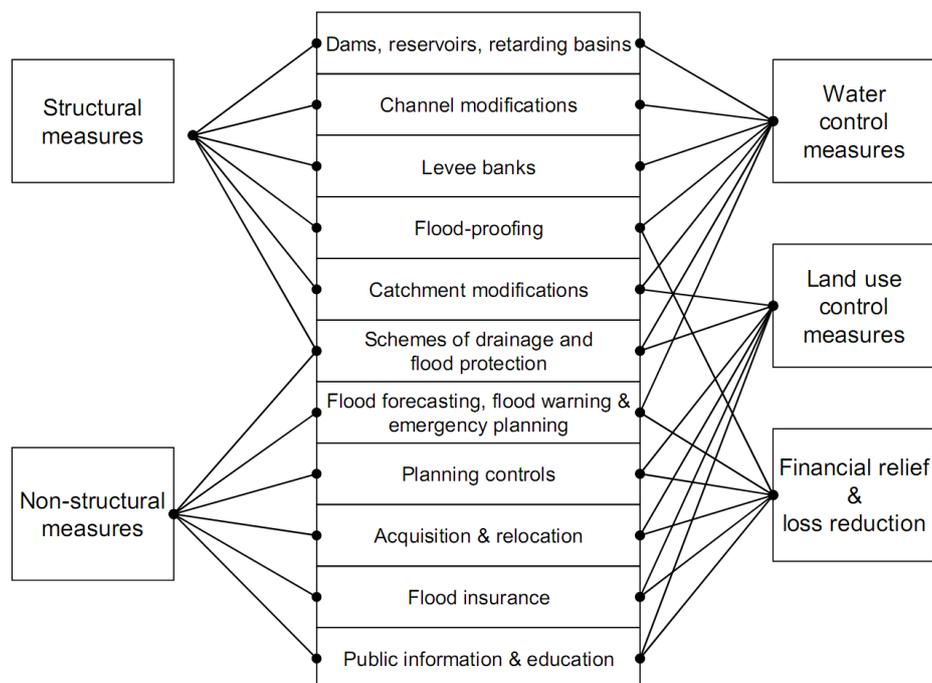


Figure 3 - Structural and Non-Structural Measures [Penning-Rowse & Peerbolte, 1994]

These considerations and the fact that there will always remain a residual flood risk, leads to the need to incorporate non-structural measures into any strategy. According to research of Andjelkovic (2001), the role of non-structural measures is to manage risk by building the capacity of people to cope with flooding in their environments. Non-structural measures such as early warning systems can be seen as a first step in protecting people in the absence of more expensive structural measures (structural measures), but they will also be needed to manage the residual risk remaining after implementation of structural measures. He believes that although non-structural measures do not usually require huge investments upfront, they often rely on a good understanding of flood hazard and on adequate forecasting systems – as an example, an emergency evacuation plan cannot function without some advance warning. There are also urban design and management measures which can be implemented more quickly, such as better operations and maintenance of infrastructure; greening of urban areas; improved drainage and solid waste management; and better building design and retrofitted protection.

Furthermore, land use planning and the regulation of new development is a key aspect of integrated urban flood risk management. In developing countries in particular, improving the formation of new urban areas is central to prevent the predicted increase in future flooding impacts. Therefore, the need to integrate flood risk management into land use planning and management is important for minimizing risk and manage the impacts of flooding (WMO, 2011).

*"Integrated urban flood risk management is a multi-disciplinary and multi-sectoral intervention which share responsibility for diverse governances from official government to non-government bodies" (World Bank, 2012).*

In other word, it is a comprehensive measure related to many realms such as transportation, urban planning, geography, hydrometeorology, etc. Because urban flood associates with both human activity and natural phenomenon happening pervasively at different level, so management and implementation require wider participation and a holistic management method to be successful. In concrete action, it needs coordination between stakeholders such as governments (all levels), public sector companies, civil society, NGOs, educational institutions and research centers, and the private sector. It is essential to understand the adaptive capacities and impacts of these actors, including how they use their own limited resources and adapt to high levels of uncertainty of climate change because, as mentioned above, urban flood is mostly caused by human behavior and their response to natural feature. However, most of industrialized countries have higher adaptive capacities than developing countries where lacks the economic resources, technology, and infrastructure that developed countries can call on to respond to the potential impacts (Klein, Nicholls and Thomalla, 2003).

### **2.3 Strategic spatial planning as a solution**

Many practitioners and scientists claim that strategic spatial planning is a promising non-structural measure for controlling the exposure of people and property in flood-prone areas

and for channelling urban development to non-risk areas. For Burby et al. (1998, 2000) and Mileti (1999), it is also an effective non-structural measure for building disaster-resilient communities. This consensus is based on the assumption that:

*"Principle cause of the adverse effects of flooding has always been the urban development on flood plains that followed the expansion of towns and cities away from naturally protected locations into areas where flooding was infrequent but not unknown. Many towns and cities were built on bridging points over major rivers, but have expanded massively into adjacent areas, including onto flood plains." (Penning-Rowsell 2001: p. 108)*

There are some main characteristics of strategic spatial planning, which compound from many researchers:

- It has to focus on a limited number of strategic key issue areas (Bryson and Roering, 1988; Poister and Streib, 1999; Quinn, 1980)
- It identifies and gathers major stakeholders (public and private) (Bryson and Roering, 1988; Granados Cabezas, 1995)
- It consider both internal environment and external trends (Kaufman and Jacobs, 1987; Quinn, 1980)
- It allows for a broad (multilevel governance) and diverse (environment, economic, society) involvement during the planning process;
- Both in the short and the long term, it is focused on decisions, actions, results, implementation and incorporates monitoring, feedback, and revision (Albrechts, 2004)

From these characteristics above, it can be concluded that strategic spatial planning concentrates on major issues and stakeholder. It means that there is a selection in planning process and a consideration in planning context although it allows for a wide and diverse involvement. To flood risk management, these characteristics help to clasify the main factors in strategic approaches, leading to effective result.

According to Bryson (2004), strategic spatial planning can be defined as "a disciplined effort to produce fundamental decisions and actions that shape and guide what an organization (or other entity) is, what it does, and why it does it". However, strategic spatial planning is not a single concept, procedure, or tool. In fact, a set of concepts, procedures, and tools must be tailored carefully to whatever situation is at hand if desirable outcomes are to be achieved (Bryson and Roering, 1996). Besides, strategic spatial planning can be understood as process of learning with plans (not despite of plans) for taking into account the diversity of actors relevant for urban and regional development as well as the limited resources of spatial planners to implement spatial aims and targets (Mastop and Faludi, 1997).

With respect to flood-related problems, strategic spatial planning is also one of the methods "for professional leadership regarding the future" to improve long-term flood risk management (Hutter, 2007a). For Hutter, strategic spatial planning for long-term flood risk management is not only about looking at distant futures of flood risks; it is also about a

continuous effort to balance multiple forces within a complex social process that is prone to manifold interruptions and limitations.

In addition, temporal factor of strategic spatial planning in long-term flood risk management is also stressed in research of Hutter (2007a), which should focus on formulating, implementing and controlling strategies for future flood events. Thereby, long-term planning encompasses decision for the mid-term (up to 10-20 years) and, in a more explorative mode, for the long term (up to 50-100 years). In this case, long-term planners need to explore these system's dynamics and their impacts on future risks where social context and climate change present two main uncertainties.

To cope with flood risk, water authorities have to consider not only the flood hazard but also the vulnerability of flood-prone areas (Hutter, 2007b). Hence, they have to take the existing land use as well as new development possibilities and related planning regulations into account. On the other hand, strategic spatial planning for flood risk management requires extensive analysis with regard to the flood risk of different areas, so spatial planners have to understand in depth what are the reasons and impact of floods. Therefore, both spatial planners and water managers will have to significantly change their knowledge base and work together. That explains why Hutter (2007a) says: "Strategic projects depend heavily on co-operation across different levels within organizations and between organizations to achieve their aims".

In Vietnam, the planning system is following a comprehensive integrated approach. That means government has central power to determine strategic (spatial) planning; and micro plans have to obey macro plans in a hierarchic system. However, this kind of top-down approach makes rigid solutions and cannot take full advantage of social resources. The problem is the lack of interdisciplinary cooperation between different departments. Therefore, we should encourage different levels of government to work together (multilevel governance) and in partnership with actors in diverse positions in the economy and civil society. This cooperation is a need for strategic governance on a macro scale. In smaller scale like HCMC (District 2), strategic frameworks and visions for territorial development are required, with an emphasis on place qualities and the spatial impacts and integration of investments, complement and provide a context for specific development projects (Albrechts, 2004).

In most developing countries like Vietnam, the authority and the responsibility to manage flooding is not vested in local institutions; but most of power still belongs to the central government and strongly depends on private investments. Individual experts like planners have to be very careful about how to engage in strategic (spatial) planning, since every situation is at least somewhat different and since planning can be effective only if it is tailored to the specific situation in which it is used (Bryson and Delbecq, 1979). Moreover, the shift in planning style in which the stakeholders are becoming more actively involved in the planning process based on a joint definition of the action situation and of interests, aims, and relevant knowledge (Albrechts, 2004) make it a particular challenging task.

## 2.4 Integrating flood risk management and strategic spatial planning

The relationship between flood risk management and strategic spatial planning has been analyzed primarily from a normative point of view and with regard to the content dimension of strategies by many researchers; such as Boehm et al. (2002) investigated how strategic spatial planning could and should be used at different spatial levels to consider flood risk issues within decision making. However, there is a lack of concrete knowledge showing why local planning authorities do not systematically use strategic spatial planning for reducing flood risk and how planning-based strategies could be fostered in practice (Hutter, 2006). Flood risk management should be integrated into strategic spatial planning policies at all levels to enhance certainty and clarity in the overall planning process, which requires strategies to reach the final goal.

*"A strategy for flood risk management is defined as a consistent combination of long-term goals, aims, and measures, as well as process patterns that is continuously aligned with the societal context." (Hutter 2006: pp. 231)*

The rationale for this definition is as follows: changing from the paradigm of flood protection to flood risk management raises challenging questions of formulating and implementing strategies within society. In particular, reducing vulnerability and increasing preparedness require a comprehensive understanding of flood risk management.

At local level - District 2, spatial planning can be deployed for political decision-making that exploits the results of regional scenario analysis - Ho Chi Minh region. Local strategic spatial planning for long-term flood risk management can opt for focusing on internal context and process. However, external context at regional level such as climate change, economic development in flood-prone areas, etc. and content are in the foreground of strategic spatial planning that focuses on identifying new strategic issues of long-term relevance for flood risk management. Therefore, strategic spatial planning at regional level helps to initiate and conduct a scenario planning episode that has the chance to be of significance for local officials and indirectly for politicians; e.g. through mobilizing officials that are sufficiently homogenous in their understanding of long-term flood risk management and related to different institutional positions (Hutter, 2006).

With this perspective, Burby et al (2000) argue that local governments must conduct carefully hazard reduction planning and pay attention in both the political and technical details. He gives some evidences from local experience showing that communities must be both visionary and pragmatic. They should be provident in gathering credible data, preparing maps, building consensus through planning, and noticing to manage development well before intensive tension of using hazard areas happen. They also must be practical in using tailor-made approaches, integrating hazard mitigation into their normal development review procedures, taking advantage of post-disaster windows of opportunity, and being prepared to purchase property if necessary.

Obviously, speaking of strategic spatial planning and learning for strategy making implies some notion about what strategy is. Especially within large organizations strategy takes the form of strategy making across multiple levels of decisions to address changing external contexts and internal resources and capabilities (Burgelman, 2002). Hutter (2007a) concluded

that strategy is a multidimensional phenomenon that encompasses the dimensions of content ("Deciding what to do"), process ("Deciding how to do it"), and context ("Aligning strategic decisions to internal and external conditions") (Figure 4).

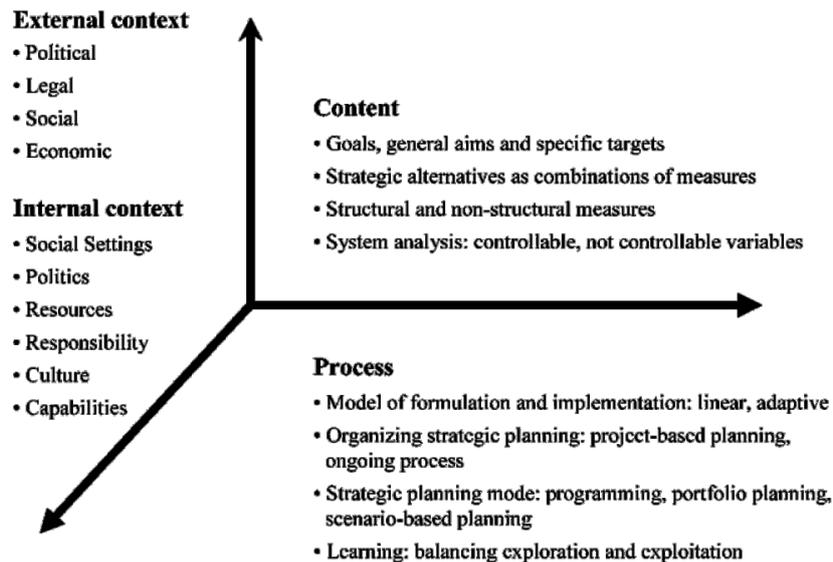


Figure 4 - Dimensions of Strategy Development [Hutter, 2006a]

In the figure of three dimensions above, Hutter (2007a) shows clearly that planning and plans are components of a strategy. They have to be supplemented by implementing, organizing, and learning processes at various levels of societal development. Each dimension will be elaborated below.

### 2.4.1 Context

In the second dimension, strategies reflect and should match the *societal context* within specific catchments (e.g. political conflict potential, resources, cultural "world views"). External context conditions like tight legal requirements can make planning ineffective and unattractive for planners. Internal conditions can decrease the probability of plan implementation near to zero (e.g. because of expected disagreement between actors of equal power). Because of the tailor-making strategy for each situation, it is of utmost importance that planners continuously seek to align context conditions with process patterns and contents.

To Hutter (2006), context reduces the complexity of possible decisions and actions to a manageable amount. Hence, context enables actors to make informed decisions because many relevant variables can be treated as given. It is very demanding to study the dynamic relationship between context and process. In addition, the turbulence of context is useful to distinguish between three strategic spatial planning modes (Volberda, 1998): Programming, Scenario-based planning, Preparedness strategies. According to Hutter (2006) a scenario is defined as a plausible description of how the future may develop, based on a coherent and internally consistent set of assumptions about key relationships and driving forces. In case of HCMC and District 2, scenario of climate change and its impact to planning are very useful to consider future alternatives and provide the most suitable measure. Besides, scenario-based

planning can be deployed on the basis of a linear or an adaptive strategy model which will be explained below.

#### 2.4.2 Content

In the first dimension, strategies encompass a *content dimension* which refers to a complex hierarchy of flood risk management aims, targets and combinations of structural and non-structural measures. In contrast to operational decisions, strategic decisions involve the evaluation of measures with regard to a complex system of general aims and specific targets and the capability of dealing with trade-offs. Existing content knowledge referring to the question what structural and non-structural measures should be linked with regard to the recurrence. Content knowledge about effective and efficient strategic measures is a necessary condition for flood strategies (Hooijer et al, 2004).

Traditionally, managing floods and flood risk focused on water control through structural measures like dykes, dams and reservoirs. Currently, we can see a shift from flood control to more holistic approaches for managing flood risk (Schanze et al, 2005) within a European perspective on integrated governance and water basin management (Bressers and Kuks, 2004). The risk-based approaches underline the importance of considering land use and strategic (spatial) planning. Strategic spatial planning for controlling development in flood-prone areas is a key topic, especially with regard to vulnerability associated with extreme flood events (Hooijer et al, 2004). However, planning for reducing vulnerability is one possible non-structural measure, not the "one best way" for managing flood risk (Hutter, 2007b).

#### 2.4.3 Process

In the *process dimension* describes how strategies are formulated and how they can be implemented. This dimension refers to questions of how planning can be effective under increasing uncertainty and how learning for flood risk management can be fostered. Actually, strategic spatial planning is as much about process, institutional design, and mobilization as about the development of substantive theories. According to Hutter (2007b) process is about learning how to deal with diverse political interests, resource paucity, current responsibility of actors and cultural "world views". Process patterns refer to recurring interactions of using the linear and/or adaptive model, planning modes and other different types of learning. The framework for analysing strategies of flood risk management identifies three main topics with regard to the process dimension:

- (1) Choosing a linear or adaptive model of formulating and implementing aims and measures.
- (2) Choosing the appropriate mode of planning with regard to the extent of stability of context conditions.
- (3) Considering the shift from the traditional paradigm of "flood protection" to "flood risk management", as a complex learning process with different planning horizons, learning types, and levels of societal learning processes.

Strategy processes do not always follow a simple systematic logic to solve complexity and dynamic problems. To flood risk management, the conception is disseminated that decision-making should be understood as an iterative (e.g., Hall et al. 2003, Hooijer et al. 2004) and adaptive process (Schanze et al. 2005, Nicholls et al. 2000.).

Burby and associates (2000) argue that integrating all stakeholders into the strategy making process is more important than choosing the "right" specific way of participatory process for mitigating risks through strategic (spatial) planning. In line with this, local authorities would prefer the adaptive model of strategic spatial planning at the framework level and the linear model at the project level. Linear model works on the assumption that a single decision maker or elite of decision makers can design an explicit "grand" strategy based on a highly top-down, deliberate, analytical process (Volberda, 1998). While adaptive model assumes that effective strategy making requires both strong bottom-up and strong top-down forces (Burgelman, 2002).

The question whether the linear or the adaptive model is appropriate for effective strategy making should be answered based on empirical findings that consider the context of flood risk management in sufficient detail. In consideration of current situation of HCMC and District 2, it can be concluded that the adaptive model is more suitable at the urban district and project level than linear model. Compared with the linear model, the adaptive model is more concerned about developing flexible resources and capabilities for adjusting swiftly to unexpected events and trends (Volberda, 1998). Its strategy does not move forward in a direct way through easily identifiable sequential phases (Pettigrew, 1997). It is characterized by the parallel processes of formulating and implementing strategic alternatives (Hutter, 2007b). Therefore, the process pattern is much more appropriately seen as continuous, iterative and uncertain. In other words, the decisions for formulating aims and targets, for analyzing the internal and external context, and for combining measures are continuously aligned with the changing societal context (Chaffee, 1985).

With the regional scale of HCMC, the strategic spatial planning should be considered at catchment scale, which integrates the strategic decisions of various actors with regard to a specific area. Since flood risk management practice in whole catchments is fragmented (Hall et al. 2003). To overcome a state of fragmentation, various challenges have to be met (Schanze et al. 2005). Within the content dimension, different strategic aims and measures of all relevant actors have to be integrated. Process integration aims at combining different time scales and process pattern (linear / adaptive model, planning modes, and so forth). Even in a municipality, perspectives can differ between a department responsible for fostering economic development and a department responsible for restructuring open spaces (Hutter, 2007a). Whereas the context conditions are needed to address the double challenge of fostering autonomous action and establishing formal and informal institutions for common orientation and constant communication (Grabowski and Roberts, 1997).

## 2.5 Concluding remarks and conceptual framework

The literature review reveals that integrated flood risk management needs multi-disciplinary and multi-sectoral intervention with both short- and long-term consideration. Combination of structural and non-structural measures is needed to cope with climate change. However, in developing countries, non-structural measures are more suitable because it relies on stakeholders' understanding rather than big monetary investment that mostly rely on development banks, as loans, and from bilateral donors as grants. Therefore, strategic spatial planning and building stakeholders' capacity are two key non-structural measures for integrating flood risk management.

Consequently, there is an effort for shifting from traditional management towards a new integrated approach and sustainable management that requires more participation, coordination among development sectors and capacity building. However, it is not easy to recognize the capacity since it is a potential quality and social behavior is so unpredictable and complex. It means that there are still wide possibilities to modify and formulate the capacity as a tool assessment, such as trust and capability to improvise due to make the indicator more applicable in practice.

Furthermore, strategic spatial planning can be applied to flood risk management at different spatial levels. The rationale for this claim is as follows: flood risk management as "holistic and continuous societal analysis, assessment and reduction of flood risk" (Schanze 2006: pp.4) is the overall challenge of integrating "among others" technical expertise and political decision making in various policy fields and at different spatial scales (site, local, regional, state, and so forth).

Strategic spatial planning is one way of focusing on a specific spatial level, a limited range of actors, selected issues and strategic alternatives and important forums as well as arenas for decision making without forgetting that planning results have to be embedded in an overall strategy for flood risk management at a catchment level. Because the term "strategic (spatial) planning" can be used flexibly without losing its meaning it serves as a bridge between different spatial levels and policy fields (Hutter, 2007b).

Based on the above theoretical discussion of three-dimension strategy of Hutter (2006, 2007a), this study builds a conceptual model which is tailor-made for particular context of District 2, HCMC (Figure 6).

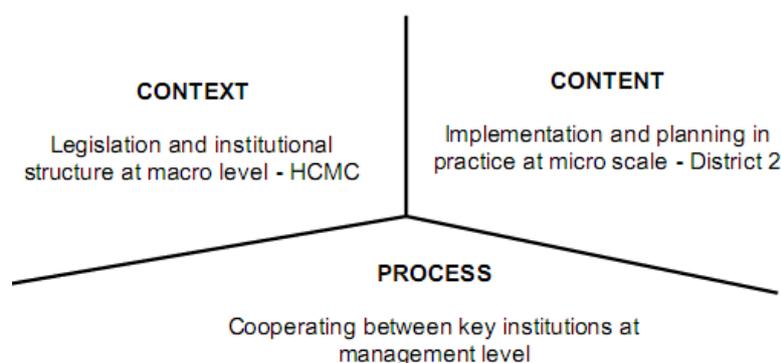


Figure 5 - Conceptual model for case research

## **Context**

In Hutter's framework, external and internal contexts including many factors are mentioned. However, in the rapid developing situation of HCMC, a new district - District 2 - is influenced strongly by the developing orientation of the municipality, which is considered an external impact. In other words, the structure of management and general policy in economy, society and environment will affect on the development of District 2. Land use in a new district also complies strictly the master plan of city and guidance in planning regulation. Besides, climate change is a future factor that affect to HCMC in general and social living in District 2 in particular. Therefore, it is necessary to consider planning documents and decision of flood management at a macro scale.

Furthermore, learning about structure and role of key institutions will help to know how the system works in coping with flood and planning. From that discovery, their relationship during working process will be revealed.

## **Content**

In this dimension, Hutter points out the goals and strategic measures play important roles in operational decisions. Therefore, after having an overview about urban planning, flood management and how the approach of key institutions, it is wise to check it in practice with the consideration of planning and its implementation via maps of concrete area - District 2. In this term, impact of climate change to a specific area will be exposed, which is also useful to know more about the reason of flood in micro scale. In this part, planning projects of new central area and other residential area should be analyzed in order to gain more insight into intervention in the future.

## **Process**

As the purpose of this paper, the process is about how to integrate flood risk management and strategic spatial planning at local level in both planning and policy. Therefore, it will consider some conditions before making plans or strategic decision, such as comparing topography map and flooding scenario maps in order to identify which area for development or for preservation. Simultaneously, this step will be the foundation for the adaptive flood management coping with climate change in the future. Besides, based on institutional analysis, it also gives recommendation for cooperation between two mains different institutions: SCFC and DPA.

## CHAPTER 3 - METHODOLOGY

In this chapter, I will provide the methodology for this thesis. The explanation will come firstly with the reason of choosing single case study by presenting theory of single case study and explaining the reason of choosing HCMC - District 2. After that, I will explain the applied methods for each dimension Context - Content - Process with concrete explanation of data collection and data analysis which including mapping analysis, legislation analysis and in-depth interviews.

### 3.1 Motivation for a single case study on HCMC - District 2

According to Flyvbjerg (2011), a case study not only provides reliable information about the broader class but it may also be used “in the preliminary stages of an investigation” to generate hypotheses. Moreover, it can produce a kind of concrete context-dependent knowledge that is very important for expert activity. In other words, it develops skills for the learning process of researcher, which is necessary to do good research. Therefore, concrete case knowledge is more valuable than abstract knowledge of theories and universals; because the advantage of the case study is that it can “close in” on real-life situations and test views directly in relation to phenomena as they unfold in practice. Similarly, the reason to choose single case study is its reflection on some real-life situation that social scientists has not been able to study in the past (Yin, 2009). In this case, Hutter's framework was established in a developed country, which research features are quite different from conditions in developing countries. Choosing a case study in a developing country like Vietnam is a good way to check the feasibility of applying Hutter's framework on a different situation. On the one hand, this real-world application and comparison will provide the practical experiences and reflections for Hutter's theory. On the other hand, it is also a way to help a developing country like Vietnam to approach the innovation and to catch the development of flood risk management in the world.

To Yin (2009), one of the rationales for selecting a single case study rather than a multiple-case design is that it represents the critical test of a significant theory, which is considered as a significant contribution to knowledge and theory building. It can be used to determine whether a theory's proposition is correct or whether some alternative explanations might be more relevant. With the same idea, Flyvbjerg (2011) confirms that a single case study can generate and test the hypotheses as supplement or alternative to other methods, because it is understood in terms of the phenomenology for human learning. Hence, a single case study can improve the way people behave and solve problem arising in the similar practical context. It can produce empirical generalizations regarding administrative rationality, professional treatment, and normative reasoning, which make readers easy to retain the lesson from an intellectually ambitious case study (Barzelay, 1993). HCMC with the remarkable characteristic of urbanization and increasing flood risk will be a suitable case for testing Hutter's theory. From then, I will apply the theoretical strategy of flood risk management to practical flooding context in order to draw the theoretical learning lessons for HCMC and practical contribution for Hutter's research.

One more advantage of case study is that it does not bias toward verification of the researcher's perception than other methods of inquiry (Flyvbjerg, 2011). Because it is multi-perspectival analyses, so the researcher have to considers not just the voice and perspective of the actors, but also of the relevant groups of actors and the interaction between them. Similar to Flyvbjerg, Tellis (1997) also assumed that case study is a "triangulated research strategy"<sup>2</sup> which is identified four types: data source triangulation, investigator triangulation, theory triangulation, and methodological triangulation. Thank to this characteristic of case study, the validity of processes and outcomes are ensured. In my case study, based on each dimension of Hutter's model - context, content and process, multiple methods are used to supplement each other and avoid bias of the outcomes. For instance, to check the validation of document analysis method in context dimension, practical information will be analyzed by mapping documents in content dimension. Finally, to confirm the analysis on words and maps, in-depth interview with stakeholder will be executed in order to confirm my conclusion. By this way, flooding problem and solution will be considered by different perspective with different knowledge and experiences. This makes the outcome and conclusion of the thesis more accurate and objective.

To sum up, with these advantages of single case study, the theory used in my thesis will be tested and modified in the way suitable to practical context. In parallel, the case study - HCMC (District 2) will have a solid foundation of theory to develop into the innovative approach of flood risk management.

### 3.2 Methodological strategy

Based on the strategy building in Chapter 2, the methodology will focus on describing how to collect and analyze data according to three dimensions: Context, Content and Process (Figure 7). To reach the objective "Integrating flood risk management and spatial planning in District 2", this study will consider planning legislation and land use of District 2 via document and map analysis. However, planning system in Vietnam has a comprehensive approach, planning legislation in District 2 has to follow general planning orientation of HCMC. Moreover, there is no specific flood risk management in District 2. Hence, planning legislation will be analyzed at the municipal level. Policy analysis will scan in planning regulation and code in order to learn whether planning laws have considered flooding and if it also accounts for climate change. Furthermore, to find out the real relationship between planning and flood manager, primary data via interview with experts who mainly work for SCFC and DPA will be necessary. However, to get more detail about urbanization in district 2, mapping analysis will give more convince for relationship between spatial planning and flood management. This analysis also examines whether planning develops in vulnerable area or considers environmental factors or not.

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<sup>2</sup> "Triangulation is a method used by qualitative researchers to check and establish validity in their studies by analyzing a research question from multiple perspectives" (Lisa, 2002, pp.1)

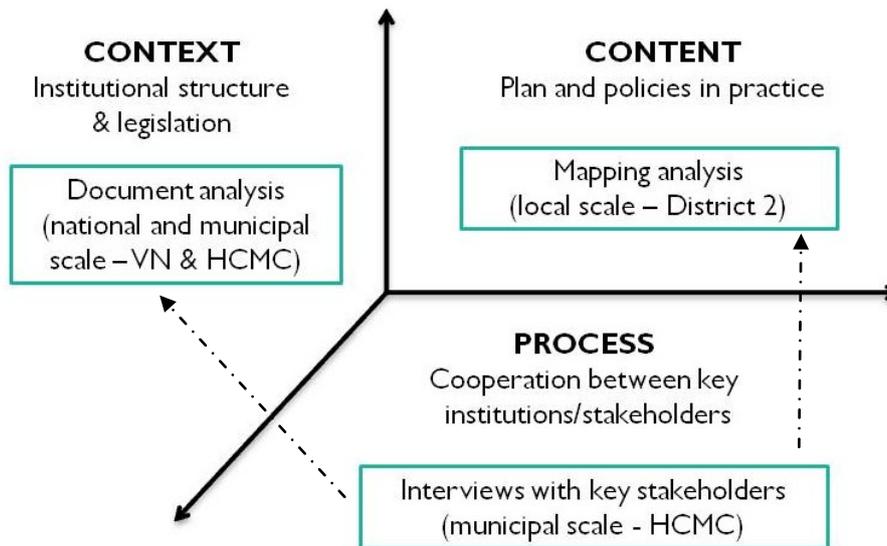


Figure 6 - Research methodology

### 3.2.1 Context

In this dimension, I will look at the law and regulations in order to grasp the context of legal aspect about planning orientation, flood management and institutional structure, which are attained from the government institutions at municipal level.

Legislation analysis will first consider institutional structure and role of managers in DPA and SCFC in order to see how they work and whether their cooperation happens during the procedure of solving problem and making decision or not. And second is scanning some basic planning regulations to answer the question "Do planning policies take into account flooding problem?". Because most of power in decision making belong to municipality (not to District level), this study will analysis policy legislation and management structure in meso scale - HCMC. There is a list of planning regulations that need to be scanned:

- Circular No. 30/2004/TT-BTNMT by the Ministry of Natural Resources and Environment dated 01/11/2004 about "Guiding the order and content of the formulation, regulation and evaluation planning and land use planning".
- Decision No. 04/2005/QĐ-BTNMT by the Ministry of Natural Resources and Environment dated 30/06/2005 about "Process of setting and adjustment Planning, Land-use plan"
- Draft (2012) "Process of setting and adjustment Planning, Land-use plan" mentions climate-change factor in setting and adjustment planning, which is considered as a supplement regulation for Decision No. 04.
- Decree No.08/2005/ND-CP dated 24/01/2005 of Prime Minister about "Construction Planning"
- Decision No. 24/QĐ-TTg dated 06/01/2010 of Prime Minister about " approval for planning adjustment of HCMC master plan in 2025"

- Decision No. 6566/2005/QĐ-UBND dated 26/12/2005 of the People's Committee of Ho Chi Minh City on approval for the Detailed Project Design at scale 1/2000 scale of Thu Thiem New Urban Area.
- Decision No.752/QĐ-TTg dated 19/06/2001 of Prime Minister about "Approval for HCMC master plan of drainage system in 2020"

Circular No.30, Decision No.04 and Decree No.08 are common regulations such as a planning code for any project, so scanning will be necessary to know whether flooding issues are considered in current planning projects. With flooding issue relating to climate change, a new regulation - Draft (2012) which supplement for Decision No.04 is a good choice. Besides, planning orientation of whole HCMC and Thu Thiem new centre will expressed via Decision No.24 and No.6566. These planning regulations are important to define perspective of planning managers about flooding issues in planning project. While the planning regulations have been popular and existed for a long time, flood management document is opposite. Until now, the most famous regulation about flood control is Decision No.752 which mostly considers engineering approach for flood management.

### 3.2.2 Content

In the content dimension, spatial planning documents at District level are used to illuminate the context of planning and the direction of spatial pattern and flood management. By reviewing location of each newborn residential area in master plan of District 2, the rationality in urban development can be known; thus can be assessed interrelatedness between planning and flooding at local level.

On the local scale for District 2, mapping analysis in this study will be divided into 2 parts: municipal scale - HCMC and local scale - District 2. First is comparing three layers: current land use, spatial plan and topography map. Current land use and spatial plan are taken from official institutions, while topography map will be created by MapInfo software. Topography analysis helps to indentify which area will be affected by flooding in the future context of climate change. These vulnerable areas will be noticed when comparing with developing plans in order to consider whether these areas be violated for rapis development or not. Second is considering in detail development project in District 2, especially the project of Thu Thiem central area. This will answer the question whether the newborn centre considers flood-prone area in the future or other residential areas develop in the flood-prone areas or not. These analyses are also physical proofs for the flooding consideration of the developing orientation of urbanization.

### 3.2.3 Process

In this final dimension, in-depth interview help to collect opinions and experiences of expert about flooding in spatial planning and coordination among governments. By this way, the study also considers experts' statement and perspective via newspaper. Interviewing the

related actors was an appropriate method to provide an insight of the fragmentation and coordination circumstances.

In-depth interview is a qualitative research which is used to go intensively into interviewees' perspective, individual idea and situation (Boyce and Neale, 2006). The value of the interviews undertaken during field visit lies in the fact that a selected group of experts was chosen. Each had a particular view or knowledge on the subject of flooding and planning. Some of them are at the high level of the government, others are professors in planning field. According to Adam et al (2008), in-depth interview can provide a flexible and attendant method that depends on users' perceptions and experiences. By interviewing experts with different backgrounds, a diversified set of opinions on the subject of flood management and urban planning are obtained. This provided an integral view of flooding issue in HCMC because different people with their own position and experiences may possess quite different opinions about the urbanization and flood management.

<b>No</b>	<b>Interviewees</b>	<b>Position</b>	<b>Location</b>	<b>Date/time</b>
1	Interviewee A	Director of Thu Thiem management board (Investment and Construction), District 2	177 Ly Chinh Thang Street, Ward 7, District 3, HCMC	8.00 AM Monday 06/05/2013
2	Interviewee B	Manager of drainage project, SCFC	10 Tran Nhat Duat Street, Tan Dinh Ward, District 1, HCMC	13.00 PM Monday 06/05/2013
3	Interviewee C	Permanent vice-director, SCFC	10 Tran Nhat Duat Street, Tan Dinh Ward, District 1, HCMC	8.00 AM Wednesday 08/05/2013
4	Interviewee D	Director of Planning Information Center, DPA	168 Pasteur Street, Ben Nghe Ward, District 1, HCMC	10.30 AM Tuesday 07/05/2013
5	Interviewee E	Former vice-director of DPA	21 Street No.17, Ward 14, District 8, HCMC	8.00 AM Tuesday 07/05/2013
6	Interviewee F	Professor and Dean of Urban Planning Department, HCMC University of Architecture	196 Pasteur Street, Ward 6, District 3, HCMC	14.30 AM Wednesday 08/05/2013
7	Interviewee G	Director of Institution of water management and climate change. Project director of PMU, SCFC	<a href="http://dothivietnam.org/2012/03/12/pvholongphi/">http://dothivietnam.org/2012/03/12/pvholongphi/</a>	12/03/2012

**Table 2 - Related interviewers in different institution**

The experts were selected from the organizations which are listed in Table 2. All of them are senior experts both in urban planning and flood management and most play key roles in government institution, so their opinions will be very important to understand the policy context of the local situation. There are in total seven interviews: one indirect interview with a famous person in flooding research is collected in newspapers; and six direct interviews have been carried out during the fieldwork. Due to the knowledge and experiences of two planning experts in DPA; and two flood managers from SCFC, the flooding problem and planning in city has been exposed clearly. Meanwhile, one professor from university has given academic perspective in regards to their contribution and expertise in spatial planning and flood risk management. Final person coming from Management Broad of District 2 has provided deeper insights into the local planning and flooding context of research area.

The questions from in-depth interview is the open question type which gives freedom for interviewees to answer the question or express their opinion in regards to the topic of research (Singleton et.al, 2005). They could provide a different side of view of the coordination among institutions in spatial planning and flood management. Interviews are saved in document by audio record and transcript. Audio record is only for direct interview which later be transformed into transcript, while indirect interview has already been available in the internet. All the interview results are further used for the qualitative analysis of policies in all three dimensions context, content and process.

There are some examples of questions for the interviewees in different institutions (see Appendix 1 - Interview guideline). All the questions focus around three dimensions - Context, Content and Process. Depending on the professional characteristic of each interviewee; they have been asked different kinds of question. However, there are some questions that should be ask for all interviewees in order to receive the comments with different perspective, such as the question "What do you think about Master planning in District 2? Does it care about elevation or climate-change flooding in this map?"

With respect to experts in planning, the questions will find out their opinion in general planning system, the role of planning actors or relationship with flood management, such as:

- How is the relationship between spatial planning and flood management nowadays?
- What kinds of criteria and key issues of flood management have been raised by flood manager for strategic spatial planning in HCMC? How can they transfer to the criteria for strategic (spatial) planning?
- What are the role of the various levels of government in flood and land use management? Are these roles and responsibilities clearly defined?
- What are the major responsibilities of urban planners to deal with flood-related problems?
- What are the comments and suggestions for the cooperation between urban planning and flood management?

With respect to flood manager in SCFC, the questions aimed at discovering current flood management in HCMC, recent projects as well as government orientation in flood control, such as:

- What are the flood control projects recently?
- Tell me about Royal Haskoning's project (see 5.3.1)? What is the difference with former projects?
- Are there any flood management/control program only for District 2?
- How is the relationship and cooperation between municipal institutions in flood prevention?
- What are the orientation of government for coping with flood in HCMC? What are the plan and measure coping with current flooding and climate change in the future?

With respect to interviewee working in DPA, the questions have focused on how planning and flood relate to each other and their function in flood control procedure, such as:

- Do the recent plans consider flooding factor caused by climate change? If not, why?
- What is the role of Planning Information Center related to flood problem? What are the achievements and difficulties in accessing flooding information?
- Which organizations play the important role in implementing planning policy concerning the flood management? To what extent can they play?

With respect to project manager in District 2, more concrete question about flooding and planning situation have been asked, such as:

- What are the main flooding problem in District 2?
- How are the recent projects in District 2? Especially Thu Thiem - new urban area project?
- How do the authorities in District 2 work with municipal level in flood management and planning?
- What do organizations affect in solving flood problem in District 2? How are their roles?
- What are your recommendations to solve these current problems?

### **3.3 Conclusion**

The main method applied in this study is qualitative analysis which help to evaluate the impacts of flood and interpret urban planning in the context of dynamic development. Qualitative analysis such as mapping analysis is used to examine the impacts of urban land use expansion and climate change on the surface water and topography. Whereas document analysis and in-depth interview are used to analyze the concerning flood and policy issues. The main purpose is to explore the limitations of present policies/planning and to find potential innovation in the future policy-making.

Primary and secondary data in this study has been collected during the fieldwork and via internet. Primary data comes from site investigations, field observations and in-depth interviews with experts working in two main institutions - DPA and SCFC. Secondary data, i.e. official documents (e.g. spatial plans and policies) and reports, chorography and local literature, statistical data, digital spatial data and image data, etc. However, there are certain limitations of each type of data, so using primary and secondary data at the same time can supplement for each other. For example, primary data in in-depth interview has limitations in particular for the validity of the information obtained (Creswell, 2003). The varied and rich information from the interviewees can bring dualism mainly when they are not correctly summarized and structured. It can create bias since the interpretation of the information much depends on the ability of researcher (Creswell, 2003; Singleton et.al, 2005). Therefore, to clarify the information, secondary data is still needed, especially under public perspective in newspapers which usually reflect facts and popular expectations. It is useful to prevent any bias in opinion of the interviewees.

Not only can help to prevent the bias from the interview, secondary data also provide more contextual material for this research (Flowerdew, 2005). Hence, the secondary data can be used to enhance the understanding of local context in spatial planning and flood management and government in District 2. In addition, other advantages from the secondary data are qualified and reliable since it is published already, and cheaper and easier to be compared to primary data (Creswell, 2003). About these advantages, secondary data can increase the quality of information and data used for this research.

In general, using both type of data while comparing the information of each type will help the research to have a deep insight into problematic relationship between flooding and planning at present and to give the predictable solution coping to climate change in the future.

## CHAPTER 4 - INTRODUCTION TO THE CASE

In this chapter, I will introduce the flood and planning situation of the case study - HCMC in general and District 2 in particular. The first part will present general information such as administration management, natural feature, development, etc. of HCMC and District 2. The second part will introduce in detail flooding from the national level to the local one. Current flood as well as flood risk caused by climate change in HCMC also belongs to this part. All these introductions will help us to have an overview of flood risk in the case study.

### 4.1 General information

#### 4.1.1 Ho Chi Minh City (HCMC)

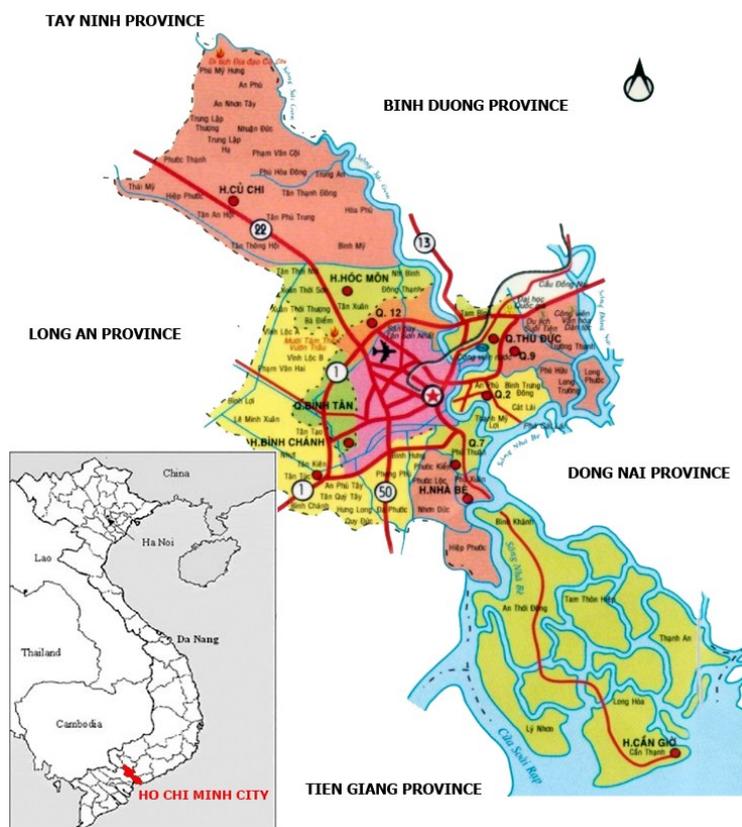


Figure 7 - Map of Ho Chi Minh City [<http://www.hochiminhcity.gov.vn>]

Ho Chi Minh City, formerly known as Saigon, was founded in 1698. It is located in the south of Vietnam, near the delta of the Mekong River, 60kms from the sea (Nguyen, 2013). It is the biggest and most dynamic city in Vietnam with the transport hub of the Southern region and the largest port system and airport in Vietnam (Figure 8).

Ho Chi Minh City has an area of 2,095.01 sq km and population of 7.396.446 people which is equivalent to about 8% of the total population of Vietnam (Statistical Office in HCMC, 2010). It is organized into 24 districts, including 13 of which are old urban inner districts, six expanded urban districts (District 2 among them) and five suburb districts.

Since 1986, the renovation policy triggered the so-called "industrialization and modernization" process which created momentum and impetus for social transformation and radical economic development in Vietnam (Storch et al, 2012). However, the rapid annual economic development has degraded urban services, infrastructure and facilities, such as traffic, water supply and drainage.

#### 4.1.2 District 2

In 01/04/1997, District 2 was established, following Decree No.03/ND-CP about urban development of the Government. It is located on the left bank of the Saigon River in the east of HCMC, which is opposite to old central area (District 1). Its location is considered as a focal point of transportation connecting between HCMC with other provinces such as Dong Nai, Binh Duong, Ba Ria - Vung Tau (Figure 9). With many advantages such as extra space for building, low population density, pristine waterscape and landscape, District 2 has potential to develop as a new central area in the future.

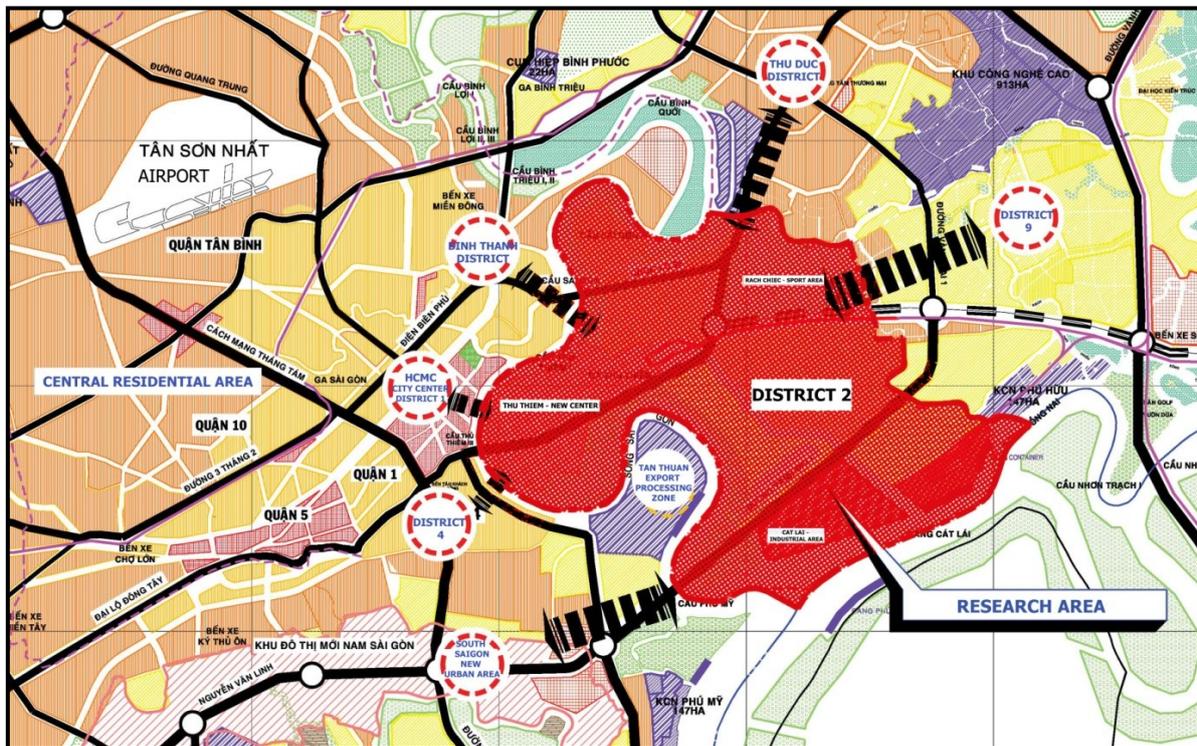


Figure 8 - Location of District 2 in HCMC

The total area is 5017 ha with population of 238,800 people (Statistical Office in HCMC, 2010). At the beginning of the developing process, 50% of total area has been agricultural land. However, after rapid urbanization, agricultural land just left 1611 ha which occupies 32% in 2005, residential land is 1402ha (nearly 28%), while water areas occupied 24,7% (MBD2, 2013). District 2 is divided into eleven wards, including: An Phu, Thao Dien, An Khanh, Binh An, Thu Thiem, An Loi Dong, Binh Trung Dong, Binh Trung Tay, Thanh My Loi and Cat Lai (Figure 10).

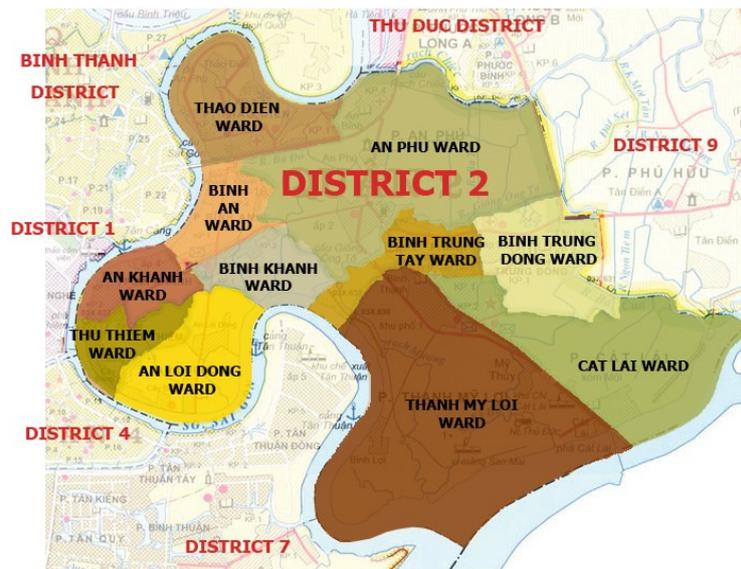


Figure 9 - Administrative boundary of District 2

Historically, at the early development of District 2, three Wards (An Phu, Thu Thiem and An Khanh) have been focal points for investment (MBD2, 2013). At that time, Binh Trung Dong, Binh Trung Tay and Thanh My Loi were still agricultural wards because of their disadvantageous location. Therefore, at the beginning of development, District 2 met a lot of difficulties because of unclear developing orientation, intangible planning and poor technical and social infrastructure.

With respect to natural feature, it is influenced by semi-diurnal tides on the Saigon River and Dong Nai River. The highest water level was recorded 1.55 m (2010-2011) (Storch et al, 2012). The area is located in the monsoon tropical zone with two clearly classified seasons: the rainy season (from May to November) and dry season (from December to April). In rainy season, it rains more than 20 days. The rainiest months are August, September and October (approximating a rate of 43,6% of the rainfall of the year). These natural features have contributed a lot to the flooding problem in District 2.

## 4.2 Overview of flood risk and flood risk management on the case study

### 4.2.1 Flood risk and flood risk management in Vietnam

Situated in the tropical monsoon zone close to the typhoon centre of the western pacific, Vietnam is one of the most flood-prone countries in the Mekong region. Currently, 70% of the 73 million people in Vietnam live in disaster-prone areas, with the majority of the people in the urban areas (Shaw, 2006).

Based on the geographical and climatological features and the disaster conditions of all types of the country, the government of Vietnam made decisive policy for each zone as follows (Shaw, 2006) :

- For Northern Part of Vietnam: To strengthen dyke system and flood retardation and diversion structures in order to improve flood resistant constructions and to protect population and economic areas mostly in Hanoi Capital.

- For Central Part of Vietnam: With the narrow and complicated topography, this Part is frequently affected by storms and heavy rains which cause annual flooding. The decisive policy is to supplement active measures for flood prevention and mitigation, as well as for familiarizing with floods.
- For the Mekong River Delta: The decisive policy is to prepare measures for living with floods, to minimize damage caused by floods as well as to make use the advantages of floods for the sustainable development.

In short, in the Northern region, it is more on “positively prepare for and prevent flood”, while in the Mekong region in the south (which HCMC belong to), it is more on the “coexistence with flood (living with flood)”; and in the Central part, it is on “positive preparedness, mitigation and management”. For HCMC case study, from the policy orientation above, it can conclude that government also encourage the approach of "living with flood" which can be considered as a general direction for concrete strategy of flood risk management in smaller scale - HCMC.

#### 4.2.2 Flood risk and flood risk management in HCMC

##### a. Reasons for flooding and its consequences

There are several reasons of flood in HCMC, both by natural features and human impacts:

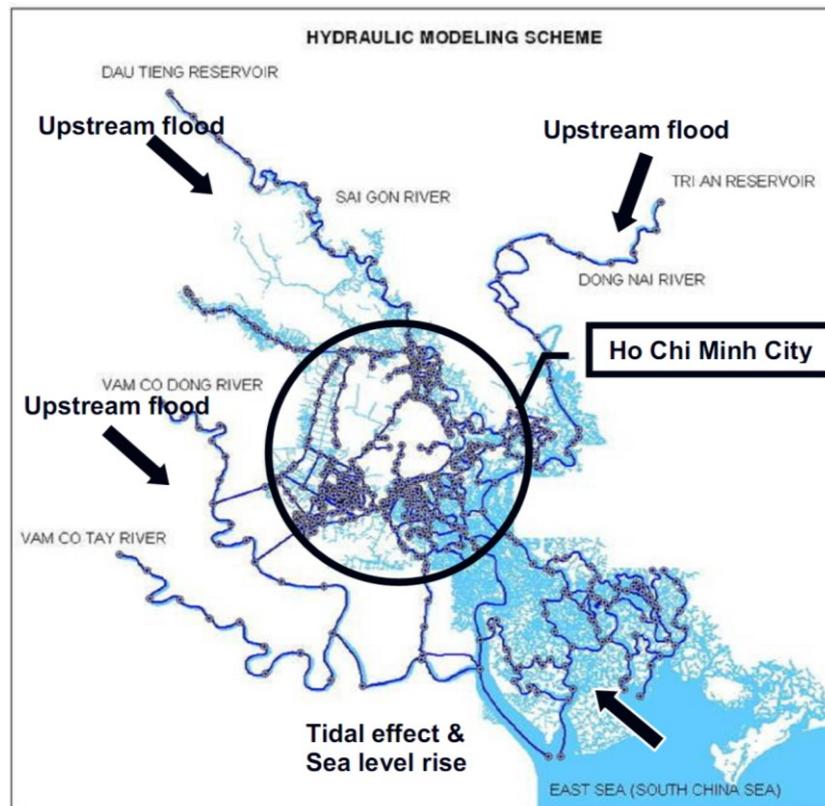


Figure 10 - Hydraulic modeling scheme of the HCMC Region [Ho, 2007]

Firstly, Ho Chi Minh City is located 50 km from the South China Sea and northeast of the Mekong River Delta in an estuarine area of Dong Nai River system with high flow volume.

HCMC is located in the central catchment area of Saigon - Dong Nai River with a high density of canal system forming a complex network affected by tide (Figure 11). The majority of the lands in Ho Chi Minh City are situated in low-lying areas; over 50% of the city land is less than two meters above sea level (Ho, 2011). This low elevation of the land and heavy rainfall makes the city susceptible to flooding induced by tidal fluctuations (Storch, 2008) (Figure 12).

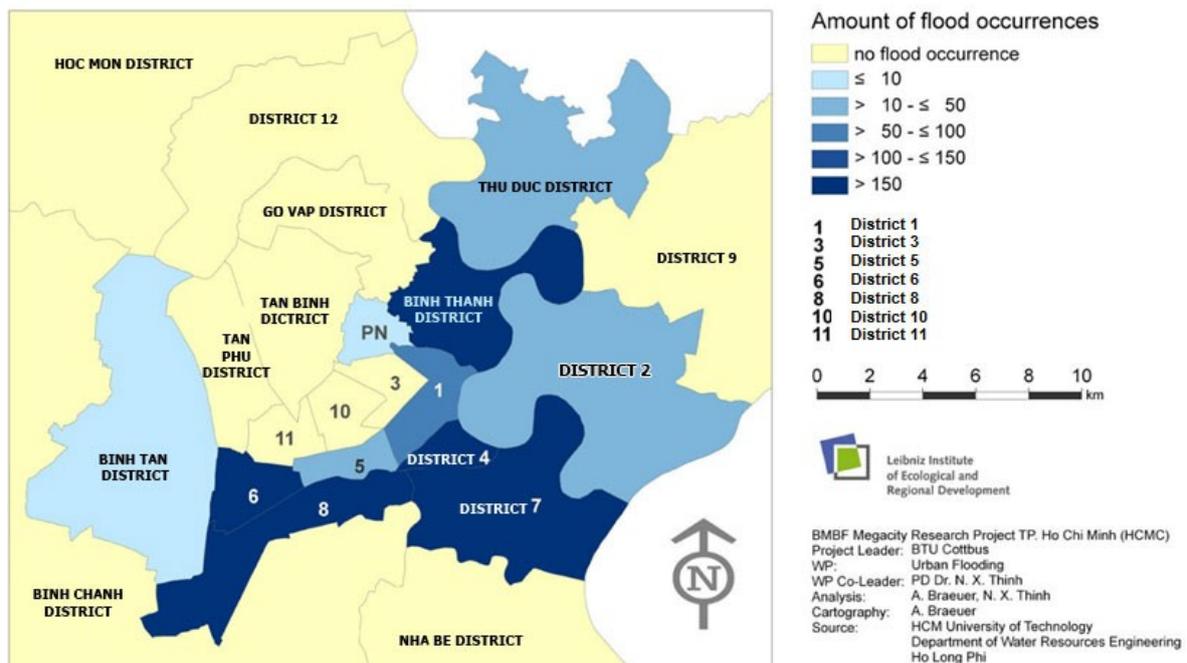


Figure 11 - Amount of flood occurrences caused by high tide in district of HCMC in 2008 [Ho, 2011]

Secondly, since the early 1990s, events of inundation within the city have been seen with increasing frequency (Trinh, 2005). The numbers of flooding locations, the flooding frequency and its duration have increased continuously. Each year, HCMC suffers many serious floods, not only in rainy season from May to November, but also during the season with high tide from September to January (Nikken Sekkei, 2007). Moreover, heavy rainfall in HCMC are usually concurrent with periods when the water level is at its annual high and this fact causes an even more severe problem for urban drainage in HCMC (Ho, 2008). The rainfall rate increased in the period of 1988-2004 due to climate changes, coincident with the dramatically change in urbanization and industrialization (Nikken Sekkei, 2007). More than 100 serious flooded locations, including many in the city centre, were reported after one single heavy rainfall event (127 mm) on May 16 in 2004, causing prolonged traffic jams as thousands of motorcycles broke down (Storch, 2008). Until 2011, flooding spots reduced to 31, which can be considered a significant improvement in flood management (Ho, 2011) (Figure 13).

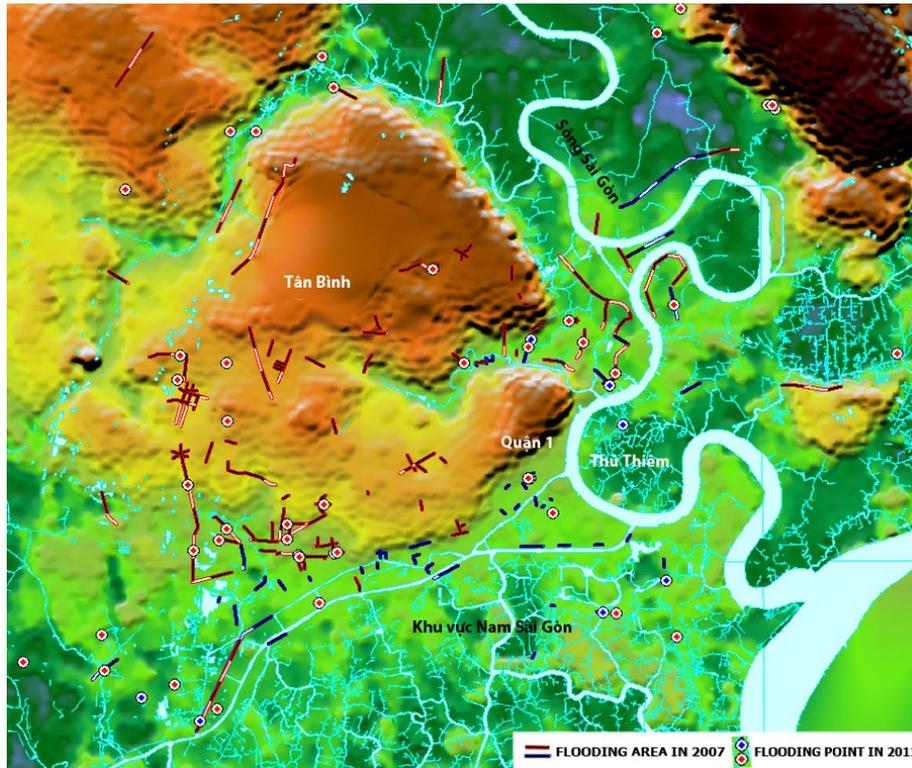


Figure 12 - Flooding location in central area of HCMC, based on topography analysis [Ho, 2007]

Fourthly, at some locations in HCMC land subsidence has been occurring at a significant rate, caused by over exploitation of groundwater and construction of high-rise buildings (Storch, 2008). Land subsidence is creating a similar effect as sea-level rise and may enhance the flooding situation when combined with rising water levels and more intense rainfall.

Fifthly, the increasing trend in population growth in HCMC leads to new problem. Many people expanding their living in low land areas, which makes the city face the rapid population growth in limited condition of lands and resources (ADB, 2010). Since 2000, this urban expansion of HCMC has taken place in the low-lying peripheral and suburban areas (Figure 14). These areas are already known to be prone to flooding in high-tide events. This rapid urbanization process has changed the land-use pattern of the metropolitan region (Storch, 2008). Natural streams, channels, lakes, wetlands and vegetation structures that can maintain the urban water balance have been replaced by impermeable surfaces causing the risk of urban flooding.

Urban flooding in HCMC has very serious impacts on the built environment. The housing production and the ground sealing by infrastructure on former retention and infiltration areas lead to a reduced drainage and storage capacity for flood and rain water (Eckert and Schinkel, 2009). Therefore, most parts of higher situated urban areas will be inundated by flooding and heavy rain events with impacts on transportation, economic business and social activity. Traffic jams happen quite often in the rainy season due to flooding. Flooding disperses the wastewater from sewerage all over the city, which causes water pollution, epidemic diseases, damage to houses and infrastructures.

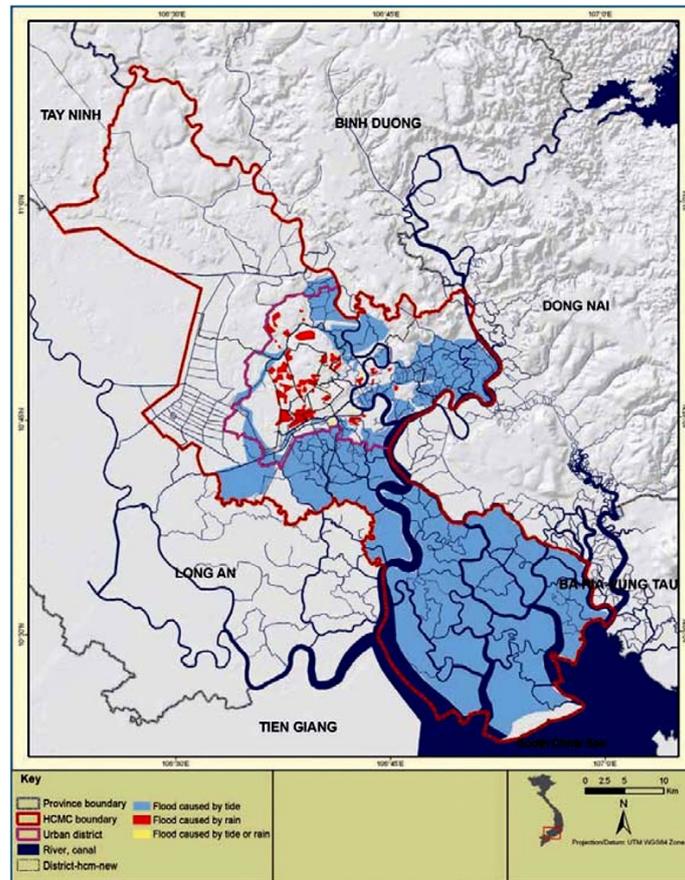


Figure 13 - Ho Chi Minh areas subject to flooding [ADB, JICA-HCMC urban drainage and sewerage project, 2010]

*b. Effects of climate change on flooding*

Ho Chi Minh City has been categorized as the most five vulnerable cities impacted by climate change (World Bank, 2010). This vulnerability is of particular concern because it strongly influences Viet Nam’s development: HCMC accounts for 23% of national gross domestic product (GDP) and 20% of foreign direct investment (ADB, 2010). “Recent studies on the urban flooding problem in Ho Chi Minh City have proven that local impacts of climate change, rising water levels, land subsidence and urban sprawl are among the most direct causes of the flooding that caused millions of USD in losses damage each year” (Ho, 2007).

According to research of ADB (2010), HCMC is vulnerable because:

- It is barely above sea level—40%–45% of land cover in HCMC is 0–1m in elevation, 15%–20% is 1–2m, and very little land sits above 4 m;
- It has a large and growing population—residents number more than 6.3 million and the dynamic economy draws migrants from all over the country;
- Local development patterns are also affecting vulnerability and the local climate—urban development, for example, has decreased infiltration and causes localized flooding; and
- Current climate and hydrodynamics are already extreme and are expected to intensify, so there will be more severe storms, storm surges, and tidal flooding

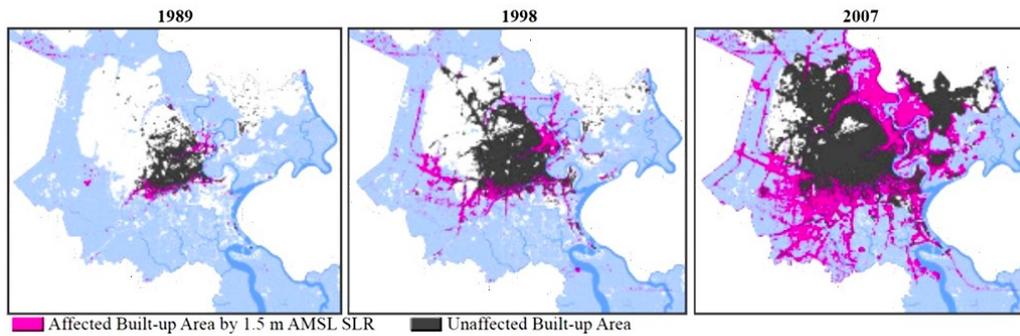


Figure 14 - Potential risk for inundation at high-tide level (1,5m AMSL) for built-up area [Storch, 2011]

Historically HCMC, as a densely built-up area in a low lying region, is sensitive to climatic effects. However, vulnerabilities of lives and livelihood to climate-related environmental processes are primarily the result of inadequate and unsustainable urban planning practices associated with complex natural settings and societal structures (Storch, 2011c). Figure 15 shows the inundation risk at current high-tide level in relation to the past urban development process from 1989 to 2007. Therefore, the conversion of the wetland areas and the loss of its critical functions in both buffering and storing rain waters and surface runoff and releasing them slowly back into the surrounding water bodies has significantly increased the inundation risk for built-up areas (Storch, 2011c).

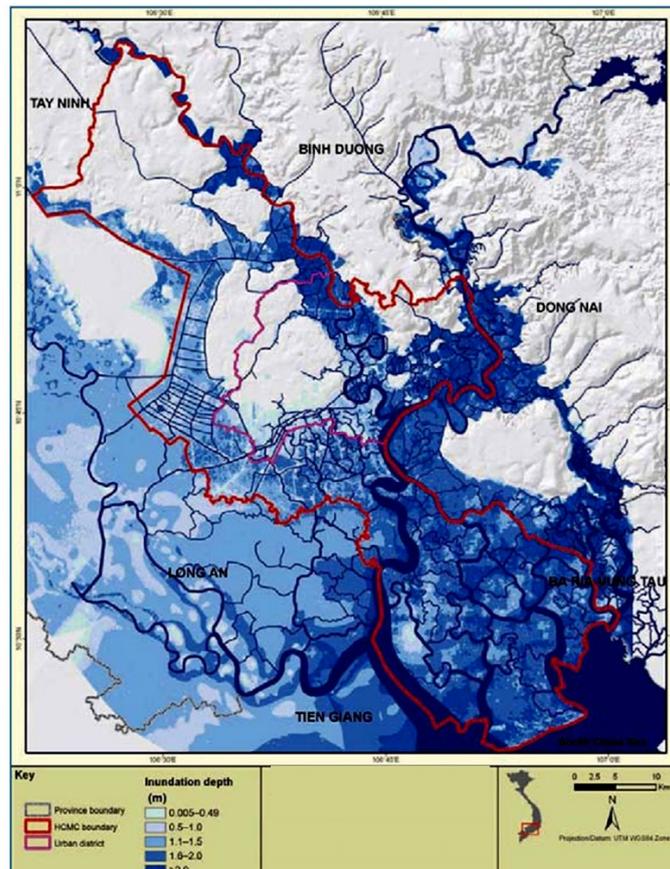


Figure 15- Projected extent of flooding in extreme events by 2050 without proposed flood control [ADB, 2010]

The Intergovernmental Panel on Climate Change (IPCC) recommends that a range of Special Reports Emission Scenarios, with a variety of assumptions regarding driving forces are used in any climate change analysis. For the analysis of climate change scenarios for Vietnam six scenarios groups were used. With the high emission scenarios, the average presumed sea level rise by 2050 will be 18.5 cm, while the worst case scenario would be 33.4 cm. By 2050, even the low emission scenarios on average expect sea level rise of 13 cm. Figure 16 expresses flooding situation in 2050 without any protection method. By 2100, the high emission scenarios on average predict an increase of 52.9 cm, with a worst case scenario of 101,7 cm, while the low emission scenarios expect on average a 33.6 cm sea level raise respectively. With this scenario, 70% area of HCMC region sinks in flood, excepting some highland areas in the North-West. Particularly, the Southern and Eastern areas of the city are ecologically sensitive low-lying marshlands. It is estimated that such low-lying areas will continue increasing due to the global warming effect.

### **4.3 Concluding remarks**

HCMC is an typical example of such an emerging Asian coastal megacity facing the double challenge of rapid urbanization and climate change. In recent decades urban flooding in HCMC has become one of the most pressing issues. Flood events occur individually but more commonly in combination with high tides and fluvial flooding events. Moreover, HCMC is a high densely built-up area in the downstream of Sai Gon - Dong Nai River; it can be seen as a flood-prone metropolitan area which is also sensitive to climate change. According to the general orientation of government about flooding control, the strategy for Southern area in general and HCMC in particular is to harmonize with flood risks, which proves the progress in flood risk management.

The plan of new urban area in District 2 is already approved and in the process of clearance. However, with the disadvantageous natural features, choosing District 2 for research will give more chances for planning adjustment with deep consideration of flooding in the future. Integrating climate change considerations into land use planning in HCMC is a complex decision making problem, which requires a careful assessment of the decision situation, related to the concrete places and spaces. The next chapter will analyze to what extent spatial planning and flood risk management are already integrated based on the conceptual model developed in Chapter 2.

## CHAPTER 5 - ANALYSIS OF THE CASE

After having the practical knowledge of research case in Chapter 4, I will gain insight into application of case study based on three dimensions - Context, Content and Process - which is introduced in previous chapters. In the context dimension, general planning system will be introduced as a foundation for the analysis of planning legislation and institutional structure of DPA and SCFC. In the content dimension, all the content information will be checked in practical planning maps of HCMC and District 2 in order to find the integration of flood in planning practice. To avoid subjective conclusion, interview with different stakeholders in key institutions will be conducted in process dimension. With different methods in each dimension, the analysis in this chapter will serve as a valid basis for the next chapter - conclusions and recommendations.

### 5.1 Context

In the first dimension - context, I will mainly elaborate on the planning legislation and the institutional and organizational structure, which are useful to understand clearly how planning related to flood control and how relationship inside management system during the procedure of planning or flood control works in HCMC.

#### 5.1.1 Planning legislation

In this part, some planning regulations and flood Decision are considered in order to check what extent flood issues integrate into planning legislation and how the degree of awareness of managers about climate change is.

The master plan of HCMC up to 2020, ratified by Decision No.123/1988/QĐ-TTg dated 10/07/1998, has been prepared before the Construction Law which was revised in 2003. The revision of Construction Law has provided a new perspective in basic spatial planning framework for three different construction development plans: the regional construction plan, the urban construction plan and the rural residential area construction plan.

In accordance with the construction law, the land use plan is prepared for a five-year period while its maps are drawn every 10 years. The land use plan indicates planned targets by various land use categories. Although these maps are not spatial physical plans in essence, it is sometimes understood that they specify the particular land use of a parcel of land.

In addition, there are Decisions/ Decrees related to planning regulations which are the compulsory rules for designing or setting a spatial plans in any planning project (more detail in Appendix 1), such as:

- Circular No. 30/2004/TT-BTNMT by the Ministry of Natural Resources and Environment dated 01/11/2004 about "Guiding the order and content of the formulation, regulation and evaluation planning and land use planning". This Circular is about regulation to improve land use planning at all levels and to surmount suspended planning via several steps from assessing current land use to building map of land use planning.

- Decision No. 04/2005/QĐ-BTNMT by the Ministry of Natural Resources and Environment dated 30/06/2005 about "Process of setting and adjustment Planning, Land-use plan". This Decision is about regulating the process of land use planning at regional and national level by evaluating the advantages, limitations in land use and economic-social development.
- Decision No. 24/QĐ-TTg dated 06/01/2010 of Prime Minister about "Approval for planning adjustment of HCMC master plan in 2025". This Decision is about developing principles for old and new inner city following the centralized model with multi-polar, with purpose of sustainable development.
- Decree No.08/2005/ND-CP dated 24/01/2005 of Prime Minister about "Construction Planning". This Decree is about guidelines of formulation, approval and management of the construction planning stipulated by the Construction Law.
- Decision No. 6566/2005/QĐ-UBND dated 26/12/2005 of the People's Committee of Ho Chi Minh City on approval for the Detailed Project Design at scale 1/2000 scale of Thu Thiem New Urban Area. This decision is a concrete design guideline for the future development of Thu Thiem Project.
- Decision No.752/QĐ-TTg dated 19/06/2001 of Prime Minister about "Approval for HCMC master plan of drainage system in 2020". This Decision is about managing and operating entire urban drainage system in HCMC.

These are five popular planning regulations, however, all of them mention mostly about building code or other planning regulation for many scale of planning projects. Some parts among them mention about space for water or building elevation; e.g. if planning fill up certain water area (pool, canal, etc) by creating three-times space for water or preparing carefully building foundation for lowland area. It proved that there is no deep consideration of flooding in planning management; if yes, these measurements are quite technical and too general. Furthermore, these planning regulations do not mention about how to cope with climate change, except Draft Circular No. \_/2012/TT-BTNMT by the MONRE dated \_/\_/20\_ about "Process of setting and adjustment Planning, Land-use plan". This Circular, considered as a supplement regulation for Decision No.04/2005/QĐ-BTNMT, is not approved yet. However, it proves that government starts to consider climate change in setting and adjustment planning. In this circular, evaluating natural condition under impact of climate change on land use is a compulsory planning process at any level in order to give a suitable planning implementation and adjustment for each region.

Similar to planning documents, the Decision No.752 about flood measure is also very engineering. After scanning the planning and flooding documents, it can be concluded that although there are some regulations for natural water protection and measure for flood control, they are insufficient consideration of comprehensive and long-term approach - lacking of non-structural measure and climate change situation.

### 5.1.2 The general planning system and its shortcomings

HCMC is a centrally managed city which has the same status as a province. As a centrally managed city, the state government and ministries have an important influence on how the city is managed and developed. The administrative area of HCMC is divided into 24 districts. In terms of the present state of urbanization, the districts are generally categorized into Existing Inner District, New Inner District (which cover District 2) and Suburban District (Nikken Sekkei, 2007) (Figure 17).

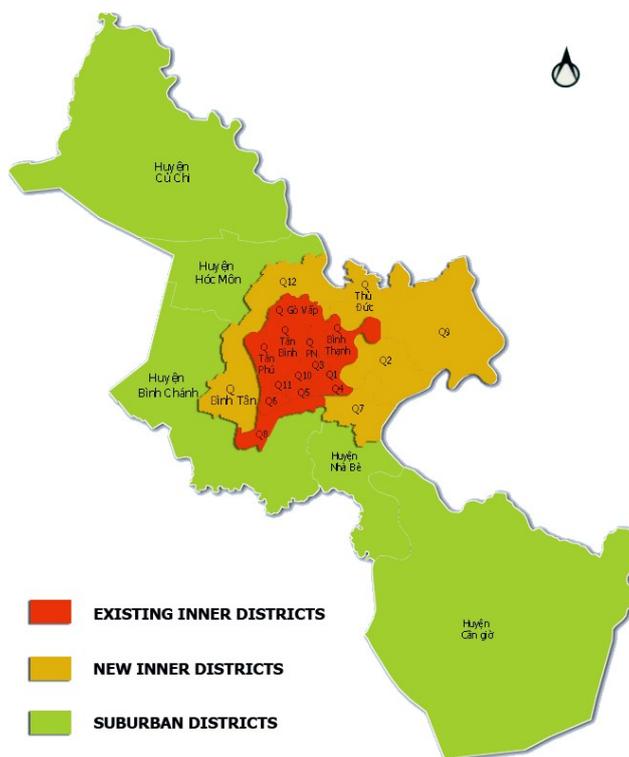
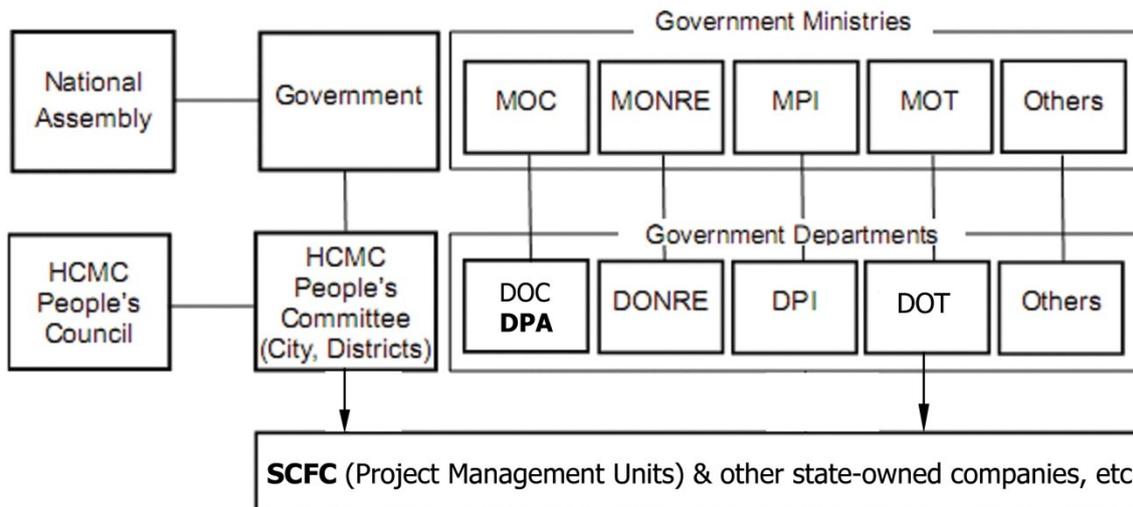


Figure 16 - District category based on developing characteristics

Since HCMC is a centrally managed city, it has several government agencies at both the ministry and the city levels, as well as people's committees at both the city level and the district level. The HCMC People's Committee (HCMC PC) oversees several departments responsible for managing urban development and providing local public services. Many of these departments are line departments of ministries, but are also accountable to the HCMC PC. In addition, management boards and state-owned enterprises are organized to carry out specific public projects, belonging to the HCMC PC or line departments of ministries (Figure 18). Because HCMC is a special city, there is one more institution under control of the Ministry of Construction (MOC), which is DPA, besides the Department of Construction (DOC). While the DPA has functions of appraising and approving a planning project, the DOC has functions of appraising and approving a building construction (function, quality, building code, etc). With respect to flood control, SCFC is a young specialized institution established by HCMC PC. Hence, it does not have enough power as a department such as approving for a flood control project. The main task of the SCFC is executing flood control construction (improve sewage system, building embankment, etc), so whenever they have flood control project, they have to ask permission of the DOT. This shows some disadvantage of the SCFC's function and power, which may be barriers for flood risk management.



- N.B.
- MOC: Ministry of Construction
  - DOC: Department of Construction
  - DPA: Department of Planning and Architecture
  - MONRE: Ministry of Natural Resources and Environment
  - DONRE: Department of Natural Resources and Environment
  - MPI: Ministry of Planning and Investment
  - DPI: Department of Planning and Investment
  - MOT: Ministry of Transport
  - DOT: Department of Transport
  - SCFC: Steering Center for urban Flood Control

Figure 17 - Administrative structure for urban development and planning [inspired from Nikken Sekkei, 2007]

The most important agencies which determine overall land use, spatial zoning and environmental quality in HCMC are the Department of Natural Resources and Environment (DONRE), the DPA and the DOC (Storch, 2009). While the DPA and the DOC formulate the master plan (urban development plan), the DONRE is responsible for drafting and updating of the land-use plan, which is developed from the master plan (Nikken Sekkei, 2007). The next update of the land-use plan will describe the medium-term development of the city until 2025. The DONRE's land-use plan and the DPA's and the DOC's new master plan are the most influential spatial plans that will shape the nature of HCMC's urban development for the next decades (Carew-Reid, 2009).

The planning system of HCMC is influenced by spatial planning which comprises the socio-economic development plan, the construction master plan, and the land use plan (Nikken Sekkei, 2007). Among these plans, the socio-economic development plan plays an important role in giving the foundation for planning system, which provide a context for the Urban Development Plan and the Land Use Plan (Storch, 2009). The construction master plan and the land use plan need to be coordinated with each other. In fact, these plans are formulated by different institutions at different levels of administration, so they are insufficient harmony. In general, planning at urban/ district level are formulated by the HCMC PC and the District People's Committee (D PC), especially establishing the construction master plan has participation of DPA. However, they all will be approved by the HCMC PC or the Prime Minister depending on the sphere of influence of each projects. Therefore, the final decision-

makers still belong to central government. It proves that planning system still keeps top-down approach and has a strong hierarchy/vertical management.

Although these three plans differ in both their legal origins and their responsible administrative agencies, in principle they should share common targets for a coordinated and sustainable urban development. According to Nikken Sekkei & UPI (2007), some of the main practical problems for adequate institutional cooperation and coordination in HCMC planning agencies are:

- Differences in land-use classifications: the land use classification in the Urban Master Plan does not correspond with that in the Land Use Plan. As a result land use cannot be appropriately controlled as planned.
- Missing common base information: strategic spatial planning should be based on consistent and common information, even if thematic details are different between the Urban Master Plan and Land Use Plan. This implies the existence of an inter-agency culture of information sharing, because otherwise the transparent development and assessment of spatially explicit planning goals will not be possible.

Moreover, the construction approval procedure in HCMC is complicated, time-consuming, and costly. This procedure often results in frequent occurrences of illegal constructions in rapidly developing areas. According to suggestion of Nikken Sekkei (2007) for HCMC master plan, there are some problems in planning project:

- Lack of coordination between related authorities: main authorities (DPI, DONRE, DPA, DOC) do not have a unified manual or understanding of approval procedures. A flowchart or table should be formally documented for clarification. This problem also receives a definite agreement of all interviewees.
- Complicated procedures: the steps and authorities for each decision vary depending on location size, capital size, or function of project. Criteria of project classification must be simplified and clarified in order to lessen the confusion.
- Unclear responsibilities: since multiple agencies and departments are involved in the process of document issuance, responsibilities are scattered. Responsibilities should be clearly rectified. This point is also stressed by the opinion of Interviewee A (06/05/2013): "Responsibility of relevant stakeholders in planning problem should be judged transparently in order to avoid the disadvantage for local residents"<sup>3</sup>

Another characteristic of planning in HCMC is that the District Master Plan is formulated for each urban district, which is the only case in Vietnam. The District Master Plan is prepared by the Urban Planning Institute in cooperation with district authorities and then is approved by the HCMC PC (Nikken Sekkei, 2007). However, in case where there has occurred such a big or important project (e.g. national road, transportation node, large-scale neighborhood, national security, etc) as needs decision of the state or the city, that project has to be reflected in the District Master Plan beyond the intent of the district. This leads to delay in formulation

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<sup>3</sup> "Trách nhiệm của các bên liên quan khi một vấn đề phát sinh trong khu quy hoạch cần được phân xử rõ ràng để tránh thiệt hại cho người dân" - Interviewee A (06/05/2013)

of the District Master Plan. On the other hand, the district's intent is emphasized in estimating future projects and population in its own administrative boundary with little view of the total balance of the city as a whole. Some of the decision-making process has been decentralized to the provincial and district people's committees (Nikken Sekkei, 2007). Taking into account this movement of decentralization, the relationship between the city and its districts should be reviewed to make administrative procedures more effective in attaining the uniform objectives of the whole city.

With the strong vertical hierarchy of planning system as analysis above, the current problem of urban planning and development systems in HCMC and general Vietnam, in fact, fails in implementation. This point is confirmed by opinion of two interviewees - Interviewee A (06/05/2013) and D (07/05/2013). They assumed that this problem could come from lacking of financial source to synchronize infrastructure system or lacking of coordinating management and other factors like technology, information, etc.

### 5.1.3 Organizational structure of DPA and SCFC

This important part supports our understanding about relationship of relevant stakeholders in process of planning and flood control. There are two key institutions, which directly involve in the process and decide the results of planning and flood management - the DPA and the SCFC. Elaborating their institutional structure, task and project procedure will help us gain insight into their role and learn about how their work relate to each other.

#### a. HCMC Department of Planning and Architecture (DPA)

##### ➤ Organizational structure

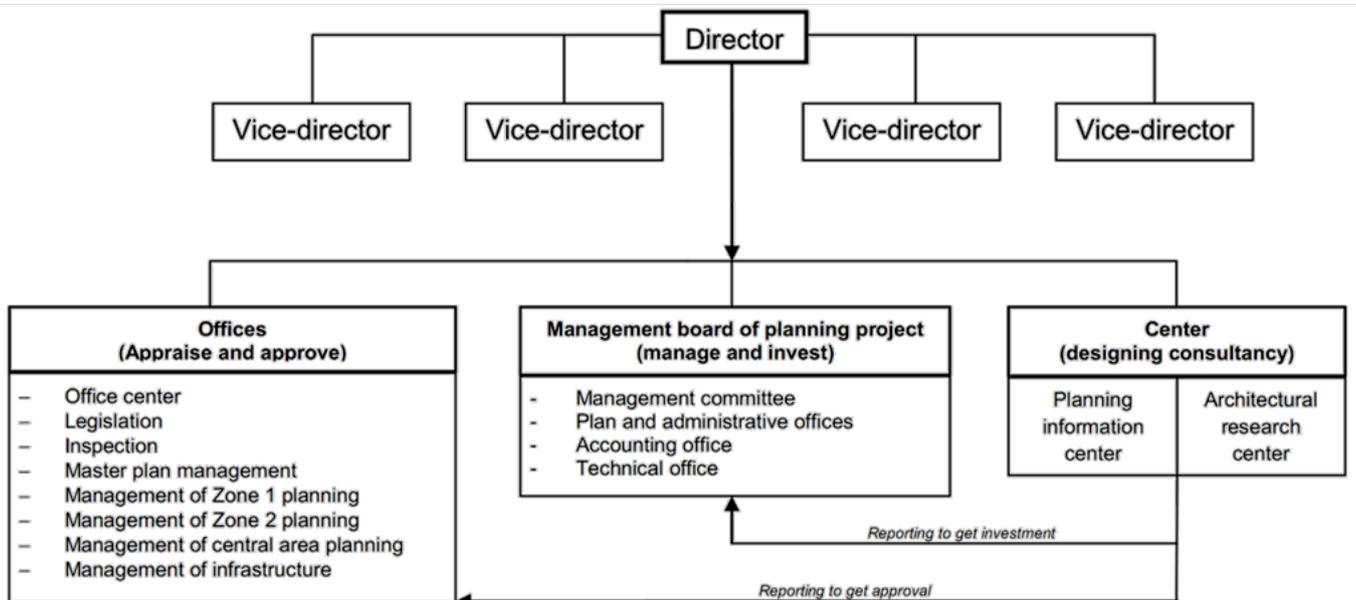


Figure 18 - Organizational structure of the DPA

The DPA is a specialized agency which give advises for the HCMC PC about urban planning and architecture in HCMC (including: urban and rural planning, urban architecture, landscape architecture, etc.). It is under management and direction of the HCMC PC and MOC in specialized aspect; as well as under the control and supervision of other government agencies.

Based on organizational structure of the DPA (Figure 19), it can be said that there are three main functions in DPA. The first is the Centers working as a designing consultancy for planning and architecture. The second is the Offices who receive the drawings and reports from the Center or other consultancies outside to appraise and approve the project. The third is the Management Board who decides the investment for government project. It is confusing that the real function of the DPA now are designing and funding instead of appraising and approving planning and architectural project. Actually, the Management Board of planning project is an institution of the HCMC PC and two Centers has just been established recently. The combination of many function in the DPA make its task become complicated and ambiguous when intervening functions of other institutions.

➤ *Tasks*

1. Taking responsibility to the HCMC PC for management of construction planning and urban architecture by advising for issued legal documents.
2. Coordinating with other urban departments and the HCMC PC at local level in order to preside the planning construction; organize the supervision; submit the specialized master plans and detailed plans; guide for setting up the construction project of urban planning and architecture. It can approve some detailed plans built by the HCMC PC.
3. Introducing the construction location, issuing planning certification and reaching the architectural-planning agreement for construction work.
4. Proposing the orientation for conservation and development of urban architecture; requirements of architectural layout; architectural solutions, standard rules and regulations of landscape architecture in HCMC.
5. Organizing and implementing the scientific topic and international cooperation projects about urban planning-architecture; organizing and participating in international conferences and workshops which are assigned by the People's Committee.
6. Collecting and managing information, documents and survey data about the city and surrounding areas which are related to construction planning and urban architecture.
7. Coordinating with other departments and the People's Committee at local level to publicly disseminate the approved plan; training and guiding professional knowledge about management of planning and architecture.
8. Join with the DOC, the People's Committee at local level and other related agencies concerned in the inspection about implementation of planning and architectural management.
9. Meeting people and resolving complaints and denunciations from citizens and organizations about related responsibilities of the DPA.

10. Being a permanent member in the City Council and involving in the review and approval of the construction project.

➤ **Planning procedure**

The planning procedure (Figure 20) helps to consider the relationship of relevant stakeholders in planning process. In design phase, the investors (from government or private one) have to hire a consultant company to design a planning project. This consultancy may also be from government institution such as the Planning Information Center - the DPA or the Urban Planning Institution (UPI) or from a private company depend on the characteristic of the project. After having the planning drawing, they have to report to the DPA and the HCMC PC to get approval and license for building. In construction phase, the main involved stakeholder is constructor who is responsible for investment and building project. After finishing, the District PC with the Urban Management Office (UMO) and the Project Management Board (PMB) will check whether that project suits to regulations or drawing. However, this inspection is quite subjective and not comprehensive - "They just check whatever on the ground like height, space, distance, etc without knowing what happen with the infrastructure underground" ( Interviewee A, 06/05/2013)<sup>4</sup>.

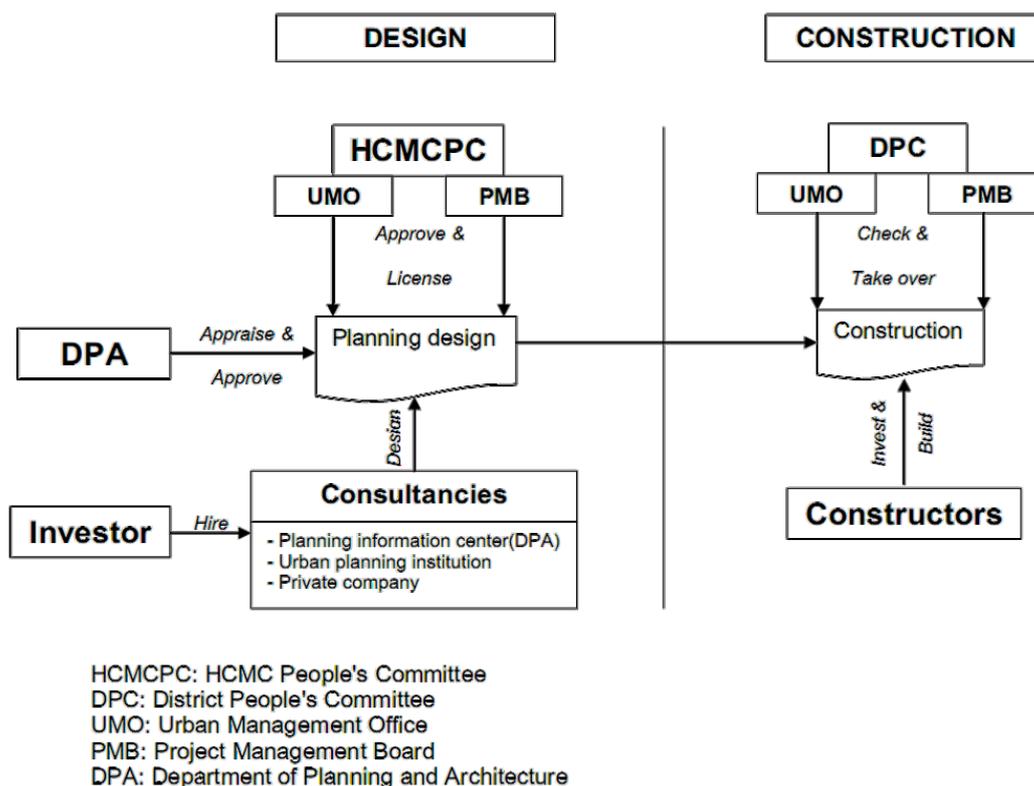


Figure 19 - Basic planning procedure with relevant stakeholders

In short, three main institutions (DPA, HCMC PC, and DOC) have the most power in planning procedure. Most of institutions taking part in planning decision come from

<sup>4</sup> "Họ chỉ kiểm tra những thứ nhỏ lẻ trên mặt đất như chiều cao, khoảng lùi, mật độ...mà không ai quản lý hạ tầng bên dưới mặt đất có làm đúng hay không, đầu nổi ra sao" - Interviewee A(06/05/2013)

government; the private actors are just involved in designing phase. Moreover, the participation of local resident is not remarkable, which just a "fake appearance" following the compulsory of planning regulations. Interviewee A (06/05/2013) also confirms this comment: "Resident meeting in planning process is just formalism because local residents do not have enough planning knowledge to understand and they just care their own damage in planning project instead of benefit of whole living environment"<sup>5</sup>. Therefore, planning is still top-down and has government characteristic. The figure also show clearly that during planning process, the DPA works quite separately from other different specific institutions, especially the SCFC. This is a remarkable point which proves the lack of cooperation between spatial planning and flood risk management.

### b. HCMC Steering Center for Urban Flood Control (SCFC)

#### ➤ *Organizational structure*

The SCFC is an specific agency under control of the HCMC PC. It has the function to advise and assist the HCMC PC make flood control programs, drainage projects in the city (Figure 21).

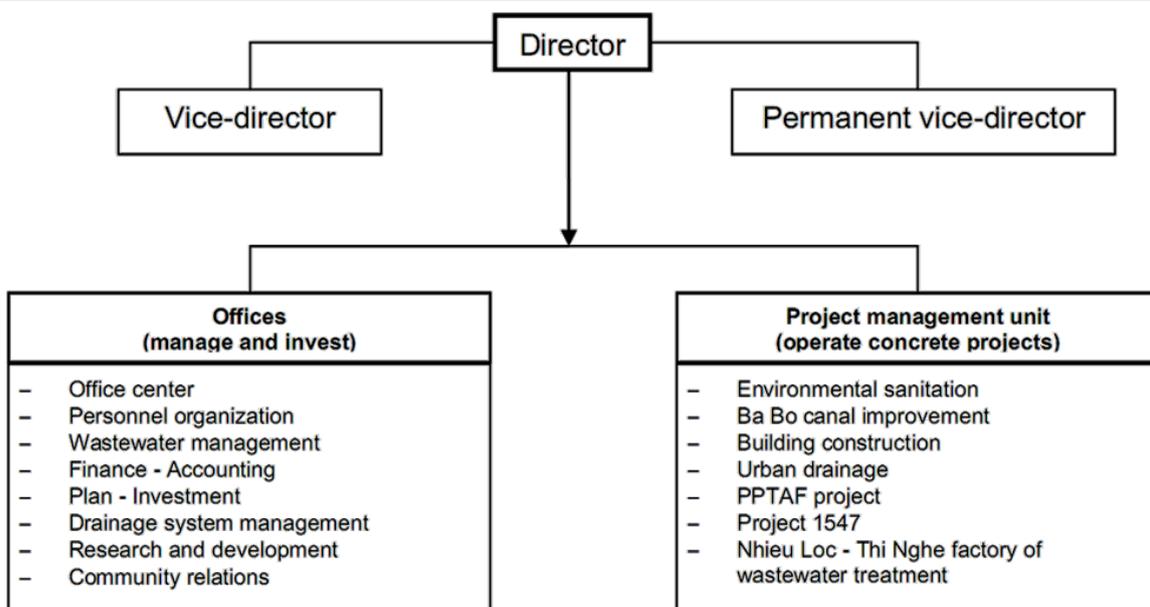


Figure 20 - Institutional structure of SCFC

The major current functions of the SCFC is to prepare long-term/medium strategies and annual plans for flood risk management in HCMC. The SCFC plays not only as an owners of the flood management projects but also as a leader in preparing master planning for flood risk management. To do that, they have to update the regulations/ standards, apply new technologies and carry out surveys and data collection for flood management. Aside from performing the tasks assigned by the HCMC PC, they need to coordinate with relevant

<sup>5</sup> "Việc họp bàn với người dân chỉ mang tính chất hình thức vì người dân không có đủ kiến thức về quy hoạch để hiểu bản vẽ và họ cũng chỉ quan tâm đến những thiệt hại liên quan đến lợi ích cá nhân trong dự án quy hoạch, thay vì lợi ích chung của môi trường sống" - Interviewee A (06/05/2013)

Ministries and agencies on preparing and carrying out training and capacity building programs.

➤ **Tasks**

1. Researching, developing strategies and solutions to control flood and tide in the city and surrounding areas. Identifying prior projects and dividing implementation phases for each area; coordinating activities, drainage projects in order to solve fundamentally flooding situation in the city.
2. Building long-term, mid-term and annual drainage plan including prior plan of flooding and drainage in the city.
3. Collecting, measuring, surveying, doing statistics, storing full data, analyzing, evaluating data related to flood and predicting flooding situation in the city in order to advise measures to prevent, combat and overcome.
4. Being focal point for research of setting General planning program coping with flood and drainage project in the city; examining design projects and actively coordinating and proposing measures in order to ensure the consistency in the management and solving flooding and drainage issues of HCMC.
5. Owning investment projects about anti-flooding programs, deciding and proposing mechanism for capital investment in the city; organizing, inspecting and monitoring progress of flooding and drainage projects which are in current implementation in order to assess and propose effective solutions which promote the efficient synthesis for HCMC PC.
6. Researching, updating and proposing competent agencies to consider issuance or amendment; if it is no longer appropriate, supplementing the absence of regulations, standards, technical and economic norms related to drainage, waste water treatment, boundary determination methods protecting rivers, canals, channels of rivers; regulating technical dredging as a basis consistent in design, test, and coordinating projects drainage in the city.
7. Coordinating inter-sector and inter-basin water in general and management, implementation of drainage projects in particular in order to implement effective anti-flooding and drainage program in the city.
8. Researching and applying the domestic and foreign progress of science, technique, technology in the field of drainage and anti-flooding; holding scientific conferences about drainage and urban anti-flooding.
9. Organizing structure of authority under national laws to ensure advisory role and to implement anti-flooding program; building training program; training human resources and scientific experts in technology about research design and operational management in the field of domestic and foreign water sector and international cooperation.
10. Implementing the project "Irrigation planning for searching solutions coping flood in HCMC" of the Ministry of Agriculture and Rural Development (MARD) was approved by the Prime Minister according to the functions and tasks that the HCMC PC assigned give

SCFC; identifying prior projects and dividing implementation phases for each area; coordinating activities, drainage projects in order to solve the fundamental flooding situation in the city .

11. On behalf of the HCMC PC in managing the entire drainage system and waste water treatment in the city.

12. On behalf of the HCMC PC in monitoring, receiving and operating the projects of improving water environment in the catchment Tau Hu - Ben Nghe - Doi Channels - Te Channels (Phase 1) and the City Environmental Sanitation Project (Nhieu Loc - Thi Nghe basin).

13. Presiding building and proposing schedule, plan of environmental protection charges for waste water in order to report the competent authority for approval. Building plans and effective plan to use this revenue.

➤ **Project procedures**

At present, SCFC still works on process following the Decision 752/QĐ-TTg and Decision 1547/QĐ-TTg of Prime Minister. In a basic procedure of usual flood management project in SCFC, there are 4 main steps (Figure 22); and in each step, different institutions play different roles and have different ties for each other (more detail in Appendix 2).

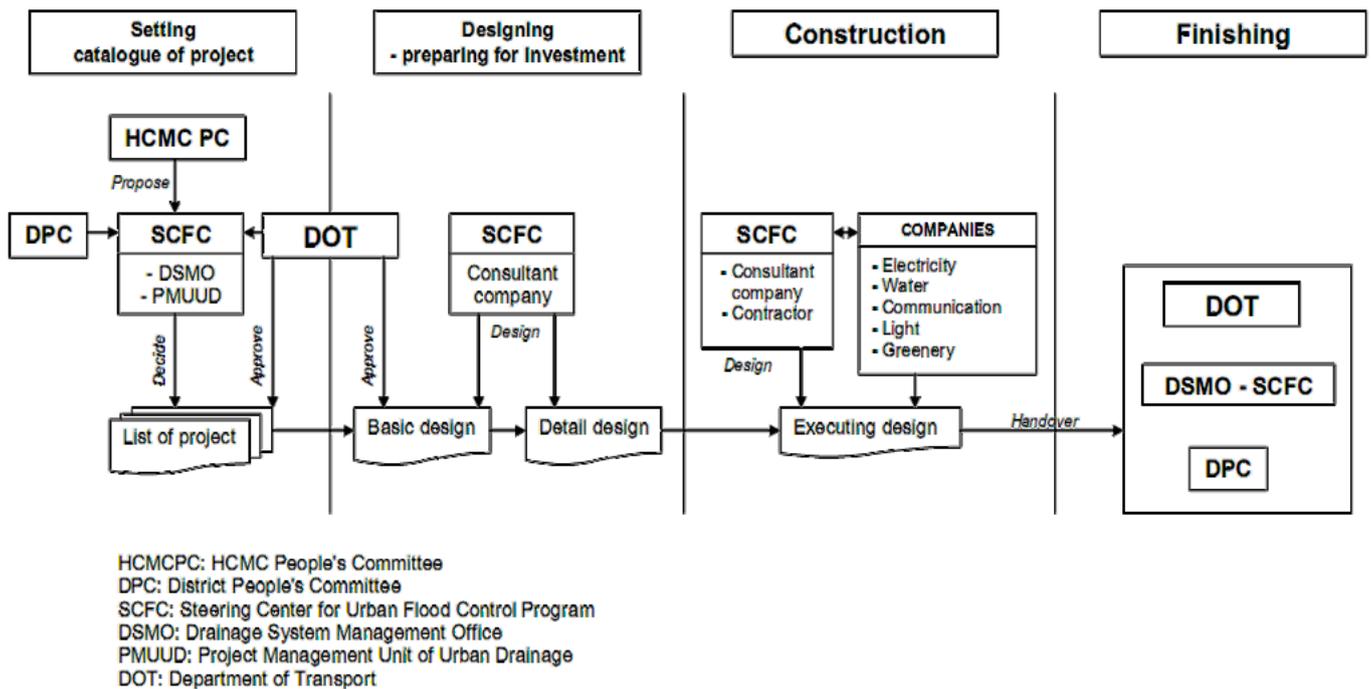


Figure 21 - Procedure of flood protection project in SCFC

In the first step - setting catalogue of project, there are 3 main institutions effect to the first list of flooding project. Based on practical situation, the HCMC PC, the District PC and the DOT will suggest the flooding spots for the SCFC to solve. Two offices are the DSMO and the PMUUD will consult SCFC to decide the list of possible projects. These projects will be checked by many institutions via site visit. However, in designing phase, the DOT is the most important institution having right to approve the technical design of consultant company who

is hired by the SCFC. After construction phase with participant of relevant companies such as electricity, water, communication, light and greenery, the completed work will be checked by the DOT, the DSMO and the DPC.

In conclusion, it can be seen that the DOT plays a very deciding role via 4 phases of procedure. Actually, most of the flooding projects in the SCFC are about renovating drainage system under existing road; so their approach is still structural and quite passive because they just do that whenever finding out the flooding point already happened in that road. Hence, "they are always in passive situation because their solution is just for existing flood spots, instead of preventing flood in advance." <sup>6</sup>(Interviewee D, 07/05/2013)

#### **5.1.4 Conclusion of context dimension**

Analyzing planning and flooding documents reveals that flood risk management is still mainly concerned with improving the drainage system. However, in planning document, it starts to consider the impact of climate change in planning procedure. With respect to planning system, hierarchy management is still very strong. However, socio-economic plan, construction master plan and land use plan are set up by different institutions, which make them fragmented instead of integrated. This proves that general planning system still has complicated procedure and unclear responsibility. In detail, the DPA and the SCFC work separately and chase different goals. Flood managers still have less power and depend much on different specialized institution - the DOT. Both planning and flooding procedure involve with private parties in their projects; however, the decisive right still belongs to the most powerful government - the HCMC PC.

### **5.2 Content**

In this dimension, I will analyze spatial planning of HCMC in general and of District 2 in particular in order to check my conclusion based on document analysis in context dimension. Mapping analysis will be analyzed to see how current master plan and future orientation plan at municipal - HCMC, local - District 2 and project level - Thu Thiem new urban area. From that point, we can know how this development threat natural environment and affect to flood situation. Analyzing physical outcome of planning also help us to learn about relationship between planning and flood control by considering how flood measure reveal on planning map.

#### **5.2.1 Spatial planning of HCMC**

##### **a. Current master plan**

Today, HCMC is struggling with already perceptible climate-related problems, whose impacts are intensified by failures in managing the ongoing rapid urbanization since the mid-eighties (Eckert and Schinkel, 2009). Since then, large parts, particularly in the Northern and

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<sup>6</sup> "Trung tâm chống ngập thể hiện tư thế bị động, chỉ đi giải quyết những chuyện đã rồi, đáng lẽ ra phải là ngăn ngừa ngập lụt" - Interviewee D (07/05/2013)

Western territories of the city, had become built-up areas (the PC HCMC et al. 2007). This uncontrolled urban expansion and land use change brought about by urbanization go along with an excessive change of natural land cover to sealed surfaces, the removal of natural retention and infiltration areas for precipitation, increased traffic volumes, and increased emissions related to transportation and industrial production. As a result of the mostly spontaneous land occupation, the adequate provision of technical and social services often lag behind in the marginal settlements on the outskirts as well as in inner city slums, causing considerable negative effects on the environment and urban society of HCMC (Carew-Reid, 2009).

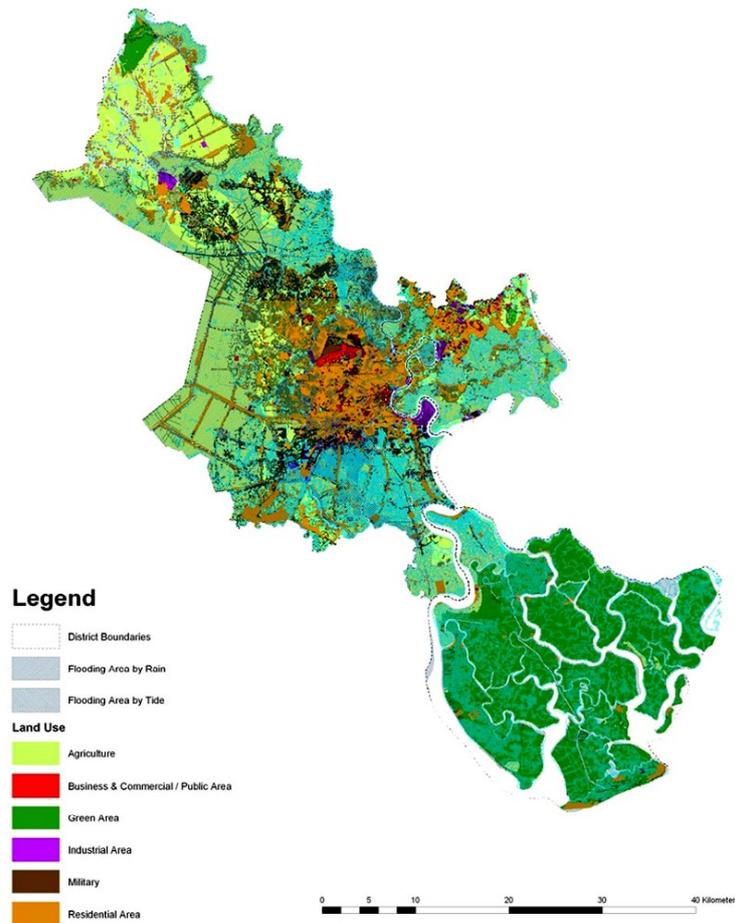


Figure 22 - Current land use and flood-prone areas [Nikken Sekkei, 2007]

Figure 23 shows the overlap between HCMC current land use and flood-prone areas. This figure illustrates that the land conditions have been strongly affecting the urban development activities. The urbanized areas and currently urbanizing areas are mainly located in areas with good land conditions, not flood-prone, and having firm soil areas which can be developed easily by individual and small-scale developers. The on-going medium- and large-scale development projects have been occurring in southern and eastern areas close to the urban center in Districts 2 and 7. However, the land conditions of those districts are not good; most of their lands are situated in low-lying areas affected by regular flood. On the other hand, those districts are adjacent to the urban center (Districts 1 and 3).

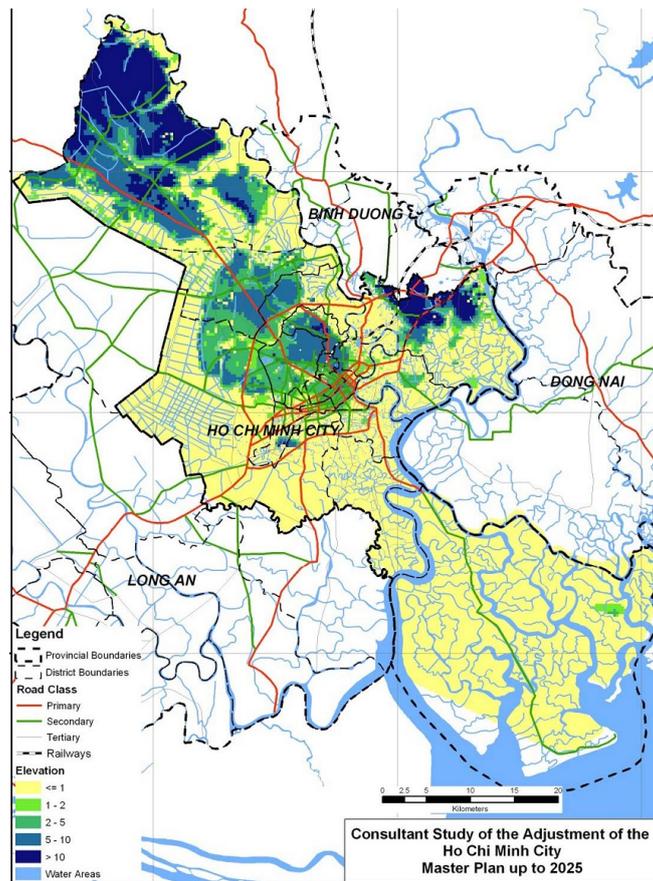


Figure 23 - Elevation ranges of HCMC [Nikken Sekkei, 2007]

Figure 24 illustrates the elevation ranges of the city, indicating that a majority of the city areas are located in less than 1 meter above sea level. Particularly, the eastern and southern areas of the city are mainly low-lying marshlands affected by habitual flood. The construction activities are relatively difficult in such low-lying areas, which in turn increase the construction cost. For example, in Saigon South New Urban Development Area, the land preparation and infrastructure development costs were much higher than those in areas with better land condition.

However, even the formally planned urban growth neglects climate change issues considerably. The majority of current housing construction activities in HCMC are concentrated in large-scale urban expansion projects at the city's periphery in the South (Saigon South) and the east (Thu Thiem). Here, completely new urban districts were or will be created on low elevated, predominantly marshy land, which previously served as buffer area in times of flooding (Eckert, 2009). These new neighbourhoods are basically influenced by imported international urban design concepts and neglect traditional life styles and behavior patterns of the Vietnamese population.

The lack of working facilities, social and commercial infrastructure nearby induces enormous traffic flows when only a part of the projected population lives there. Less than 10 years after construction, damages of the area's main development axis, the Saigon South Parkway, were observed due to land subsidence. The Parkway already had to be elevated by 1-2m. In the similar condition, the planning for another major project, the Thu Thiem New City Center

opposite central District 1, had to be redesigned after significant delays during the implementation period. The endangering of wide parts of the proposed construction land by flooding will cause the necessity of cost-intensive land filling before constructions can start (Eckert and Schinkel, 2009). These examples figure out that geographic consideration should be put in planning process in order to ensure the long-term development in the future.

### **b. Planning orientation/direction up to 2025**

In 1998, the Prime Minister approved a construction master plan for HCMC which determines urban development up to 2020 with vision of “A Renaissance of Shining Pearl in the Orient - Establishment of Cultural Megalopolis - HCMC will be developed as an advanced service and industrial center of the region covering ASEA and East Asia, and a modern and functional megalopolis with an urban design respecting the city’s culture and history”. However, the implementation process has shown that the unsuitability requires amendments of the master plan. Therefore, in March 2008, the HCMC PC approved a revised master plan up to 2025 designed by Nikken Sekkei Ltd - a Japanese consultant company (Figure 25).

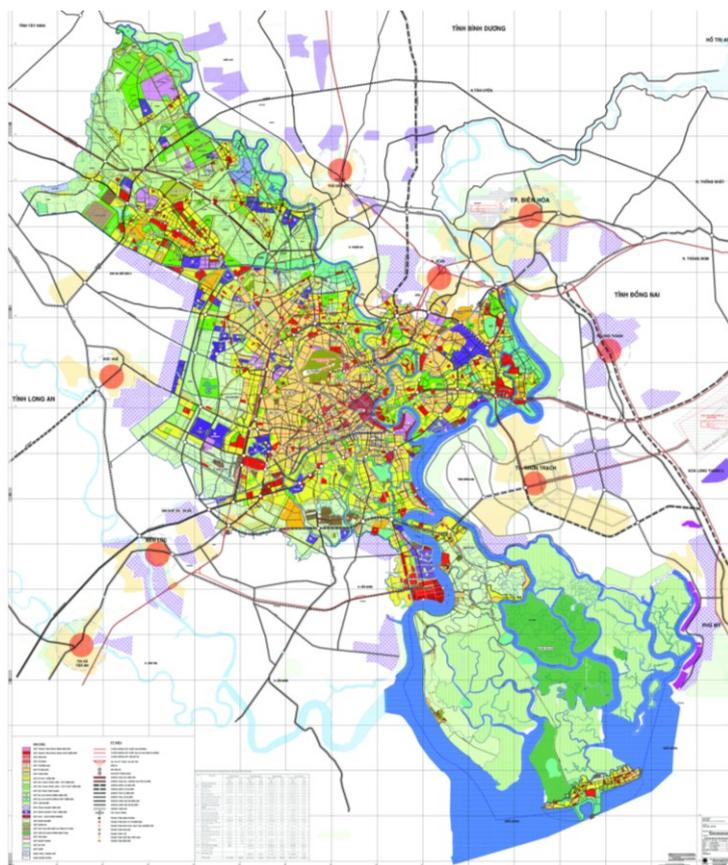


Figure 24 - Master plan of HCMC up to 2025 [Nikken Sekkei, 2007]

Based on Decision No. 24/QĐ-TTg dated 06/01/2010 of the Prime Minister about "Approval for planning adjustment of HCMC master plan in 2025", HCMC will be expanded in the following directions with Thu Thiem as a new urban area (Figure 26). Depending on economic factor, the major and minor developing directions are decided:

- Major development in the East: developing corridor is the Ho Chi Minh City - Long Thanh - Dau Giay Highway and along the Hanoi Highway; developing new urban areas with high building density, synchronous social and technical infrastructure;
- Major development in the South: developing corridor is Nguyen Huu Tho route with special hydrogeological conditions (many rivers and potential development for urban land and infrastructure; complying with regulations of river protection and promoting the strengths of waterscape by low building density; not reducing the water surface area which used for urban drainage);
- Minor development in the Northwest: the development corridor is the Highway No.22 (Trans-Asia Highway) with advantage of natural conditions; developing new urban areas, synchronizing modern social and technical infrastructure;
- Minor development in the West and Southwest: the development corridor is Nguyen Van Linh Highway with disadvantage of hydrogeological conditions, so the development of urban infrastructure is limited; complying with regulations of river protection, not reducing the water surface area.

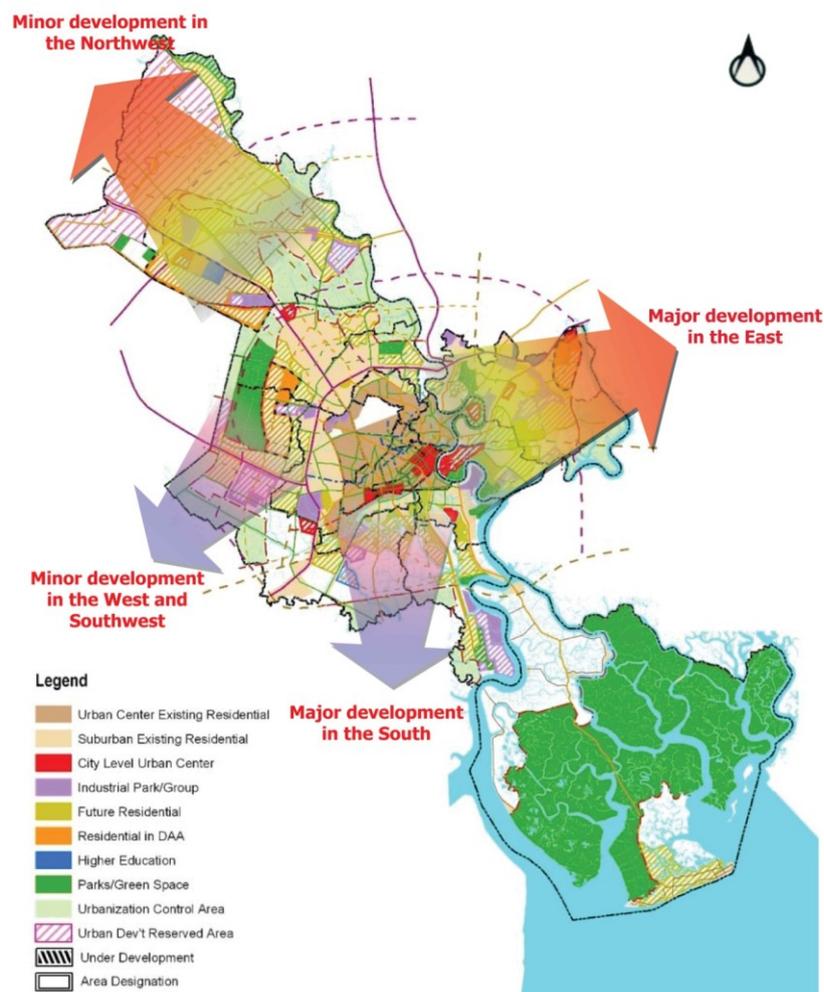


Figure 25 - Developing orientation of HCMC up to 2025, based on Decision No.24

According to Storch's research (2011b), the actual use map was determined based on the visual interpretation of high-resolution satellite imagery captured in the period of 2009-2010.

Many of the marked construction sites which are located in the urban fringe may have already been subsequently developed. The focal point and the dynamic building activities of current real estate projects now develop in districts 2 (Thu Thiem), 7 (Phu My Hung) and 9 (below Thu Duc) in the South and East of the city, which currently form the frontier of urban development. However, the decision to expand the existing the central business district on the east bank of the Saigon River over the river into District 2 is a controversial orientation because it was formerly wetlands and sparsely populated. In addition, it is visible that the majority of the new construction sites are in accordance with the official land-use plans for 2010 and 2025 (Figure 27).

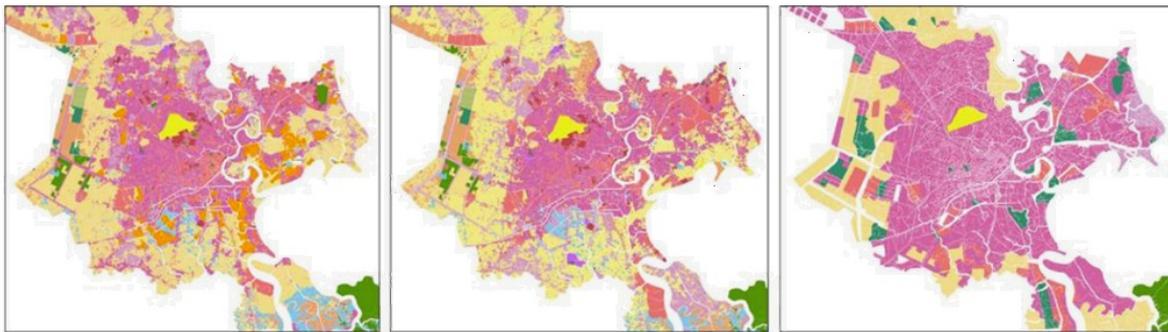


Figure 26 - Land-use plans change over time from 2008, 2010 and up to 2025 [Storch, 2011]

There are considerable differences in land conditions between rapidly urbanizing areas and slowly urbanizing areas in the city. The main reasons affect urban activities:

- Natural conditions: Topography (height of land), geology (soil condition), flood-prone situations.
- Other conditions: accessibility to urban centers, infrastructure development situation (water supply, drainage, roads, bridges, etc.), land price, large-scale development projects.

Among them, the following four factors, including natural conditions, accessibility to urban center, land prices, and large-scale development projects, are considered to be the most influential factors for current urbanization (Nikken Sekkei, 2007). In fact, some new neighborhood areas do not follow this development direction. This messy development strongly results from economic strategy. In other word, government is willing to approve any projects which have big investments. An example for this is development of new urban area South Saigon which used to be a low-using agricultural land. The Interviewees D (07/05/2013) and A (06/05/2013) also confirm that economic factors always prevail over environmental or social factor in planning projects.

## 5.2.2 Spatial planning of District 2

### a. Feature of current land use

#### ➤ *Elevation*

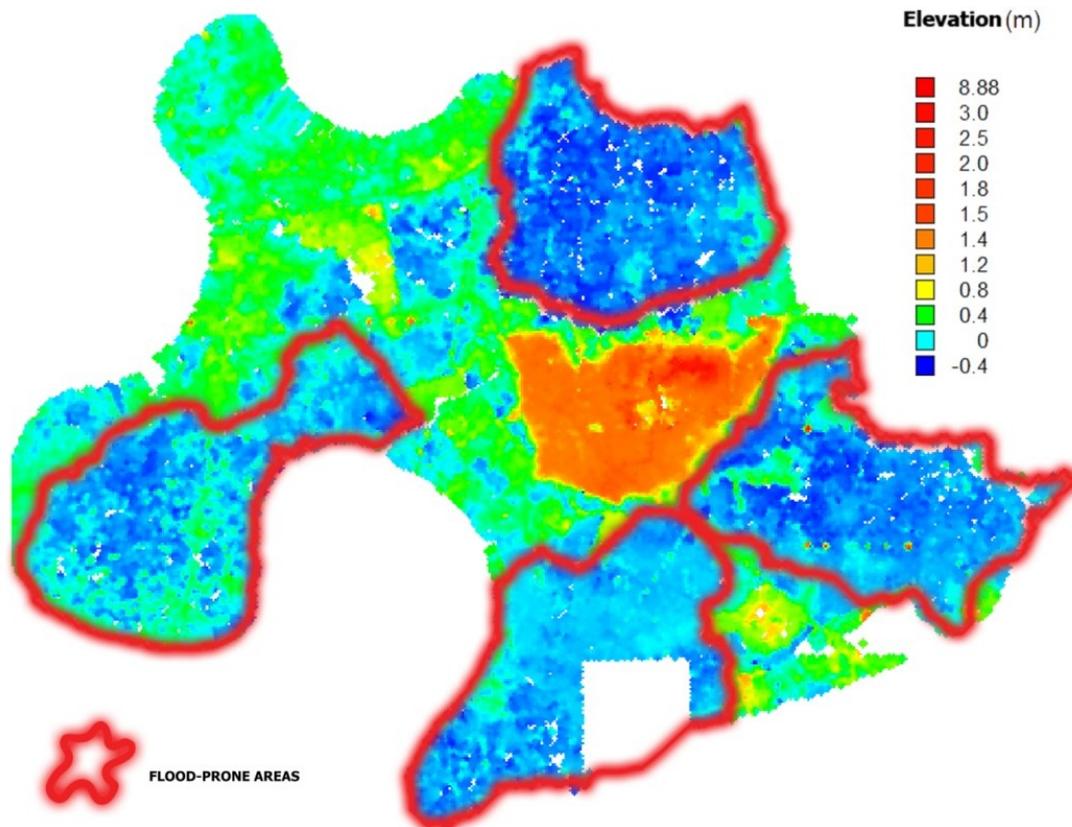


Figure 27 - Natural elevation of District 2

Based on the data from the planning explanation report of AIA (2008), District 2 has flat terrain with average land level of 0,4m to 1,2m (Figure 28). The main slope direction is from East to West with two main types of terrain:

- High terrain (Giong Ong To Mound - 310ha) located in the middle of District 2 with high level from 8.73m down to 2.0m
- Low flat terrain: occupies the remaining area with high level from under 2.0m down to 0.23 m.

Based on elevation analysis in Figure 28, there are four vulnerable areas (marked by red boundary) in North, Southwest, South and Southeast, which have elevation from 0m down to -0.4m below sea level. These areas can be seen as flood-prone areas which need careful consideration of environmental factor before building new urban areas.

#### ➤ *Current land use*

With three faces bordering river, District 2 has low elevation and high density of canal/rivers system. However, it has a complex land use with many functions, such as residential areas, industrial port, agricultural areas and other public service, etc. As can be seen in Figure 29 -

an overlay map between elevation and current land use - most of existing areas develop concentratively in high-elevation land. At present, existing housing (orange) and other development projects gather in the Northwest - Southeast axis. This development was spontaneous, which totally depended on residential settlement in former times. Historically, they settle in high land along the road or river which is favorable for their business. Until now, this developing custom still exists, i.e. most of commercial buildings develop along the main streets in District 2. In addition, industrial area (purple) develops in the Southeast, direct to the sea, which suit to form a big international port of HCMC, namely Cat Lai port. There also a particular land-use need to be considered, that is "filling-up" land (green) which mainly develop in low-land areas. Currently, these low-land areas does not have much development, so they can be considered as "other land" (following notification of the map).

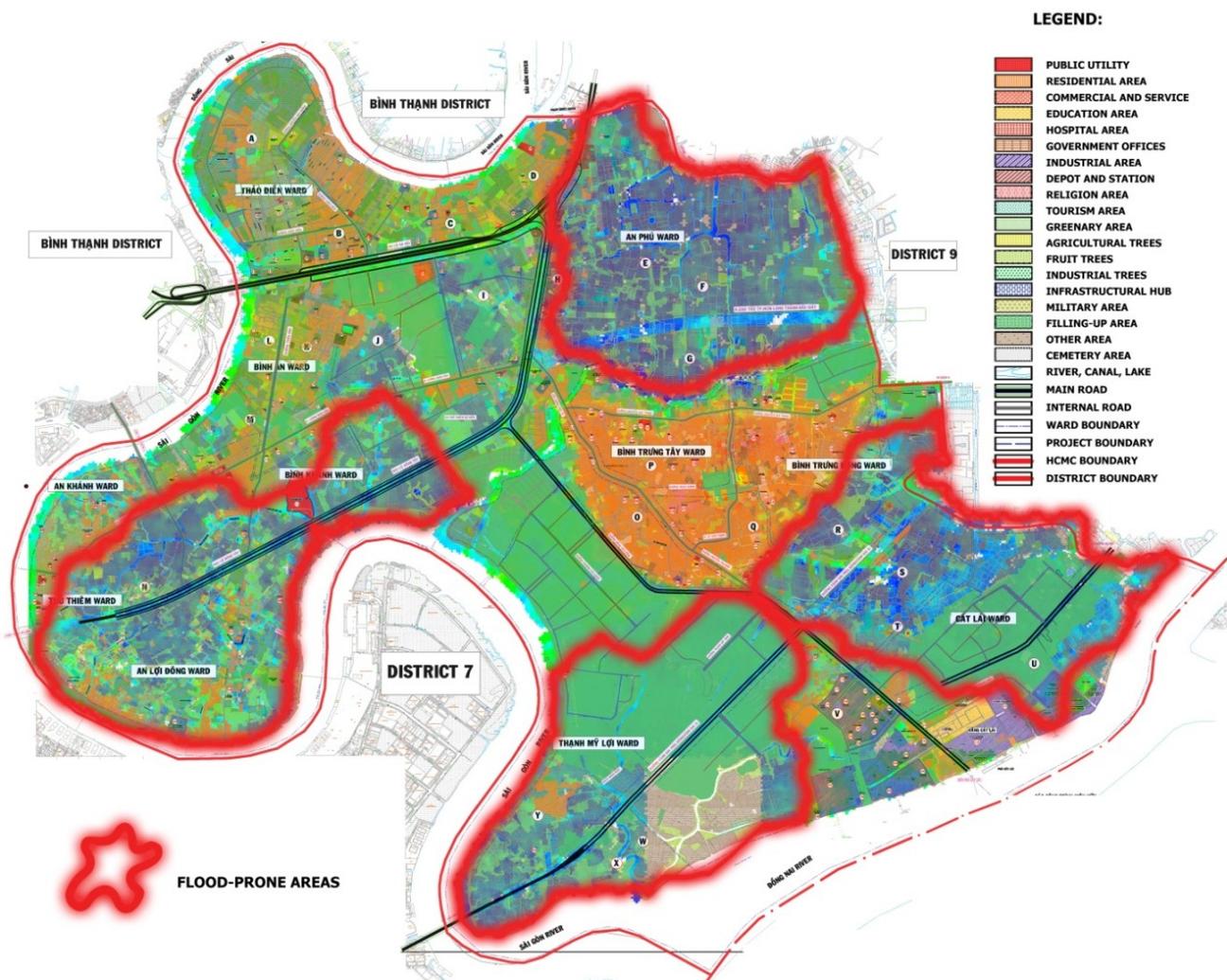


Figure 28 - Current land use of District 2 in 2004, updated 2011 [provided by the MONRE]

➤ **Drainage system**

Currently, the main natural drainage directions in District 2 depend on existing river system such as the Saigon River - Thuy My River - Ba Cua Canal - Chiec Canal - Giong Ong To Canal - Ca Tre Canal and Dong Nai River. However, it is also influenced strongly by tide mode of the East China Sea (MBD2, 2013).

District 2 already had a drainage system for wastewater collection (common sewer systems in existing neighborhoods) (MBD2, 2013). To new residential areas, wastewater collection network is not formed or already be formed without following technical regulation. In general, drainage density is low (around 50% of the area) and unevenly distributed (MBD2, 2013). According to the MONRE's survey, surface water in planning area is more polluted. Moreover, local resident's awareness is not high; e.g. they usually disposal their garbage into sewage and drainage ditches, which blocks water runoff in rainy season.

Therefore, it is necessary to protect strictly surface water quality when more population will raise in the future. At this time, both municipality and local authority have to cooperate each other to solve contaminated problems in river/canal system.

### **b. Future development**

On 07/12/1998, People's Committee issued Decision No. 6577/QD-UB-QLDT about "Master plan of District 2 up to 2020". According to this Decision, main function and developing motivation of District 2 are mainly "Centre of Service - Commerce - Industry - Culture - Sport" with about 600,000 population. In other words, District 2 will play an important role as a new urban center with the transportation hub for connection between HCMC and other surrounding provinces such as Dong Nai, Binh Duong, Ba Ria - Vung Tau. Besides, this master plan also defines technical standards and major functional areas which are the fundamental orientation for socio-economic development in District 2. Currently, this master plan is completing the adjustment following Decision No. 3165/QD-UBND in 2011.

#### **➤ *Planning orientation up to 2020***

The DONRE has cooperated with the Center of Land Surveying and Planning in order to complete the land use of District 2 up to 2010, the developing orientation up to 2020 and the 5-year plan for land use (2006 - 2010).

Figure 30 - an overlay map between elevation and developing map - shows the land-use development in District 2 up to 2020. However, it seems that this development do not consider topography, i.e. most of new residential areas (yellow) and public services develop strongly in 4 main flood-prone areas, especially in two vulnerable areas in the South of District 2. For that reason, the UPI decide to plan for building code and drainage system, as described in detail below. However, are these regulations enough for flood risk management? And do these developments in low-land areas have strong effect to vulnerable environment in marsh areas?

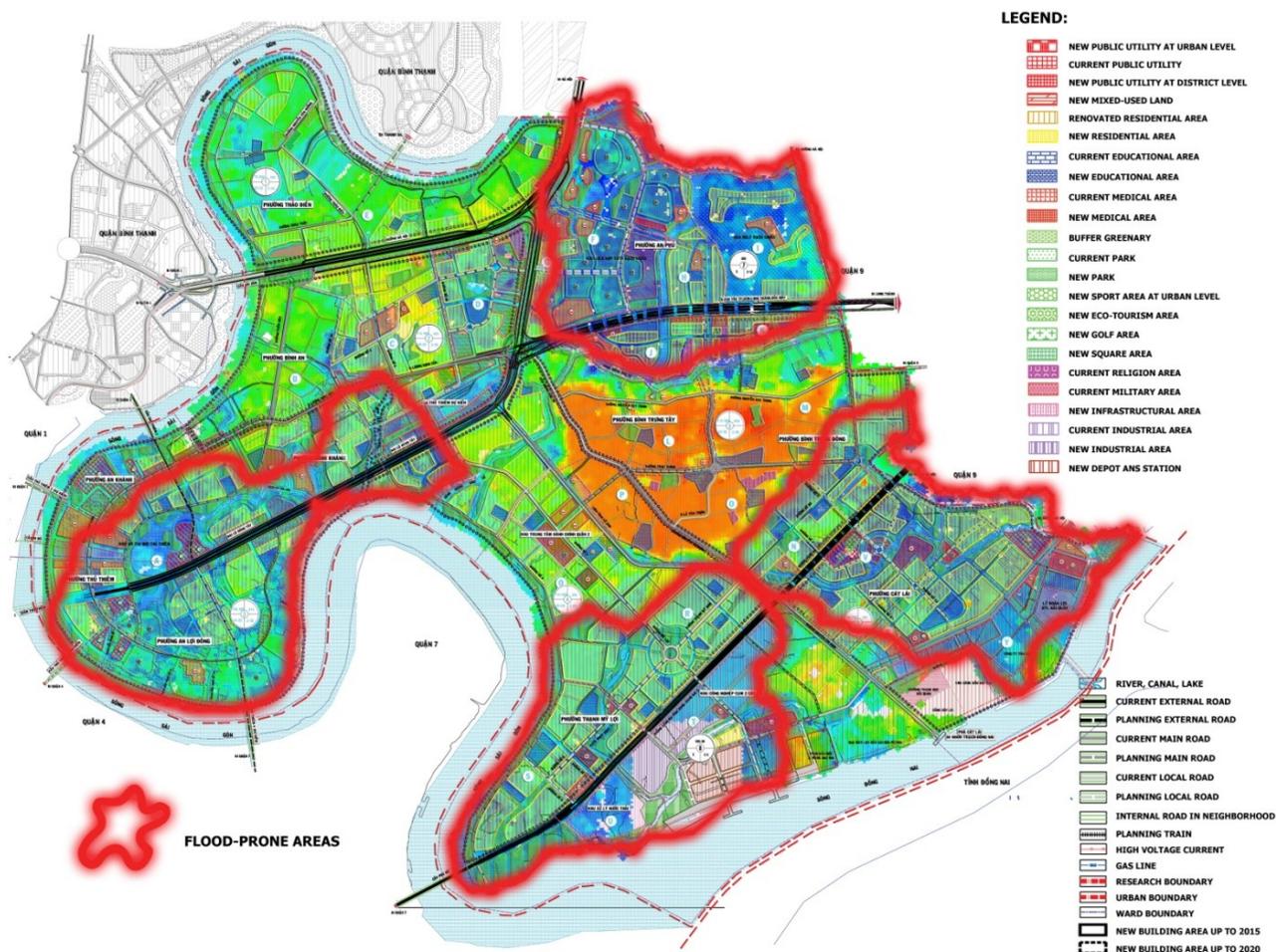


Figure 29 - Master plan of District 2 up to 2020 [Urban Planning Institution, 2012]

➤ **Planning for building elevation**

According to Decision 1547/QĐ-TTg on 28/10/2008 of the Prime Minister about "The irrigation planning against flooding in HCMC" and Decision No. 24/QĐ-TTg on 06/01/2010 of the Prime Minister about "Adjustment of HCMC master plan", HCMC is divided into 3 areas:

- Region I (right bank of Saigon - Nha Be River): Located in the closure dike from Ben Suc to Long An, the dike height is from 2.50m to 3.00m; rivers water level inside the dike is kept at the highest 1.00m; controlled construction height:  $H_{xd} \geq 2.00m$
- Region II (the confluence area of Dong Nai - Sai Gon River): The urban controlled construction height:  $H_{xd} \geq 2.50 m$ ; garden houses and tourist resorts have to cover by closure dike; the dike height is from 2.50 m to 3.20 m; construction height inside dike:  $H_{xd} \geq 2.00 m$ ; to higher area: dredging rivers and enhancing water drainage.
- Region III (left bank of Saigon - Soai Rap River): defined as a buffer zone, big drainage infrastructure will be built in the future; small dykes are used at present; controlled construction height:  $H_{xd} \geq 2.00 m$ .

District 2 belongs to region II, which can be divided into 3 small areas:

- High ground area (Giong Ong To Mound): not leveled.
- Urban areas: mainly along Chiec Canal, including Thao Dien Ward, An Phu-An Khanh Ward, Thu Thiem - New Urban Area, Thanh My Loi Ward and Cat Lai Ward, construction height  $\geq 2.50$  m.
- Area inside dike: mostly remaining area of the South, construction height  $\geq 2.00$  m.

Although the regulation of construction height is  $\geq 2.50$  m, some neighborhoods including Thao Dien Ward, An Phu-An Khanh Ward, Thanh My Loi Ward and Cat Lai Ward have been put into leveling and construction with ground height 2.0 m; because it is hard to improve ground height (except Thu Thiem - New Urban Area is designed  $\geq 2.50$  m). However, the SCFC is implementing dike design along the Saigon River (from Chiec Canal to Thu Thiem - New Urban Area), so building ground height inside the dyke  $\geq 2.50$  m is not necessary. This point is the dilemma about flood strategy (building dyke) and construction code inside protection area, which is also mentioned in interview with Interviewee E (07/05/2013) - a former director of the DPA.

In addition, planning for drainage system takes full advantage of existing river and canal system for water drainage, which is a priority in order to reduce the construction cost. Based on the natural topography, existing drainage systems, land use planning in each stage and drainage projects, drainage capacity, government will choose one of these solutions: keeping the existing sewer system, building additional drainage line if applicable, replacing the existing sewer system or building completely new drainage system for the new road or new developing area.

### 5.2.3 Planning projects

After having an overall view about master plan in District 2, I will analyze deeply in concrete planning projects which are developed in the future. Among them, Thu Thiem new urban area, a famous project classified at municipal level, is necessary to be considered because of its widespread influence. Thank to the comprehensive planning, Thu Thiem project can be considered as a typical lesson of flood integration and climate change factor for other smaller projects.

#### **a. Thu Thiem - new urban area**

On 27/12/2005, the HCMC PC issued Decision No. 6565/QD-UBND and Decision No. 6566/QD-UBND about "Approving the adjustment plan of Thu Thiem new urban area - scale 1/5000 and detailed planning for central Thu Thiem scale of 1/2000". Thu Thiem is located on a 657-hectare peninsula across the Saigon River from the historic center of HCMC (Figure 31).

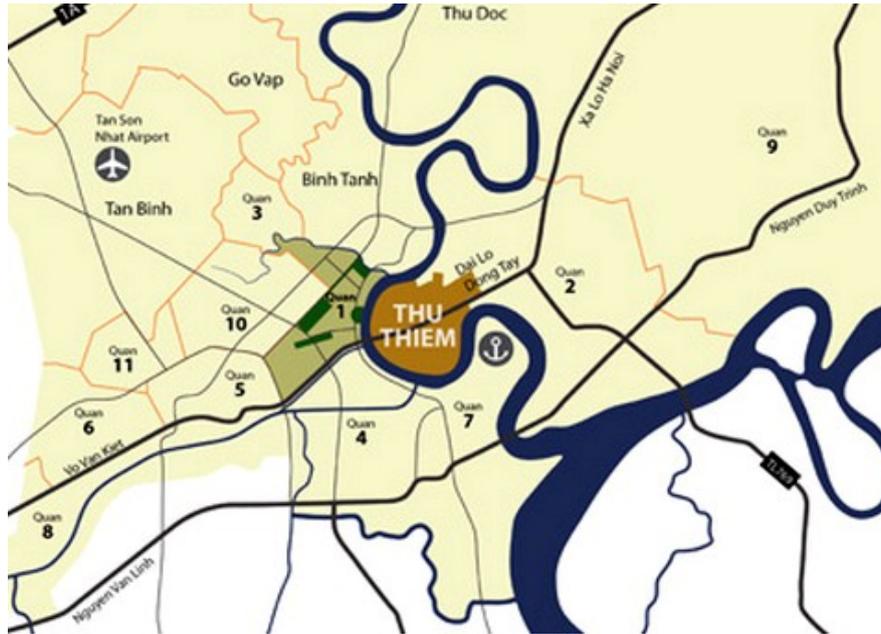


Figure 30 - Location of Thu Thiem New Urban Area in HCMC [Sasaki, 2012]

Sasaki's master plan focuses on development of Thu Thiem as a sustainable, dynamic, mixed-use central business district. The plan is based on a framework of transportation, land use, and public spaces that integrates the existing ecological conditions of the lower Saigon River and responds to the climate of southern Vietnam. The plan of Thu Thiem strengthens the city's extraordinary bond with the river and is a model for long-term sustainable growth in HCMC. Sasaki's plan for Thu Thiem also focuses on connections to the riverfront, linkages to the historic city center, and a compact, flexible urban form. Remarkably, it promotes density, integrated public transit (water- and land-based), and appropriate street and building orientation that encourage cross-ventilation and passive cooling. The plan incorporates the natural delta landscape and river fluctuations into the urban fabric and preserves native vegetation.

In Thu Thiem new urban area, environmental sustainability is established in every aspect of the project. The elements such as transport and building orientation, wind direction, water, landscape, reducing excavation and fill activities, and promoting the delta area of Thu Thiem were considered in the master plan (Figure 32).



Figure 31 - Land-use planning of Thu Thiem project [Sasaki, 2012]

Sustainable factors in each phase of construction is considered, including active and passive strategies to reduce the energy consumption, use of alternative energy sources, increase water recycling, take advantage of local materials, and other approaches suitable to the standards of sustainable development. There are some main strategies in the project:

- Passive Strategy
  - Orienting the North-South face for building in order to reduce heat and maximize wind flow.
  - Combining "green roofs" and "white roof" to reduce solar radiation and heat.
  - Opening ground floor for building to increase ventilation to the public sector.
  - Creating open space inside the building to enhance air circulation.
  - Strategy for building height to ensure natural light and views.
- Use Energy / Power Generators (Active Strategy)
  - The overall task is to reduce lighting energy use to 46%.
  - Combination between the chilled beams and cooling strategies can reduce energy use by 50%.
  - The air circulation under the floor also enhances air quality, energy savings and reduces building height.
  - Using photovoltaic panels to supplement energy needs.
- Water Management
  - Recycling water for flushing and irrigation intense in order to reduce water demand.
  - Trees on the roof not only keep rainwater but also bring the pleasant for outdoor spaces.
  - Storm water treatment.
- Rain water and surface water drainage
  - Building elevation is designed to let water go out lakes and wetlands.
  - The water channels in Central Lake and South of the Delta not only help to construct the landscape in high tide but also act as a filtration system to ensure water quality.
  - Open space is designed to prevent and filter pollutants in storm water initially and to reduce speed flow.
- Transportation
  - The transport system allows flexible transfer between different types of transport in order to create a community walk and to minimize motorcycle.
  - Subway is connected with transport corridor.
  - Giving new kind of water transportation: water taxi.

A key ecological strategy is to keep Thu Thiem as an "open system" that accommodates tidal regimes and high-water events through natural and man-made canals, lakes, and wetlands (Figure 33). Besides, flood is controlled by raising building elevation at +2,5m and allowing other lowland areas to receive more water in flooding events. All residential areas are in close proximity to the water and to the public spaces created through this strategy. Recently, Thu Thiem new urban area is adjusted by HCMC PC about compensation policy, support for damage; and the District PC is completing general policy for implementation.

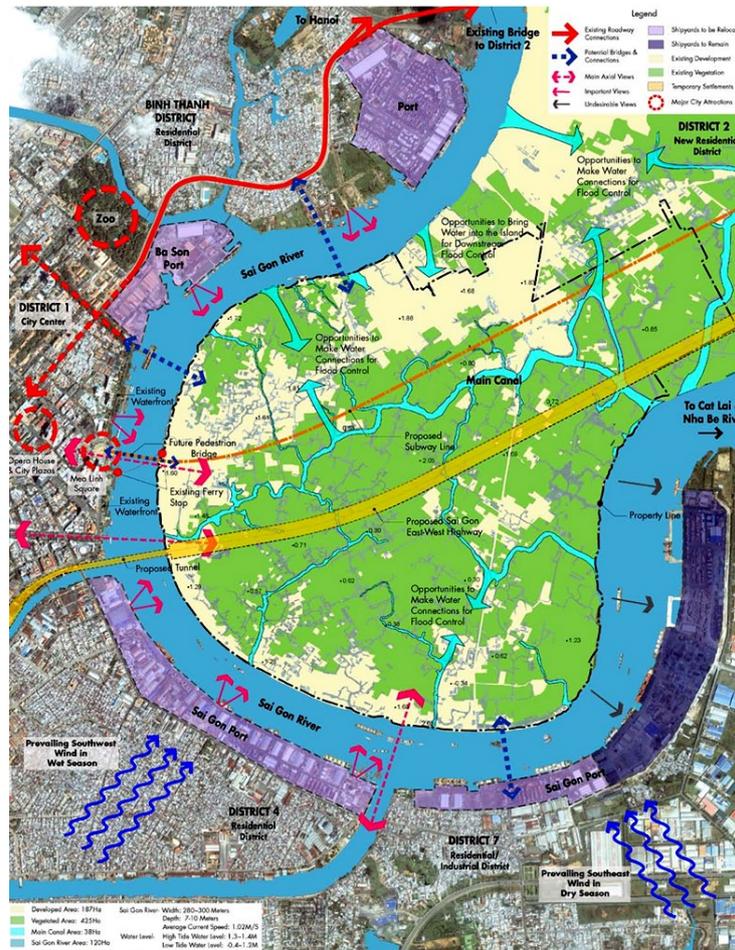


Figure 32 - Analysis of water system in Thu Thiem project [Sasaki, 2012]

To sum up, this project has a serious research in designing, especially in flooding analysis. Thank to careful analysis of existing situation, the land-use planning has an appropriate development when use low land area as a function of ecotourism. Combining with comprehensive management in planning operation, it can be said that Thu Thiem project has a right direction in planning, suiting to be a model planning process for other developing residential area in District 2.

### **b. Other developing residential areas**

Apart from Thu Thiem new urban area project, the District PC has approved a land-use planning - scale: 1/2000 for three residential areas after Thu Thiem project, include:

- Residential Binh Trung Dong Ward (174.12 ha).
- Residential Thao Dien Ward (zones 1 - 115.93 ha).
- An Phu Residential Area (Area 3 - 95.58 ha).

These three plans of residential areas has publicized and transferred to local management. Currently, there are nine areas still in research; these planning researches were already held basically in public meeting and reported at second time to the District PC. Most of the residential projects focus near Thu Thiem new urban area, the South of Hanoi road and Trung Binh Tay Ward. Thu Thiem new urban area can be seen a momentum and a good model for development of District 2. However, these small projects do not have the same investors, so there are many differences in construction. Therefore, infrastructure systems (road, drainage system, etc) are not synchronous, which make flooding problem more excess in future. This situation result from the lack of strict management in District 2, like opinion of Interviewee A (06/05/2013): "Planning projects are divided into many small parts in order to find investment. However, the general manager is lacking and investors chase partial benefit of their own, so infrastructure system is not synchronous"<sup>7</sup>.

#### **5.2.4 Conclusion of content dimension**

All the planning maps above from municipal level to district one prove that the developing orientation does not consider the natural topography. Economic factor play an important role in deciding how and where the city will be expanded, even in lowland areas. With respect to project level in District 2, the implementation is a crux in planning. Although these projects are designed to follow planning regulations, they are quite fragmented in practice because of lacking cooperation between different investors who just care their own profit. Thu Thiem new urban area is evaluated as a good planning project; however, it is still on drawing. Operating such a big project like Thu Thiem needs a lot of endeavor in cooperation and financial capacity of different stakeholders.

### **5.3 Process**

Currently, there are many agenda and programs discussing about how to cope with flood at present and in the condition of climate change in the future. However, in this dimension, I will choose the most innovative program related to my topic and elaborate its feature of flood measure and cooperation. After that, I will summarize some main points in interviewees' opinions which are valuable to confirm my conclusion in two above dimension - context and content and to support my thesis as well as to avoid subjective opinion.

#### **5.3.1 Innovative program of flood control and cooperation**

In 16/09/2010, the SCFC has started the contract with Dutch consultant for the "HCMC flood and inundation management project" which is a mark of bilateral cooperation between the Vietnamese government and the Dutch government in the sector of flood risk management.

<sup>7</sup> "Các dự án quy hoạch bị chia nhỏ ra để dễ thu hút đầu tư. Tuy nhiên do thiếu người quản lý tổng thể và các chủ đầu tư có tư tưởng lợi nhuận cục bộ nên hệ thống hạ tầng không đồng bộ" - Interviewee A (06/05/2013)

This project is granted by the Dutch government in the period of 30 months (2010-2013). The time zone of project will start from present problem analysis to principle modeling for 2025 situation and outlook to 2050 and 2100 with 3 main objectives:

- Setting overall strategy and implementation plan to prevent flooding for HCMC and other related areas, paralleling with building collaborative programs and establishing funds to execute the project.
- Building capacity of technical skill and flood management for the SCFC and other related authorities.
- Building collaborative relationships between institutions of science, environment and education in the Netherlands and Vietnam; and between government agencies and NGOs in the field of water management and flood control in order to exchange knowledge of technic, climate change and water management. (Figure 34)



Figure 33 - Establishing new partnership [Source: Royal Haskoning, 2011]

However, there are many challenges for SCFC about flood management activities in HCMC (Royal Haskoning, 2011), such as:

- The number of flooded areas and flooding level has been reduced but not as expected. Some new flooded areas have occurred because of both natural reasons (increasing tide, rain, etc) and human one (ineffective management, unsuccessful drainage project, urbanization, etc.)
- No integrated strategy for flood risk management.
- The collaboration between the Departments and agencies of HCMC and the surrounding provinces and Ministries is not sufficient.
- The progress of the relevant flood management projects especially the ODA-funded (Official Development Assistance) projects is behind the schedules.
- Lack of qualified human resources for the flood management activities.
- The budgets, staffing and facilities for the O&M activities of the drainage and sewerage systems are not sufficient.
- Lack of coordination between spatial planning and drainage system.

- Insufficient attention was given to the relation between the construction benchmarks and drainage aspect.
- No suitable regulations on compensation for the water storage areas, which are filled up by the urban development activities. No effective regulations for protection of the drainage and sewerage systems.
- Lack of proper connection between the drainage projects managed by the Departments and the projects managed by the Districts.
- There is no agency solely responsible for the Government management functions on drainage, sewerage and flood protection in HCMC. Responsibilities for flood protection and inundation are dispersed

In general, this project is considered a comprehensive project when taking into account both structural and non-structural measures for flood risk management, especially with consideration of climate change problem in the future. With the concept of Protection - Adaptation - Mitigation, the project will return space for water as a sacrifice of suburban area to save central area. To do that, they have to prepare treatment policy and program to support suburban residence by communicating, raising their awareness in protecting drainage system and training them how to cope with flood. With respect to structural solution, they also pay attention in adaptive architecture and planning as well as building suitable dyke to protect central area. Interviewees B (06/05/2013) and C (08/05/2013), who work in the SCFC, both believe that this program will open a new chapter for improving current flood management.

To sum up, it seems to be a nice research in paper, which open a "new window of opportunity" to improve traditional flood approach. However, the question is how to make it come true bearing in mind the financial problem. That is still a hard work for SCFC in next years or it will be a suspending project again like other projects and they are still a passive worker chasing the change of flooding problem such the comment of Interviewee D (07/05/2013).

### 5.3.2 Interviewees' opinions

With the open questions around planning and flood management, I will summarize some remarkable comments from interviewees who are managers in the DPA and the SCFC or are planning experts in university or in the MBD2. Their opinion will be divided into three main aspects: strategic spatial planning, flood management and recommendation for cooperation. With the different perspective and expertise, their ideas will be very precious for my thesis conclusion and recommendation. (Concrete interviews - see Appendix 3)

#### *a) Spatial planning*

##### ➤ *In general HCMC*

As a Director of Planning Information Center - the DPA, Interviewee D (07/05/2013) remarked that the DPA just work with objective and structural solution like building dyke, raising building code, etc. There is also no interdisciplinary cooperation; i.e. just has vertical management instead of horizontal one. The main task of the DPA is setting the master plan

with long-term strategy for urban development, under control of Ministry of Construction. In other words, they just work on paper by appraising and approving designing project. In short, the DPA have a general view but it is quite impossible because of not basing on financial situation and management capacity.

Moreover, to him, "climate change is a fuzzy word. Because, until now, it is just expressed by general scenario instead of concrete solution for each specific context (e.g. regulations, laws, designing solutions, management, investment, etc)"<sup>8</sup>. They do not have strategy and long-term approach; i.e. the only solution until now is raising the elevation for flood-prone area, which is the passive and short-term solution. The DPA lacks the concrete information about climate change and they do not right to build the solution for urban coping with sea-rise level.

With the viewpoint of academic planner, Interviewee F (08/05/2013) assumed:

*"One of the important criteria for floodplain management in strategic spatial planning is the permeability of the surface. People pay more attention to the material of urban surfaces (e.g.: tiling the pavement or footpath with hollow bricks, combining with the alternating grass instead of cement or concrete, using many green carpet instead of "concrete" surfaces in urban areas). These criteria can be transformed into indicators, for example: the rate of empty/ solid of the surface; i.e. turn quantified-quantification, criteria, qualitative into the evaluation quantitative index"*<sup>9</sup>.

To him, urban planner should pay more attention in building elevation. Selecting land for building city should consider not only horizontal relation (location, access, infrastructure, etc) but also vertical relation (height, flooding depth, flooding possibility, flooding scenario, disaster management, risk management, evacuation routes, etc). Moreover, they should focus on developing urban infrastructure towards response and mitigation; adapting to the natural disaster or catastrophe, not against disaster. On the other hand, proactive measures such as reducing consumption and emissions or using permeable surfaces instead of waterproof surface to enhance drainage in urban instantaneous should be encouraged.

Whereas, with the perspective of Director of Institution of water management and climate change, Interviewee G (12/03/2012) pointed out the role of urban planners is to respect the rule of "space for water" and promote all possible initiatives which can help the water space to adapt to climate change, while providing the feasibility to economic, technical and the intellectual. Because in terms of uncertain climate change, solutions for water space needs to be flexible enough in order to adapt to the change over time. While drainage engineers can only provide input data about the required capacity and location of the main regulatory areas, but in order to express them into urban solutions, we will need contributions from the urban planner. The more sensible way is that the urban planners should discuss with the drainage

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<sup>8</sup> "Biến đổi khí hậu là một khái niệm rất mơ hồ. Cho đến giờ nó chỉ có những kịch bản chung chung mà không có những giải pháp cụ thể (như quy định, luật, giải pháp thiết kế, quản lý, đầu tư...)" - Interviewee D (07/05/2013)

<sup>9</sup> "Một trong những tiêu chí quan trọng trong công tác quản lý ngập lũ trong quy hoạch không gian tại TPHCM hiện nay là "khả năng thấm thấu của bề mặt; người ta chú ý nhiều hơn đến vật liệu bề mặt của đô thị (ví dụ: lát vỉa hè hay lối đi bộ với các loại gạch rỗng, kết hợp với các thảm cỏ xen kẽ thay vì xi măng hay bê tông; sử dụng nhiều thảm xanh thay vì "bê tông hóa" các bề mặt trong các khu đô thị; Các tiêu chí này có thể được chuyển thành các chỉ số đánh giá, ví dụ: tỉ lệ rỗng/đặc của bề mặt; nghĩa là "lượng hóa" (quantified-quantification) các tiêu chí (criteria) định tính (qualitative) thành các chỉ số đánh giá (index) định lượng (quantitative)." - Interviewee F (08/05/2013)

engineers from the beginning to outline the best possible solutions, in which the adaptive and reducing damage factors are needed to be considered initially rather than only relying on anti-flooding constructions.

According to Interviewee G (12/03/2012), urban planning should pay attention to the following three principles:

*"Firstly, in all cases, we should not allow any additional overflow which is generated by the planning project. This is done through regulating spatial distribution. Secondly, the space for water should be allowed to expand in necessary in order to adapt to the uncertainty of climate change. Thirdly, the occurrence of flooding in vulnerable areas should be solved by the soft solutions to mitigate the damages in extreme events, rather than relying only on the anti-flooding constructions."<sup>10</sup>*

### ➤ ***In District 2***

Two interviewees A (06/05/2013) and D (07/05/2013) have the same opinion about planning project in District 2. They assumed that most of planning projects, except Thu Thiem project, are chasing economic benefit of urbanization by taking full advantage of spacing without caring about environmental and social factor. Each small neighborhood project has different partial development without following the general orientation. Furthermore, there is an ambiguous responsibility of inspection during implementation phase and after finishing the project. Urban management office of district just manage very locally in each house instead of checking whole area about wrong code, lacking greenery, wrong design, illegal building, etc.

Furthermore, both Interviewees A (06/05/2013) and C (08/05/2013) said that District 2 does not have its own direction in flooding prevention. There are some small projects to renovate existing drainage system in extreme flooding road. Particularly, the natural elevation has changed much because local residents themselves raise building elevation to protect their own house, so building elevation is quite messy.

### ***b) Flood management***

Interview C - a vice director in the SCFC - admitted that flood is also caused by human management aside from natural condition, such as inadequate drainage system, lacking dyke and filling up canals, etc. According to Interviewee B (06/05/2013) - a manager of Drainage projects in the SCFC, flooding points are reducing 60-80% comparing in 2009. He also said that different institutions play different roles and have different ties for each other in each step of project. This is quite complicated and time-consuming because the SCFC is just a specific center, so they do not have right to approve the projects. Although, financial resource

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<sup>10</sup> "Thứ nhất, trong mọi trường hợp, không được phép gây ra dòng chảy tràn phát sinh thêm bởi dự án. Điều này được thực hiện thông qua các không gian điều tiết phân bố. Thứ hai, không gian QH dành cho nước phải cho phép mở rộng nếu cần thiết để thích nghi với tính bất định của BĐKH. Thứ ba, việc xây ra ngập lụt ở các khu vực dễ thương tổn cần được kết hợp giải quyết bằng các giải pháp mềm để giảm nhẹ thiệt hại trong trường hợp xảy ra các biến cố cực lớn, chứ không chỉ trông chờ vào các công trình chống ngập." - Interviewee G (12/03/2012)

for flooding projects comes from two main sources: ODA fund and city budget, the SCFC still does not have enough money to invest large-scale construction like regional dyke.

However, to Interviewee G (12/03/2012), many large-scale projects pretext for flood prevention to intervene aggressively into the natural. These projects are often based on long-term scenarios to influence on policy in their favor. The common feature of these projects is the approach of "prediction and action". This method is dangerous because the long-term forecasts are usually inaccurate, especially in terms of uncertain condition of climate change. Moreover, these large-scale solutions will be not flexible enough to adapt to the uncertain factors; and it also requires enormous amount of resources what is very difficult for our current macroeconomic conditions. Another factor should also be noted that the operation and maintenance of large-scale system is so complicated and risky.

With a different perspective, Interviewee D (07/05/2013) judged that the SCFC has the own tasks, under control of Ministry of Transport. "They work with feasible and short-term project based on realistic finance and resources. However, their work is quite passive and ineffective when chasing to fix flooding problems existing in whole city. They also lack the sufficient concern in flooding situation and responsibility."<sup>11</sup>

Furthermore, Interviewee E (07/05/2013) - a former vice director of the DPA - concluded that there is a dilemma between flood risk management and urban planning because flooding solution adapting to climate change will decide the building elevation in city, while urban planning does not take into account climate change at present. However, the DPA is still waiting that flood solution from Ministry of agriculture and rural development in order to decide building elevation. This waiting delays many decisions and makes the present work of planning become objective and prodigal in the future. "Therefore, the main point is that flooding solution should be concrete and clear in deciding which area for developing and in defining target area for flood prevention."<sup>12</sup>

Bringing the modern flood control, Interviewee G (12/03/2012) pointed out: "Instead of only focusing on reducing the frequency of flooding such as the way we are doing now (flood protection), the innovative solution should be finding the way to minimize all damages when flood happens (flood resilience)"<sup>13</sup>. This is a cross-sectoral issue in which the urban planning center plays a central role. Therefore, the best choice of flood risk management is doing in parallel; i.e. alternatively, we still implement the technical preparation for the large-scale project of tidal control which is opposed by the MARD. On the other hand, the city also implements the flood control projects as following to the perspective of the Dutch government. In addition, the SCFC has also implemented many local, small-scale projects to solve directly and immediately flooding problems rather than rely on large-scale projects; and that has brought many good results for the city.

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<sup>11</sup> "Họ làm dự án ngắn hạn trực tiếp, khả thi, cục bộ trong đô thị trên năng lực tài chính, tổ chức thực tế. Vì thế, SCFC làm việc k hiệu quả vì tính bị động và ngắn hạn. Nhận thức về trách nhiệm và phạm vi công việc chưa đầy đủ." - Interviewee D (07/05/2013)

<sup>12</sup> "Vì thế, điểm quan trọng trong phương án giải quyết ngập lụt nên cụ thể và rõ ràng trong việc quyết định những vùng nào cho phát triển và vùng mục tiêu chống ngập" - Interviewee E (07/05/2013)

<sup>13</sup> "Thay vì chỉ tập trung tìm cách giảm tần suất xuất hiện ngập như cách chúng ta đang làm hiện nay (flood protection), thì giải pháp thông minh hơn là: tìm cách để sao cho xảy ra thiệt hại ít nhất khi bị ngập (flood resilience)." - Interviewee G (12/03/2012)

### *c) Suggestion for cooperation*

According to Interviewee D (07/05/2013), without the compulsory regulation from the higher government, planner and flood manager do not want to work together because of time consuming and working disturbance affecting to their own work. However, to Interviewee A (06/05/2013), the reasons why specialist institutions do not work together because of lacking the main leader which should be the HCMC PC to connect them on the one hand. On the other hand, the task of some institutions overlaps each other in urban management such as the SCFC, DOT, DPA and the Department of Agriculture and Rural Development (DARD). To Interviewee F (08/05/2013), "There is no contradiction, but only inconsistencies between land-use planning and flood management"<sup>14</sup>; or the strategies are not integrated with each other effectively.

However, they both agree that there should be cooperation between the DPA and the SCFC at the very early phase of project; i.e. sharing same strategy, goal, and orientation; in order to provide the best solution for completed planning process (from designing to implementation). Same opinion with Interviewee D (07/05/2013), Interviewee E (07/05/2013) concurred with them that cooperation is a must; and recommended that it should happen regularly every week to follow easily the process. Since the main role of planner is creating space for development and infrastructure. That why they have to work with flood manager instead of working independently at present. The HCMC PC should be active in linking the SCFC and the DPA. According to Interviewee F (08/05/2013), the national target program adapting to climate change, including coordinating organization and coordination mechanism in both vertical and horizontal side, also pointed out the importance of this collaboration; the problem is how to implement the specific projects and action plans at local level. That depends much on financial factor.

In addition, a remarkable point stressed by Interviewee A (06/05/2013) is that no regulations or laws define the responsibility and treat with relevant stakeholders in a project; that is a disadvantage for local resident. This is a mistake of mechanism: low salary leads to lacking of responsibility and quality of work; and no strict law to treat guilt in planning. Therefore, he suggested some improvements: "(1) Strict law and rational regulation should be considered and suitable to market economy; (2) Defining clear and concrete responsibility for each stakeholder in planning project (contractor, investor, inspector, designer, government, etc); (3) Improving salary because it goes parallel with responsibility."<sup>15</sup>

However, Interviewee G (12/03/2012) suggested the objective of living with flood in a sustainable and less-risk way. In order to achieve this objective, we need to overcome many obstacles, in which we need the Understanding - Consensus - Collaboration among related parties. Any complicated technical matters should not be a major obstacle. He assumed that:

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<sup>14</sup> "Thực ra theo tôi thì không có sự mâu thuẫn (conflict) giữa hai công tác này mà chỉ có việc không tương thích giữa chúng với nhau" - Interviewee F (08/05/2013)

<sup>15</sup> "Luật pháp chặt chẽ, thưởng phạt nghiêm minh đúng mực, theo đúng nền kinh tế thị trường. Phân vai trách nhiệm rõ ràng, cụ thể (nhà thầu, chủ đầu tư, giám sát, thiết kế, nhà nước) vì hiện nay còn chung chung. Cải tiến thu nhập vì trách nhiệm đi chung với quyền lợi." - Interviewee A (06/05/2013)

*"If we are lacking of Understanding - Consensus – Collaboration, we cannot achieve the desire to minimize the risk of flooding and damages. There are two principles: respect for the space of water and minimize damage in a proactive way; each person, depending on capacity, location, occupation and situation, will be able to come up with the most appropriate activities".<sup>16</sup>*

According to Interviewee G (12/03/2012), with respect to the government, they have to imply two principles as laws/ regulations. With respect to community, they should not expect that they would be perfectly safe with anti-flooding constructions. In addition, they should actively find the way to mitigate the damage for themselves with the support of government. With respect to technicians, they should give the priority to interdisciplinary ideas, proposals, and solutions instead of working dependently as they are doing now. Once we come with same oriented principles, the consensus and the collaboration will become easier.

Nevertheless, from the planning to the reality is a long distance; and in many cases, a good solution is not enough to overcome challenges in reality. Therefore, we need some organizations or institutions, standing for the scientific and impartial perspective, to link all the factors together in term of technique (interdisciplinary and multidisciplinary) and relationship (between the community, the state and the group benefits). Thus, the approach is always the multi-objective and integrated solution. Besides, Interviewee F (08/05/2013) also agreed on the inter-disciplinary and multi-disciplinary coordination. He suggested that "this coordination not only in technical but also in relationship between the MONRE (land area) and the MOC (building area) and other Ministries."<sup>17</sup>

### **5.3.3 Conclusion of process dimension**

Most of interviews admit the lacking cooperation between relevant institutions. They also stress on implementation of planning project, which need financial resources and cooperation capacity. Moreover, climate change information is still difficult to access; and solution coping with sea level rise is quite general and ambiguous. To improve the fragmentation of planning and flooding control, interviewees also give some suggestions which are very concrete, practical and innovative.

### **5.4 Concluding remarks**

Based on the general information about the case study and the analysis of three dimensions, I will give some remarks as following:

In context dimension, most of planning laws tend to regulate building code or developing orientation which reach to economic development. There are some regulations for space of

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<sup>16</sup> "Tôi luôn cho rằng nếu thiếu sự Thông hiểu – Đồng thuận – Cộng tác thì không thể thực hiện được những ước mong về giảm thiểu nguy cơ và thiệt hại cho ngập lụt. Xuất phát từ hai nguyên tắc: tôn trọng không gian giành cho nước và giảm thiểu thiệt hại một cách chủ động, mỗi người tùy theo năng lực, vị trí, nghề nghiệp, gia cảnh của mình sẽ có thể đưa ra được những hoạt động phù hợp nhất." - Interviewee G (12/03/2012)

<sup>17</sup> "Sự phối hợp liên ngành và đa ngành không chỉ về mặt kỹ thuật mà còn về mối quan hệ giữa Bộ Tài nguyên Môi trường (lãnh vực đất đai) và Bộ Xây dựng (lãnh vực xây dựng) và các bộ khác." - Interviewee F (08/05/2013)

water; however, the attention of flood risk in planning documents stop at low level. Besides, document of flood management is just about engineering measure. It proved that planning loses its crucial position in flood management. In short, there is no serious consideration of non-structural measure for flood control; and the relationship between flood and planning is not indicated clearly in the traditional legislation.

With respect to climate change issue, the attention has just started via Draft Circular No /2012/TT-BTNMT about "Process of setting and adjustment Planning, Land-use plan". While climate change becomes a hot topic over the world, it is still discussed in agenda and research in Vietnam. It needs more support from international organization and intensive awareness of government, especially in planning field. However, the appearance of Draft Circular will mark a new hope for flood management coping to climate change in the future.

With respect to institutional structure of the DPA and the SCFC, it can be concluded that they work quite separately to each other. The strong link of management belongs to vertical hierarchy instead of horizontal cooperation. Besides, their working procedures are time-consuming because of certain reasons in decision and implementation. The general planning system also proved that top-down planning still prevails, which make the planning maps not feasible and acceptable widely.

In content dimension, it seems that there is no consideration of natural feature in planning procedure. The factor decides planning project is still economy which make private profit prevail over public benefit. This also leads to the fragmentation in planning, including building elevation, infrastructure system, urban design, etc. In concrete case of District 2, it seems that there is no serious consideration of planning development when most of new residential areas develop in vulnerable zones. Only big project - Thu Thiem new urban area - with the participation of foreign consultant and higher government level has a deliberation of flooding and other environmental issues. To other smaller developing areas, different small investors does not ensure the development in the right track with large-scale orientation of municipality.

In process dimension, different stakeholders have provided precious opinion about practical situation and even valuable recommendations for cooperation between spatial planning and flood control. Some main ideas are about shifting from hard approach to soft one or adding more laws about responsibility of relevant actors in order to get the same goal - integration. However, they all have the same agreement in interdisciplinary and multi disciplinary cooperation. Currently, the new program of the Dutch government can be considered as a new horizon to change traditional perspective in flood management with more coordination - not only inside national level but also with outside world.

To sum up, although HCMC lacks cooperation, serious consideration of flood and climate change, or even trouble implementation of planning process, there are some positive signals as opportunities for a new quantum of leap in flood risk management. Yet, the new Draft Circular and the Dutch program, at least, raise a new perspective at management level and trigger the transformation of traditional flood control approach. With the threat of climate change and speed of urbanization in the future, it is time to take these problems into integration of spatial planning and flood risk management with a serious attitude.

## CHAPTER 6 - CONCLUSION: REFLECTIONS AND RECOMMENDATIONS

This final chapter will summarize the concluding remarks from the theoretical framework to practical analysis of case study in order to find out the answer for research question in Chapter 1. By comparing theory and practice, the conclusion will express some lessons of flood risk management to supplement both theory and current planning practice in Vietnam. After that, some recommendations are given to improve existing situation of the case study based on the framework of theory.

### 6.1 Empirical reflection

HCMC is known as the most dynamic city in Vietnam - a center of economy, administration, society, culture and finance. However, the rapid urbanization puts pressure on standard living of citizens, especially on infrastructure system. At present, HCMC has some troubles of flooding because of heavy rain, low topography, and uncontrolled development. Flooding is getting worse these days; and it becomes a crux which affects many corners of life such as daily routine, construction, economic damage and planning. In the future, warning of climate change has put more burden for government, especially flood manager. Therefore, it needs to share responsibility among them and effective solution with long-term strategy by cooperation with other key stakeholders such as planners, environmentalist, engineers, private companies, NGOs, etc.

However, the traditional management system of Vietnam in general and of HCMC in particular is quite strong in vertical link instead of horizontal cooperation. From administration management to specific one, government still plays a crucial role and prevails over entrepreneurs, private parties or NGOs in decision-making phase. On the one hand, most of planning solutions have comprehensive integrated approach with powerful top-down hierarchy. On the other hand, as a typical developing country, most of decisions are heavily affected by economic reasons. For that reason, the final decision is quite arbitrary and ineffective, which harms environment, society or even traditional culture. The typical example is about expanding the city in low-land areas just because these areas receive strong investment from foreign. Because of that dictatorial decision, many long-term consequences have been witnessed in social, environmental and even economic damage. Several studies report that new urban development activities in such low-lying areas have negative affects on surrounding areas, including frequent occurrence of flooding due to the loss of water surfaces and increase of riverbed level.

According to the characteristics of strategic spatial planning (see 2.3), strategy for flood risk management is a selected process with major stakeholders who can come from central government or specific experts in planning and flood management. Power and knowledge belonging in elite makes the selection easier in HCMC, Vietnam. That is also the reason why my thesis focuses on management level of flood risk management and spatial planning before carrying out more concrete activity program at residential level. That does not mean strategy in flood management deny the broad and diverse participation in its process. In this point,

Vietnam planning procedure need time to improve awareness of both manager and resident in planning participation. With the uncertainty of climate change, anticipation of internal environment (domestic economy, finance, policy, etc) and external trends (international economy, flooding researches, NGOs' support, etc) will help to reduce the risk in flood events in big city like HCMC. Moreover, concentrating on limited strategic key issues will help managers solve their planning or flooding problem the most rationally and effectively.

Until now, there is no serious consideration about flood management in legislation as well as in general planning. It is admitted that there is no cooperation between specific institutions such as between spatial planning and flood risk management. They work independently using their own language. Water managers focus on engineering and technical water-based solutions while planners and urban designers focus more on the spatial development and urban form. Flooding concern now just limits in research and theory although these agendas have new approach, such as "HCMC flood and inundation management project" with non-structural measure instead of engineering solution like before. That change opens a "window of opportunity" for participation of different stakeholders and marks a new step for current flood risk management in HCMC.

The current data of regulations in HCMC and maps of District 2 has proved obviously that there is no cooperation between urban planning and flood management, which is the key point of holistic strategy coping with flooding at present and climate change in the future. Most of planning regulations and decision about flooding just mention engineering approach such as building dike, upgrading drainage system, respecting space for water, etc without pointing out how to make it effectively, e.g. participation of different parties, cooperation between key institutions, education for local resident, etc. Mapping analysis of District 2 has revealed the lack of integration between spatial planning and flood management, showing clearly in the master plan of developing orientation.

In addition, the opinion of key interviewees also reveal the implementation problem in planning because of financial lack, unclear responsibility and uncooperative attitude between different investors and formal institution. These hindrances show that it lacks of a leader who will be the bridge for these fragmentation and guide to innovative approach. Most of key stakeholders in the DPA and the SCFC said that they expect a clear solution coping with climate change and guideline for responsibility and coordination. There is a paradox about the task of institutions are irrelative, but sometimes overlap each other. This leads to time consuming, benefit conflict and ineffective result; e.g. there is a dilemma at present between flood management and urban planning because flooding solution adapting to climate change will decide the building elevation in city. Whereas urban planning does not take into account climate change at present. However, the DPA still waiting that flooding solution from the MARD in order to decide building elevation. This waiting delays many decisions and makes the present work of planning become objective and prodigal in the future.

Inter-disciplinary approach with cooperation between different stakeholders is the key to build right track for flood management at present as well as in the future. However, transformation from traditional approach to adaptive one require a long-term strategy with incremental change step by step. With the stress of internal system and influence of external

environment, new horizon will be opened with the innovative realization for developing country like Vietnam, at least at management level. However, adaptive strategy for complex problem of current flooding and uncertain flooding of climate change is not a general formulation, but totally depends on specific context in each country.

## **6.2 Recommendations for HCMC - District 2**

Based on analysis of strengths and weaknesses of the case, there are some strategic recommendations to contribute to improve the flood risk management in HCMC, as follows. Strategy is based on a multi-sector/multi-disciplinary approach to spatial planning and flood risk management.

### **6.2.1 Complement of legislation**

Law and regulation of responsibility should enforce in implementation and practice by applying rewards to one who gives significant contribution to flood defence actions, and vice versa strict punishment to those who break the law. Moreover, the regulation about protection and conservation of wetlands should address concretely in planning laws.

Due to limited financial capacities reflected via Interviewees A (06/05/2013) and D (07/05/2013), investments in public infrastructure were mainly funded by international donors from the development assistance in the past. Therefore, government should encourage the private sector to involve in infrastructure investments via public-private-partnership models (Eckert and Schinkel, 2009). Increasing financial assistance ensures the local government comprehensive plans and actions to coordinate with municipal flood control plans. Besides, policy of investment will allocate budget for supporting flood defence operational and maintenance.

The implementation of adaptation measures for climate change into urban development planning requires not only environmental policy, legal and planning regulations for public participation but also consideration of social impacts, in order to make a flood risk management strategy successful not only built environment, but also the social environment needs to be adapted to the present flood risk. Therefore, objectives for integration should be formulated as an important future step (Storch, 2008).

### **6.2.2 Improving institutional structure**

It is important to work with clear objectives and general guidelines of spatial development for the long term and short term future. Governments at different levels play different roles. The HCMC PC is responsible for safeguarding basic spatial standards and the main spatial structure, for providing opportunities for negotiation and communication, and for creating link between specific institutions, while local authority of District 2 is responsible for taking care of their local environment following national or regional policies based on their concrete local situation. Therefore, horizontal and hierarchical cooperation should be maintained in parallel during the plan-making process and plan implementation. As Biswas (2004) argued that water problems cannot be solved by the water professionals or water institutions alone, but should be linked with local land use (spatial) plan.

The communication between urban planners and flood managers is also essential for public participation. Moreover, new knowledge can be created and understood and mutual trust can be established during communicative sharing. Encouraging urban planners and water managers to work together to develop more information and knowledge through modeling and scenario construction, based on sharing the necessary databases. This is also a way to minimize the conflicts among governments. The role-sharing mechanism will indirectly ask local governments to prioritize regional development instead of local interest.

Furthermore, in the situation of increasing flood risk, it is time to give more power for the SCFC, e.g. making it become a Department of Flood Control with the right of approving their own projects. This also reduces time-consuming in the procedure of flood control program, which help flood project can solve flood problem in time on the one hand. On the other hand, it saves abundant cost and avoids the overlap task and similar role of relevant institutions.

### **6.2.3 Planning procedure**

SCFC should also coordinate with other institutions at least DPA, because flood is not a single problem anymore. According to suggestion of Interviewee E (07/05/2013), they should work together at very early of any project and regularly every week in order to get the final effect.

During the plan-making process, especially before the final decision is made, the participation and negotiation should be in the hands not only of the policy-makers and the expert groups, but also of representatives of citizens. Moreover, the expert group should include more multi-disciplinary interaction, in particular at the first stages of the plan-making process when the basic decisions for further strategic development are made. According to the reflection of Interviewee A (06/05/2013) about residential meeting (see 5.3.2), public participation should start at the beginning of a plan-making process. Each planning project should establish social group who is responsible to explain the common interest and the individual one for local resident in order to raise their role in planning process. It is a very essential step to generate understandable and acceptable objectives and to ensure efficient implementation. Although the consultation and consensus building make policy-making a slow process, the final policy decision when taken is more likely to enjoy wide support and good implementation. However, in the Vietnamese situation of highly dynamic urban development, lengthy plan-making processes should be avoided because of increasing capital budget for planning project.

The current patterns of urban development, expansion and land use must be re-examined, because the generated dispersed urban forms are increasing the numbers of vulnerable urban areas. In low-land areas, urban development activities have to be carefully conducted including land preparation and other infrastructure, because the construction cost in these areas are higher than in good land conditions and easily harm to local vulnerable environment. However, the reorientation of land use planning, including developing new areas away from the low-lying areas and safeguarding natural mitigating functions, will require much endeavor, explicit zoning and protection (Storch, 2009). Furthermore, "space for water" suggestion of Interviewee G (12/03/2012) should be taken account into planning in catchment; i.e. harmonious reservoirs, canals can be considered both drainage system and

landscape element in planning projects. Protection of "space for water" has been mentioned in Vietnam planning framework, which is the foundation for further development of water space in planning design.

In planning process, both assessment tools - SEA (Strategic Environmental Assessment) and EIA (Environmental Impact Assessment) should be applied to evaluate impact of planning on natural environment related to flood risk. They are already in Vietnamese planning framework and have been integrated in planning process. Hence, these tools should be taken full advantage to screen and assess environmental factor in the integration of adaptation to urban development planning. Besides, flooding assessment should be addressed in planning procedure. At the first stage of planning, flood managers work together with spatial planners to decide the key issues of the flood management system in the spatial plan, the relevant criteria and the way to translate the technical water criteria into spatial criteria. Then planners make the plan according to these criteria. The basic idea for flood assessment is to create an open and good environment of communication for flood managers and spatial planners working together at the very beginning of planning in order to prevent potential negative consequences of planning management. In addition, it can stimulate the dialogue between flood managers and spatial planners using the same language about the water system.

#### **6.2.4 Creating cooperations**

In multidisciplinary approach, expert participation and public participation is necessary to reach consensus which offers the foundation for the cooperation of different administrative departments. In the context of the HCMC and planning practice, public participation is still a symbolic procedure. Therefore, planners, flood managers and administrative officials are responsible to present spatial layouts with enough information concerning flooding issues for the public. The key point is to achieve an agreement regarding the goals and action measures, and what urban planners, water managers and officials need to pursue.

In interdisciplinary approach, assessment criteria and methodology will be selected to assess contents and objectives of the regional planning system in order to ensure their adequacy and efficiency in adaptation to climate change (Storch, 2008). During the integration of sector planning into strategic (spatial) planning, climate concerns and their transparency for the different planning authorities of HCMC shall be strengthened. Interdisciplinary cooperation is necessary both at strategic level and at local level. Sufficient awareness and knowledge about spatial water issues helps in changing attitudes and finally also changing day-to-day behavior. Therefore, the HCMC PC needs to initiate and promote such collaborative approaches.

Besides, learning is a way to improve the cooperation and management capability, which can be from past experience and future innovation. Discussions on doubts and uncertainty of climate change implications are recognized in research agencies, academics and experts in workshop and seminar forum. However, human inherently has the capability to adapt with environment changes, namely adaptive capacity. Adaptive capacity refers to a range of quality of an individual or system to change or modified itself or its environment in order to preserve its existence and reduce possible negative impacts due to climate change (Klein et al, 2003). Adaptation of policy network system should be created in every level of

governments (from central to local) and across sectors, especially related to authority. Toolkit of adaptation measures to climate change' also include community-based adaptation measures with different levels of participatory involvement (Eckert and Schinkel, 2009). However, integrating climate change considerations into land use planning in HCMC is inherently a complex decision-making problem, which requires the careful assessment of the current decision situation, related to both specific places and spaces. (Storch, 2009)

In Vietnam, integrating flood risk management in spatial planning is a relatively new concept, both for the urban planners as well as for water managers. It therefore requires some fundamental changes in planning concepts and practices. The future spatial structure and land use planning need to link water systems, green systems and other natural systems together as a combined eco-system. I believe that by the time, under development pressure, private stakeholders, NGOs and residents will have more chance in deciding planning result and taking part in flood risk management.

### **6.3 Theoretical reflection**

Many coastal cities, mainly in developing countries, have already experienced climate change impact such as the increasing of sea level. Because of insufficient living condition in these countries, communities will be the vulnerable objects under impact of environmental change. Therefore, adaptation is a "must" strategy which the government has to consider to cope with this uncertainty and to protect their society. However, it takes a long time to accept a multidisciplinary and multi-sectoral intervention in traditional management system in Vietnam. Integrated urban flood risk management supports the comprehensive long-term integrated strategy which so much depends on contextual factor. With current condition of a dynamic city - HCMC, non-structural measure with the transformation in adaptive capacity at management level and solution of spatial planning may be the most suitable response. Hutter's framework has also proved this answer via three strategic dimensions, which strategic spatial planning is an umbrella concept for content- and process-oriented approaches to long-term flood risk management. In other words, it highlights the planning solution and asks for the choice of the right measures to deal with flood-related problems in both short- and long-term.

The most remarkable factor appearing in theory of integrated flood risk management or in Hutter's model is cooperation between relevant stakeholders, who mainly are spatial planner and flood manager. Spatial planning and flood management have to work together to indicate the spatial requirement for the flood prevention. The regional and local authorities known as HCMC PC and MBD2 need to formulate their own spatial policies according to their contextual problems and opportunities. To implement the idea, more transition in management system have to transform and the process of integration need to start as soon as possible. The ministry and department of planning and flood institution have their own responsibilities in dealing with these issues. Decision makers can also learn about changed implications for dealing with uncertain futures rather than only about how to predict or control similar occurrences in the future. To cope with climate change, planners should focus on reducing flood risk by lowering vulnerability by decreasing the rate of new economic

development in flood-prone areas. In this term, strategic spatial planning is one of efficient measurements to reduce vulnerability and cope with uncertainty. According to Hutter (2007b), long-term planners should be capable of doing two things: (1) they should avoid interpreting open dialogue with all potentially relevant actors as the ‘one best way’ to intelligent decision making; and (2) they should deploy a wide range of process options to use and design forums for discussion about long-term flood risk management.

Furthermore, flood risk management requires developing consistent combinations of non-structural and structural measure over time. The balanced combination of structural measures and policy instruments is an essential aspect of “integrated management” (Hooijer et al. 2004, p. 355). Decisions for formulating aims and targets, for analyzing the internal and external context, and for combining measures and instruments are continuously aligned with the changing societal context (Chaffee,1985).

To Vietnam - a socialist republic country with strong hierarchy top-down management, political factors determine the extent and duration of support for flood risk management in various policy fields and the way of dealing with (potential) conflicts between public and private interests. Therefore, local and regional have to take the responsibility for flood risk management with referring primarily to the external political and administrative context; e.g. they have to following the regulation from higher level in united mechanism of top-down management. In addition, internal financial resources have an important impact on how flood risk management is developed.

In theoretical conclusion, research on strategies for flood risk management should be visionary and pragmatic. Significant improvements in flood risk management will come from a comprehensive analysis which takes into account all natural and societal factors with cooperation between different levels.

While Hutter's model revealed a general picture of building strategy for flood risk management, the analysis of HCMC in general and District 2 in particular has gone deep inside the concrete situation and practical problem in developing country Vietnam. Comparing with the original framework of Hutter, I will express some main remarks based on the practical analysis of chosen case study:

- Context

According to Hutter (2006), local and regional can take consideration on flood risk management without referring to external political or administrative context. However, in case study of hierarchy management like Vietnam, external context with political factor and traditional system has a strong impact on local decision and lower level. For example planning regulations are applied from national to district/ ward level without changing anything; or the urban design at district level have to be on the right track with master plan of city or comprehensive plan of region. Therefore, depend on each situation, we should have the sufficient consideration of contextual factors impacting on situation.

- Content

While in content aspect, Hutter highlights the importance of goal and specific target, the practical analysis in my case study show that nice goal and target in paper does not mean that it will open the smooth track to make it come true. The real problem lies on implementation phase. In case that goal is not practical or suitable to current situation, it will be a dream which will never be reached. In the case of HCMC, it proves that although regulations mention about space for water or connection between different drainage system, there are no drainage connection or natural respect. Therefore, the problem here belongs to management in operation state, not in setting the object/ goal. It said that specific target/ goal should go parallel with concrete action and strict management at implementation phase in order to make strategy feasible.

In addition, the combination between structural and non-structural measures is not always effective. To a developing country like Vietnam with weak financial condition, non-structural measure should be considered first instead of starting with structural measure. With the steady management system, high awareness of flood prevention, rational procedure and solid coordination, structural measures such as building dykes, upgrading drainage system or expanding living space will be on right way and effective. For that reason, it is not necessary to have the comprehensive combination of both measures at the same time. It has to be flexible by dividing logic period with suitable measurement gradually, so they can supplement for each other.

- Process

In process dimension, Hutter stresses on two process models of strategy, which are linear model and adaptive one. To consider real-world conditions, a process modal is a category that refers to organizational decisions and actions. With traditional linear approach like in Vietnam, it will take a long time to shift to adaptive approach. However, we have to admit that adaptive model has big advantage when combine bottom-up initiatives and top-down strategic decisions. This avoids a shock of transformation for a solid hierarchal system and ensures the feasibility for the change. The uncertainty of climate change needs the flexibility of scenario-based planning. This process requires a long-term learning at management level and wide awareness of public. It will start from awareness at research and consideration in agenda to building strategy and action which take a long time; however, half a loaf is better than no bread.

## **6.5 Methodological reflection and need for further research**

The aim of this research is to provide the understanding about relationship between planning and flood control in theory and practical case study - HCMC, District 2. To reach this aim, the research gives an insight of fragmentation issue in strategic spatial planning including the characteristic of the conflict and factors that cause fragmentation. However, this research just focuses on management level without considering the integration between social groups in concrete action plan such as building communities' capacity. This is also an opportunity for

further research about social aspect in concrete action program. Moreover, the fragmentation issues discussed in this research are still on the policy level. Further discussion can give more insight on the implication of fragmentation at the implementation policies.

Besides, there are some limitations found during doing the thesis such as the quality of data and information for this research. As the local spatial plans or flooding programs are still going on process, some master plans have not updated yet. Therefore, there is still a possibility of change on the content of the spatial plan. However, this research tries to collect different kinds of information in order to ensure the accurate and transparent conclusion.

Last but not least, this research has not covered the impacts of proposed strategies if they are implemented. Since there is no “one best” strategy to solve problems (Donaldson, 2001), proposed strategies can also bring consequences positively or vice versa. Therefore, continuing this research by exploring possible consequences of each strategy in the field of environment, economics, social, etc. can widen the perspective in understanding the integration between strategic spatial planning and flood risk management.

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## APPENDIX

### APPENDIX 1 - INTERVIEW GUIDELINE

INTERVIEWERS	CONTEXT <i>(institutional structure and legislation)</i>	CONTENT <i>(plans/policies in practice)</i>	PROCESS <i>(cooperation between institutions/ stakeholders)</i>
<b>1. Expert in planning</b>	<ol style="list-style-type: none"> <li>1. What kinds of criteria and key issues of flood have been raised by flood manager for spatial planning in HCMC? How can they transfer to the criteria for strategic (spatial) planning?</li> <li>2. What are the role of the various levels of government in flood and land use management? Are these roles and responsibilities clearly defined?</li> <li>3. Are there any specific regulation of flood management in HCMC?</li> </ol>	<ol style="list-style-type: none"> <li>4. What do you think about Master planning in District 2? Does it care about elevation or climate-change flooding in this map?</li> <li>5. How are conflicts between flood management and land use in HCMC, District 2?</li> </ol>	<ol style="list-style-type: none"> <li>6. How is the relationship between planning system and flood management nowadays?</li> <li>7. What organizations have a leading role in the development of spatial scenarios and how is the cooperation among municipality, academic entities and consultancy?</li> <li>8. What are the major responsibilities of urban planners to deal with flood-related problems?</li> <li>9. What are the comments and suggestions for the cooperation between urban planning and flood management?</li> </ol>
<b>2. HCMC Department of Planning and Architecture (DPA)</b>	<ol style="list-style-type: none"> <li>1. Which organizations play the important role in implementing planning policy concerning the flood management? To what extent can they play?</li> <li>2. What is the role of Planning Information Center related to flood problem? What are the achievements and difficulties in accessing flooding information?</li> </ol>	<ol style="list-style-type: none"> <li>3. Do the recent plans consider flooding factor caused by climate change? If not, why?</li> <li>4. What do you think about master planning in District 2? Does it care about elevation or flooding in this map?</li> </ol>	<ol style="list-style-type: none"> <li>5. How is planning procedure related to flood management?</li> </ol>

<p><b>3. Steering Center of Flood Control (SCFC)</b></p>	<p>1. What are the orientation of government for coping with flood in HCMC? What are the plan and measure coping with current flooding and climate change in the future?</p>	<p>2. What are the reason of flooding in HCMC?</p> <p>3. What are the flood control projects recently?</p> <p>4. Are there any flood management/control program only for District 2?</p> <p>5. How are the results of these projects?</p> <p>6. What are the financial source for flood management?</p> <p>7. Tell me about Royal Haskoning's project? What is the difference with former projects?</p>	<p>8. How is the relationship and cooperation between municipal institutions in flood prevention?</p>
<p><b>4. Management Broad of District 2</b></p>	<p>1. Does District 2 have orientation or direction from higher government about flood management?</p> <p>2. What do organizations affect in solving flood problem in District 2? How are their roles?</p>	<p>3. What are the main flooding problem in District 2?</p> <p>4. How about local residents' responses about flooding problems? How is the management of government at different level?</p> <p>5. What do you think about master planning in District 2? Does it care about elevation or flooding in this map?</p> <p>6. How are the recent projects in District 2? Especially Thu Thiem - new urban area project?</p>	<p>7. How do the authorities in District 2 work with municipal level in flood management and planning?</p> <p>8. What are your recommendations to solve these current problems?</p>

## APPENDIX 2

### Overview relevant legal documents about planning and drainage management

Legal documents	Main objectives	Principle/qualities to achieve	Key concepts/ steps
<p><b>1. Circular No. 30/2004/TT-BTNMT by the Ministry of Natural Resources and Environment dated 01/11/2004 about "Guiding the order and content of the formulation, regulation and evaluation planning and land use planning".</b></p>	<ul style="list-style-type: none"> <li>- To surmount the irrational regulations in Circular No. 1842 by amending and supplementing new contents how to suit reality, to meet quality requirements and to ensure the feasibility of building and implementing planning.</li> <li>- To improve land use planning at all levels and to surmount suspended planning.</li> </ul>	<p>To set up the concredited regulations, specific scope and object of the application in planning.</p> <p>To regulate symbol system and sample used in land use planning;</p> <p>To regulate the contents of planning and the land use plan at national, provincial and local level</p>	<ul style="list-style-type: none"> <li>- To assess potential and current use of land.</li> <li>- To evaluate the consequence of previous land use planning in whole nation.</li> <li>- To determine the direction and objectives for land use planning.</li> <li>- To build land use project.</li> <li>- To analyze economic, social and environmental efficiency in land use planning projects in order to select the rational one.</li> <li>- To divide period of land use planning.</li> <li>- To build map of land use planning.</li> </ul>
<p><b>2. Decision No. 04/2005/QĐ-BTNMT by the Ministry of Natural Resources and Environment dated 30/06/2005 about "Process of setting and adjustment Planning, Land-use plan"</b></p>	<ul style="list-style-type: none"> <li>- To regulate necessary legal conditions and measures in order to implement the inspection and land use planning.</li> <li>- To identify the advantages, limitations in land use and economic-social development.</li> <li>- To evaluate the State management of land, the current land use and its change over time, in order to build land use planning suiting to long-</li> </ul>	<ul style="list-style-type: none"> <li>- To regulate the process of land use planning at regional and national level.</li> <li>- To build the synthesis reports and other relevant documents about land use planning. Then they are applied to competent authorities for deciding land-use planning; after approving, they are announced to public.</li> </ul>	<p>The order and content of land use planning at regional and national level</p> <p>Step 1: Preparation</p> <p>Step 2: To investigate, collect information, documents, data and maps.</p> <p>Step 3: To evaluate natural conditions, economic - social impacts of land use</p>

	term direction, mission, goals of national socio-economic development.		<p>Step 4: To evaluate the result of previous management and potential of land use in the future.</p> <p>Step 5: To build and choose the land-use plan.</p> <p>Step 6: To build the synthesis report; and to evaluate, approve and publicize land use planning.</p>
<b>3. Draft Circular No _/2012/TT-BTNMT by the Ministry of Natural Resources and Environment dated _/_/20_ about "Process of setting and adjustment Planning, Land-use plan"</b>	<ul style="list-style-type: none"> <li>- To analyze the advantages and limitations of natural resources, landscape and ecology.</li> <li>- To evaluate the characteristics socio-economic development and climate change.</li> <li>- To planning targets of other resources relate to land use.</li> </ul>	<p>Evaluating natural conditions, economic and social impacts of climate change related to land use (attach with diagrams, charts, maps, miniature, tables, analysis data) .</p> <p>Analyzing and assessing impact of climate change on land use</p> <ul style="list-style-type: none"> <li>- The impacts of sea level rise, flood tide, saltwater intrusion on land use</li> <li>- The effects of desertification, soil erosion, landslides on land use</li> </ul>	<p>The order of implementing and adjusting land-use planning at District level includes 3 steps:</p> <p>Step 1: Investigating and gathering additional data about economic - social condition, climate change and implementation of land use planning.</p> <p>Step 2: Adjusting the land use plan.</p> <p>Step 3: Developing synthesis report about the land use planning; then approving and announcing land use planning.</p>
<b>4. Decision No. 24/QĐ-TTg dated 06/01/2010 of Prime Minister about "Approval for planning adjustment of HCMC master plan in 2025"</b>	<p>Developing HCMC sustainably, harmonizing economic development with conservation of historical vestige, culture and environmental protection.</p> <p>Ensuring security and national defence by regional connection in order to become a civilized and modern city, which contributes to the development of the Southern region and the whole country.</p>	<ul style="list-style-type: none"> <li>- Development principles of old inner city: renovating existing situation based on the combination between cultural preservation (architectural value) and modern infrastructure; clearing slum along canal and in high density neighborhood; moving polluted factories and industrial facilities out of inner city.</li> <li>- Development principles of new inner city: focus on the construction</li> </ul>	<p>Urban development following the centralized model with multi-polar, i.e. central area is inner city area with a developing radius of 15km and 4 developing poles:</p> <ul style="list-style-type: none"> <li>- Developing a multi-central city with synthetic center in old inner urban areas and other city centers in four directions of development;</li> <li>- Developing city following two main directions: East and South</li> </ul>

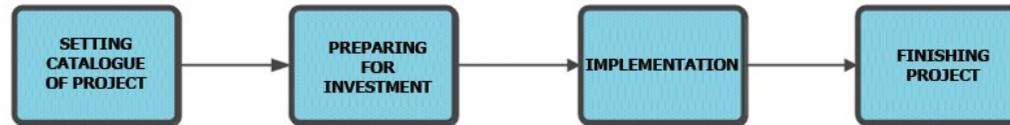
	<p>Gradually became a center of industry, services, science and technology in Southeast region and Asia.</p>	<p>of new urban areas in large-scale, synchronizing social infrastructure and technical infrastructure; e.g. Thu Thiem New Urban Area (District 2) will complement the tourism functional, multi-disciplinary services for existing central area which is not capable of development.</p> <p>- Development principle of suburban areas: focus on building the rural area following new rural model and investing modern satellite towns in order to ensure sustainable development and protection of the urban environment.</p>	<p>towards the sea; and the two minor directions: West - North and West, West - South;</p> <p>- No development in the strict conservation area - Can Gio Mangrove, the special-use forests, protection forests in Binh Chanh District and Cu Chi District.</p> <p>- Developing city with the goal of ensuring security and national defence.</p>
<p><b>5. Decision No.752/QD-TTg dated 19/06/2001 of Prime Minister about "Approval for HCMC master plan of drainage system in 2020"</b></p>	<p>a) Assessing the status of rainy and wastewater drainage systems in HCMC.</p> <p>b) Identifying the basic orientation; improving the drainage and sewage system in HCMC; identifying priority projects for the period 2001 - 2005;</p> <p>c) Building the Program of investment, renovation and upgrading drainage system for the period 2001 - 2020; estimating the total investment; identifying investment sources to eliminate urban inundation and to reduce urban pollution; building the Program of raising capacity for management and operation drainage system.</p>	<p>- Taking full advantage of existing drainage systems; upgrading and developing the drainage system suiting to general development of HCMC.</p> <p>- To existing urban areas with common sewer systems (storm water and waste water): build sewer to collect wastewater and transfer to treatment area.</p> <p>- To new urban areas: build common drainage system at first, later build its own sewer system in planning process if applicable.</p> <p>- Wastewater from manufacturing agencies and public services must be treated locally following the current regulations before discharging into</p>	<p>HCMC Drainage Company in is responsible for managing, operating and maintaining entire drainage system; for building training program for staff ; for buying materials and equipments; and for planning investment to build the urban sewer system.</p>

		the public sewer system.	
<b>6. Decision No. 6566/2005/QĐ-UBND dated 26/12/2005 of the People's Committee of Ho Chi Minh City on approval for the Detailed Project Design at scale 1/2000 scale of Thu Thiem New Urban Area</b>	Thu Thiem - New Urban Center is a expanding urban center of HCMC with the main function as a center of finance, commerce and premium services of the city. It is also a center of culture, leisure and recreation; undertaking a number of functions that the existing town center are lacking.	<p>Thu Thiem Investment Management Board is responsible for publicizing detailed planning of Thu Thiem - New Urban Area; defining planning boundary for detailed planning scale 1/2000.</p> <p>Thu Thiem Management Board collaborates with the Department of Planning - Architecture and District 2 People's Committee in order to examine and supervise construction process and to fine wrong planning not obeying regulation and laws.</p>	<p>Urban Design Guidelines.</p> <p>Planning regulation for centers, residential area, open space, transportation and other infrastructure system.</p>
<b>7. Decree No.08/2005/ND-CP on Construction Planning</b>	Providing guidelines of formulation, approval and management of the construction planning stipulated by the Construction Law	<p>The Urban Construction Plan comprises the general plan and the detailed plan. Decree No.08/2005/ND-CP provides that the general plan shall contain the following matters depending on characteristics and dimensions of a city.</p> <p>① Analysis and assessment of natural conditions, socio-economic conditions, etc.</p> <p>② Identification of potentials and motives for urban establishment and development for each period of urban development</p> <p>③ Orientation for urban space development including Inner Districts and Suburban District</p>	<p>In Decree No.08/2005/ND-CP, the detailed plan is required to determine the following mains in detail.</p> <p>① Determination of scope of detailed planning, land use area in the designed zones</p> <p>② List of proposed construction works including: new construction works, renovation works, preservation works in designed zones</p> <p>③ Determination of technical-economic indicators in terms of land use, technical and social infrastructure, requirements on space, architecture, urban designing and other specific requirements for each designed zone</p>

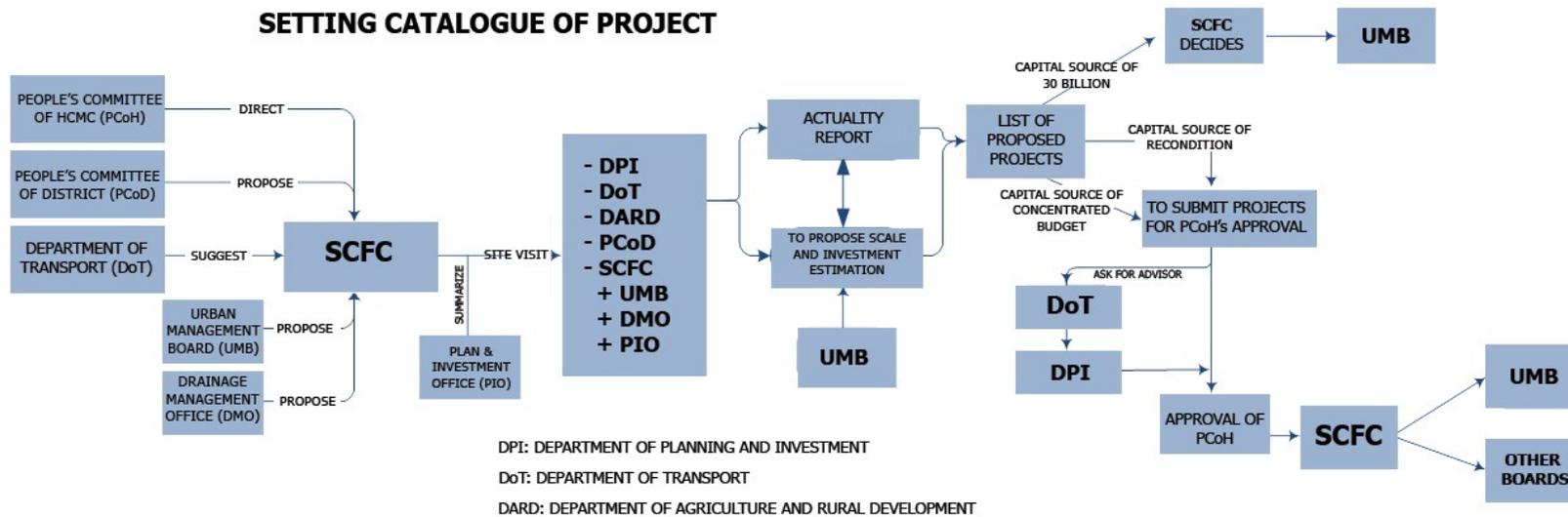
		<p>④ Orientation for development of urban technical infrastructure</p> <p>⑤ Identification of items which are given priority for development and resource for implementation</p> <p>⑥ Urban designing</p> <p>⑦ Assessment of urban environmental impacts and measures to minimize bad impacts on environment in the general planning design</p>	
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## APPENDIX 3

### STEP OF SETTING STRUCTURAL PROJECT PARALLELS ROYAL HASKONING'S PROJECT (2011-2015)

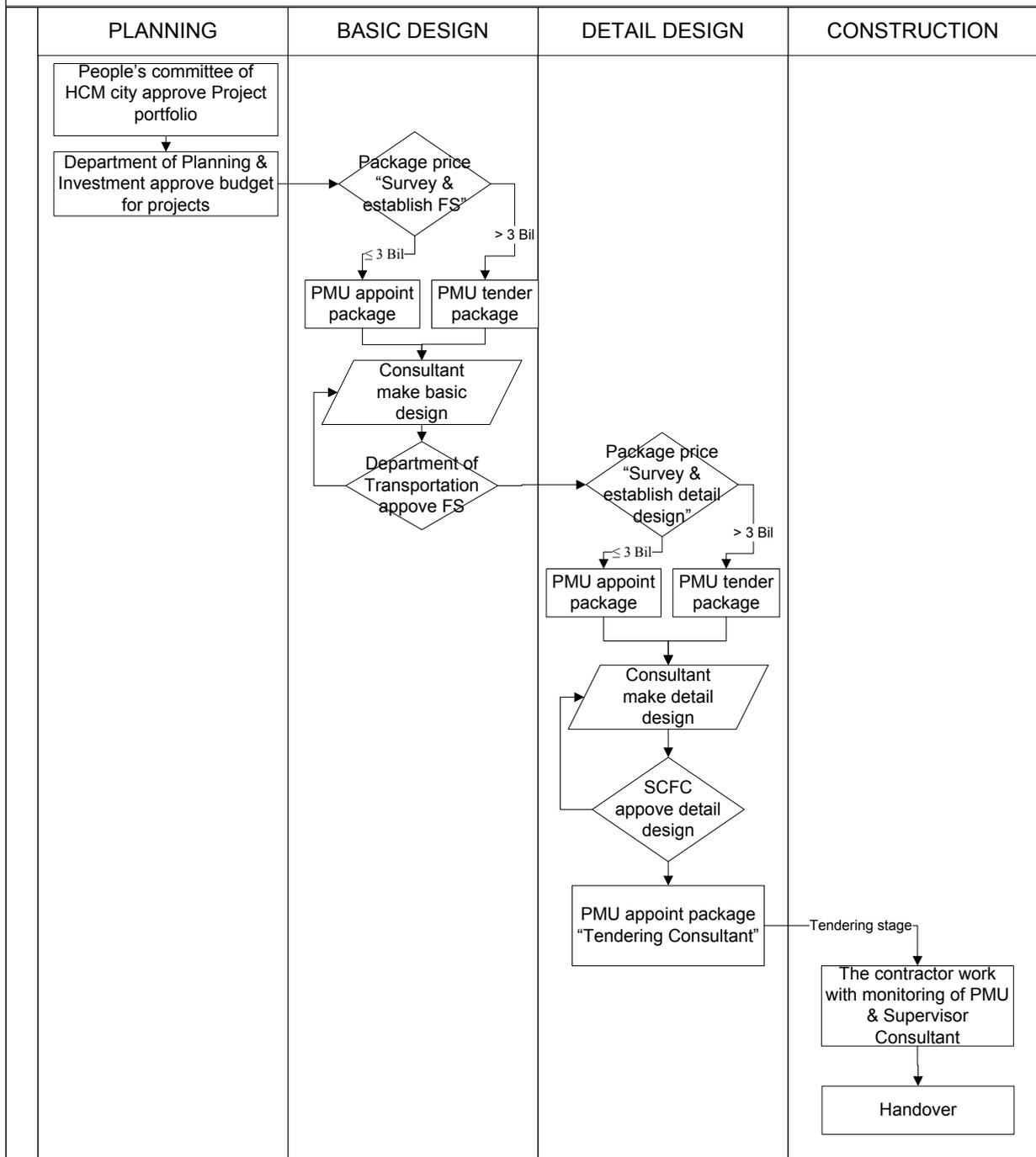


### SETTING CATALOGUE OF PROJECT

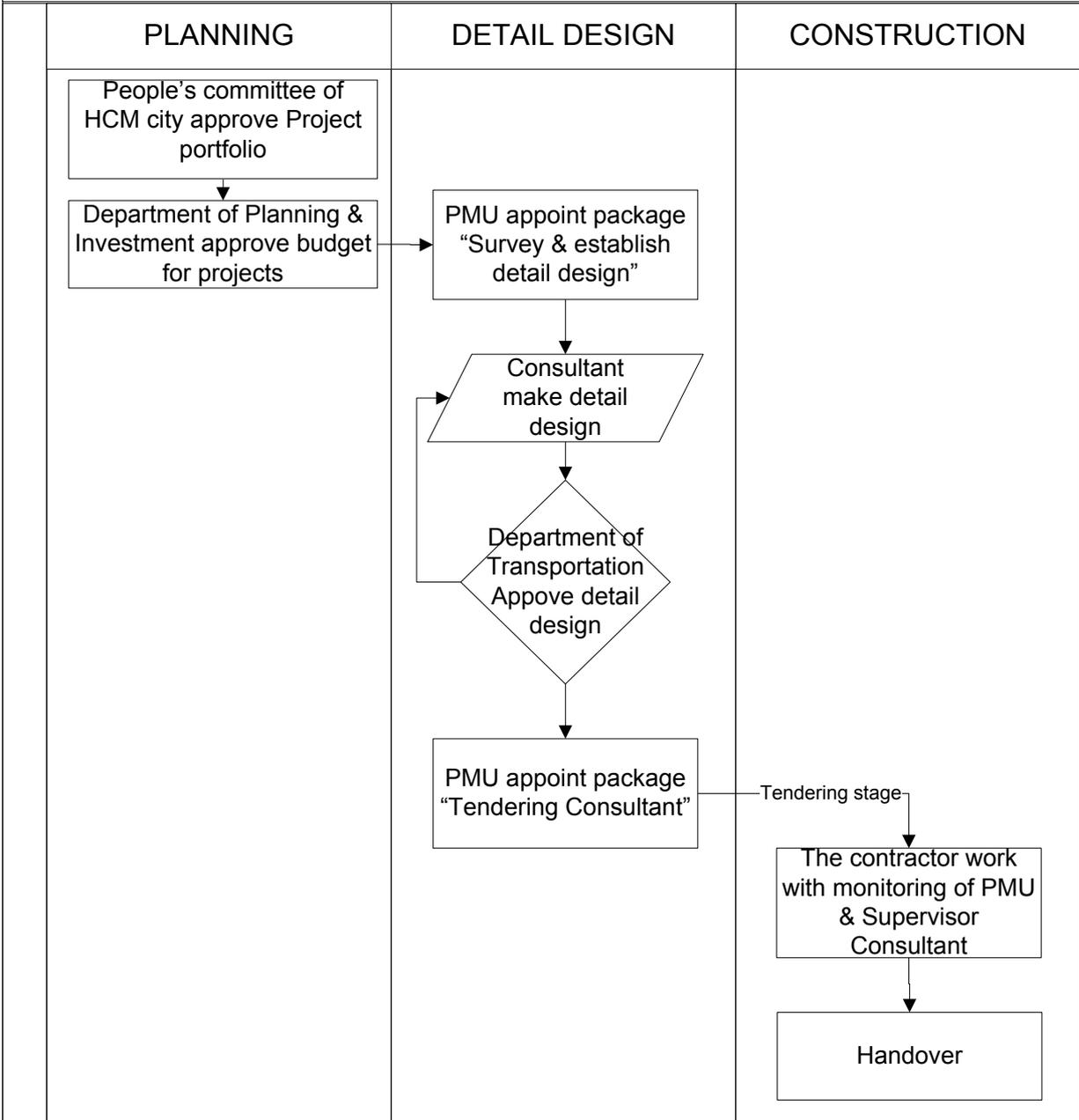


PREPARE FOR CATALOGUE OF PROJECT	SURVEY AND EVALUATE	REPORT AND PROPOSE THE CATALOGUE
<p>BASED ON:</p> <ul style="list-style-type: none"> <li>- PROGRAM OF FLOOD REDUCTION IN PERIOD 2011-2015.</li> <li>- GUIDELINE OF PEOPLE'S COMMITTEE OF HCMC.</li> <li>- PRACTICAL REQUIREMENTS FROM PEOPLE'S COMMITTEE OF DISTRICT; LOCAL MANAGEMENT (DMO)</li> </ul>	<ul style="list-style-type: none"> <li>- BASED ON SUMMARY LIST FROM PROPOSAL OF INSTITUTIONS.</li> <li>- DMO AND PIO ARE RESPONSIBLE FOR MAKING SITE VISIT PLAN.</li> <li>- UMB IS RESPONSIBLE FOR PROPOSING SCALE AND INVESTMENT ESTIMATION</li> </ul>	<p>BASED ON CAPITAL RESOURCE TO CLASIFY PROJECT:</p> <ul style="list-style-type: none"> <li>- TO 30-BILLION RESOURCE: PCoH GIVES DECISION FOR SCFC.</li> <li>- TO RESOURCE OF RECONDITION AND CONCENTRATED BUDGET: PCoH ASKS FOR ADVISORS FROM MoT AND DPI TO GET AGREEMENT OF PROJECT LIST AND PLAN OF CAPITAL ALLOCATION.</li> </ul>

FLOOD PREVENTION PROJECTS: GROUP B & C (TOTAL INVESTMENT FROM 1000 TO 15 BILLION)



**FLOOD PREVENTION PROJECTS: GROUP C (TOTAL INVESTMENT BELOW 15 BILLION)**



**APPENDIX 4**  
**INTERVIEWS**

**I. Interviewee A:** Director of Thu Thiem management board (Investment and Construction), District 2

Date and time: 08.00 Mon 06/05/2013

Vietnamese	English
<p><b>1. Vấn đề ngập lụt hiện nay ở quận 2 là do đâu?</b></p> <ul style="list-style-type: none"> <li>- Đường cống (hạ tầng chưa có)</li> <li>- Đô thị lấn ra, k có đất thịt để thấm nước, mặt đất bị bê tông hóa</li> <li>- Dù địa hình như thế nào (cao thấp), thì cũng vẫn bị ngập vì lý do con người</li> <li>- Cống 800 nhưng chỉ đặt 400, các dự án phát triển k ai đi quản lý hạ tầng do đó bị chủ đầu tư qua mặt, che mắt người dân bằng bộ mặt đẹp của cơ sở hạ tầng trên mặt đất.</li> <li>- Chia nhỏ dự án đầu tư, mỗi dự án có chủ đầu tư khác nhau (xin giấy phép sở QH) nên hệ thống hạ tầng k đồng bộ (k đúng kích thước quy định và hệ thống đấu nối k hợp lý) vì lý do lợi nhuận.</li> <li>- Không có sự phối hợp giữa các nhà đầu tư do tư tưởng cục bộ (vd hệ thống cống 800 chảy vào 400) + không có người cầm trịch là nhà quản lý nhà nước tốt → ngập là chuyện đương nhiên</li> </ul>	<p><b>1. What are the main flooding problems in District 2?</b></p> <ul style="list-style-type: none"> <li>- Sewage system (insufficient infrastructure)</li> <li>- Urban expansion: there is no absorbent ground, ground is being concreted</li> <li>- Despite the terrain (high-low), it is also flooding due to human activity.</li> <li>- Diameter of sewage should be 800, but only put 400. There is no manager for infrastructure, so the investors deceive local people by the beauty of the infrastructure on the ground.</li> <li>- Split investment projects, each project has different investors (planning permit basis) the infrastructure don't synchronize (incorrect specified size and connection systems is not rational) due to profit.</li> <li>- There is no coordination among investors due to local ideas (e.g. wastewater in sewer of 800 flow into the sewer of 400) ; and no good managers, so flooding is understandable.</li> </ul>
<p><b>2. Phản ứng của người dân về vấn đề ngập lụt như thế nào? Quản lý của các cấp chính quyền như thế nào?</b></p> <p>Hờ hững về luật pháp, trách nhiệm quy hoạch như thế nào, hiện nay chưa có văn bản pháp lý xử lý lỗi nhà quy hoạch, công ty tư vấn thiết kế. Pháp luật phải quản lý hết và</p>	<p><b>2. How about local residents' responses about flood problems? How is the management of government at different level?</b></p> <p>Lack of laws and responsibility in planning. Currently, there is no legislation to dispose the error processing of the planning and</p>

quy định trách nhiệm rõ ràng. Trách nhiệm khi 1 vấn đề phát sinh trong khu QH thì ai là người chịu trách nhiệm và chịu như thế nào, cần xử cho ra lẽ. Thiệt thòi cho người dân, khi xảy ra ngập lụt, họ k biết kiến nghị đến ai, vì thiếu việc quy trách nhiệm cụ thể cho các stakeholders liên quan (thầu, chủ đầu tư hay nhà nước làm việc k minh bạch), hoặc đùng đẩy trách nhiệm. Đó là lỗi cơ chế, hệ thống do đồng lương thấp nên chất lượng công việc k cao, thiếu tinh thần trách nhiệm.

Gần đây luật quy hoạch bắt đầu quy định việc hợp tác với người dân trong QH, nhưng kiến thức người dân k đủ để tham gia và họ cũng không quan tâm nhiều đến tổng thể qh chung, chỉ quan tâm đến những thiệt hại liên quan đến lợi ích cá nhân → hợp bản mang tính chất hình thức.

K giải quyết dc tình hình hiện tại, nên đã có phương án bỏ đô thị cũ lấy đô thị mới.

### 3. Quận 2 có định hướng/ chỉ đạo nào về vấn đề quản lý ngập lụt hay không?

Không. Chỉ có khu đô thị mới Thủ Thiêm với code san nền là +2.4m nên tương đối k bị ngập, theo quy hoạch thì đã hoàn chỉnh rồi. Vấn đề nằm ở con người quản lý thi công thực hiện có đúng với bản quy hoạch đã có hay không! Vấn đề thứ hai nằm ở nguyên vật liệu san lấp gây ảnh hưởng đến hệ thống hạ tầng (môi cát dưới sông gây sạt lở lòng sông, k đóng bờ kè, nhà bị sập)

Thiếu đầu tư, đầu tư k hiệu quả, bài bản và thiếu trách nhiệm

Quy hoạch tồi, manh mún → quy hoạch phải có kết nối.

design consulting firm. Legislation needs to manage all responsibilities and clearly define responsibilities. If problems arise in the planning areas, who will take responsibility and how to treat that guilty. Disadvantages for people, when flooding occurs, they don't know who to propose, because of the lack of specific responsibilities for various stakeholders (contractor, owner or public are working transparently), or blame each other. That is the error of mechanism due to low wages system which lead to low quality work and lack of responsibility.

Recently planning law start to regulate the cooperation with local people in the planning. However, they do not have enough knowledge to participate in and they did not pay much attention to overall master plan; they are only interested in the damage related to personal interests. Therefore, meeting is just formal appearance.

Because, they cannot solve the current situation, so they intend to leave the old urban plan and build the new one.

### 3. Does District 2 have own orientation or direction from higher government about flood management?

No. Only the Thu Thiem new urban area with building elevation of +2.4 m, so flood will not happen; it was planned and completed. The problem belongs to the construction manager in whether implementing the planning drawing properly or not! The second problem lies in the filling material which affects to infrastructure (i.e. digging river sand in the riverbed causes landslides and collapsed houses with no embankment)

Lack of investment or inbasic, irresponsible and ineffective investment.

Bad and fragmented planning should be

**4. Quy hoạch chung của quận 2 đã tiến hành như thế nào? QH này đã có quan tâm đến vấn đề cao độ địa hình và BDKH?**

BĐKH có khả năng bị phóng đại để thu lợi nhuận trong quá trình nghiên cứu. Các nghiên cứu quá trừu tượng, không có hồ sơ số liệu cụ thể về BĐKH. Cường điệu và ra vẻ có trách nhiệm để lấy lợi nhuận. QH hiện nay chưa tính tới vấn đề BĐKH toàn cầu

Code địa hình tự nhiên thay đổi do người dân tự nâng code xây dựng để tránh ngập, không có người quản lý chung nên code cao độ lộn xộn, k đồng bộ.

Các dự án quy hoạch nhỏ chỉ tuân theo các con đường trục chính của bản quy hoạch chung quận 2, còn các con đường nhỏ tùy thuộc vào chủ đầu tư → đường nhỏ manh mún tùy thuộc vào nguồn tài chính của chủ đầu tư. Vì mâu thuẫn về quyền lợi k đấu nối về khu dân cư cũ hay giữa các khu dân cư khác chủ đầu tư với nhau : tình hình chung của xã hội – k có người cầm trịch, nhạc trưởng

Thiết kế QH chuẩn và đẹp nhưng quản lý sau QH rất khó do k ai quản lý.

**5. Những dự án QH hiện nay ở quận 2 ra sao? Đặc biệt là dự án đô thị mới Thủ Thiêm?**

Quy hoạch Thủ Thiêm đang ở giai đoạn giải phóng mặt bằng (đã được 98%), 2% còn lại do k thỏa thuận được giá với người dân. Chính sách k công bằng, nhà nước k cưỡng chế được. bây giờ đất nào giải tỏa được thì

improved by connection.

**4. What do you think about master planning in District 2? Does it care about elevation or flooding in this map?**

Climate change is magnified to get profits during the research process. The researchs are also too abstract, i.e. no specific data about climate change. And the exaggeration seems to have taken responsibility for profit. Current planning doesnot take climate change into account.

Natural elevation has been changed because local people themselves level building elevation to avoid flood. Since there is no general manager, the building elevation is not synchronized.

The small planning projects only follow the main roads of the general plan of District 2. The small streets depend on the investors, so the fragmentation happens because of financial resources of the investors. Because there is no general manager, the benefit conflict happens between different investors; i.e. they do not want to connect the infrastructure in their residential areas with each other.

The planning design is nice and standard, but the management in implementation is difficult cause no one manage.

**5. How are the recent projects in District 2? Especially Thu Thiem - new urban area project?**

Thu Thiem's planning is in the clearance phase (already was 98%), 2% left because of price agreement with local people. Policies are not fair, the government cannot coerce them. Any free lands are being put in auction

chia ra đem bán đấu giá cho nhà đầu tư theo đúng quy hoạch Sasaki được duyệt. Tuy nhiên không có đảm bảo về mặt hạ tầng có tuân theo đúng bản quy hoạch chuẩn hay không vì lợi nhuận của nhà đầu tư.

Thiếu thiết bị công nghệ hiện đại để thực hiện chính xác hạ tầng kỹ thuật, VD bể chứa nước bằng ống cống dưới đường, mưa ít k ngập, mưa nhiều ngập. Hay chưa có thoát nước theo hệ thống và có xử lý, theo time rác thải gây tắc nghẽn. QH k bền vững vì k có định hướng cho tương lai.

Thủ Thiêm (650 ha) với đặc điểm là bán đảo, kênh rạch chằng chịt, có hồ sông nên khả năng thoát nước tốt. Chủ đầu tư lớn của Thủ Thiêm hiện nay là nhà nước nên họ quản lý tổng thể, nhất là hệ thống hạ tầng sẽ được làm đồng bộ hết, đường trục chính, cao độ sau đó mới giao từng lô cho nhà đầu tư. Quy trình này hợp lý và tương đối bài bản. Tuy nhiên, đối với các lô đất dân cư nhỏ lẻ, mọi thứ đều được bàn giao cho nhà đầu tư (hệ thống hạ tầng, lô đất...). Điều này dẫn tới tình trạng "tùm lum" trong quy hoạch

#### **6. Ban quản lý quận 2 đã hợp tác với các cấp chính quyền thành phố trong vấn đề QH/quản lý ngập lụt như thế nào?**

Hệ thống quản lý QH quận 2 theo kiểu quản lý đô thị, nghĩa là trên bề mặt giấy phép và Thanh tra xây dựng chỉ quản lý công trình trên mặt đất (mật độ, số tầng, khoảng lùi, etc) k có ai quản lý hạ tầng có làm đúng k (đấu nổi hạ tầng ntn nào?)

UBND quận có Phòng quản lý đô thị trực thuộc, tuy nhiên trách nhiệm của phòng này k rõ ràng, lỏng lẻo chỉ kiểm tra trên bề mặt và

to investors in accordance with the approved plans of Sasaki. However there is no guarantee whether infrastructure comply with the planning or not; it depends on the investors' profit

Lacking of modern equipment and technology to perform precise technical infrastructure; e.g. underground sewer lines cannot stand under heavy rain condition; insufficient treatment systems; garbage causes congestion over time, which labor working is not effective. This is a kind of unsustainable planning because of lacking future orientation.

Thu Thiem (650 ha) is considered as a peninsula with high density of canals and river pool. Hence, the natural drainage is an advantage. Moreover, the major investors of Thu Thiem project is government, so they manage in a comprehensive way; e.g. infrastructure systems will be synchronized from the main road to the building elevation; and then hand over the building plot for investors. This process is logical and rational. However, in small neighborhood projects, everything is handed over for investors (infrastructure system, building plot, etc). This leads to confusion in planning.

#### **6. How do the authorities in District 2 work with municipal level in flood management and planning?**

The Management System in District 2 follows urban management style, which means management via permission on the paper; and building inspectors manage only the works on the ground (density, number of stories, spatial distance, etc); nobody manages how underground infrastructure system works (does it have a right connection to each other?)

giấy phép đầu tư xây dựng dự án. Giữa bản vẽ hạ tầng và thực tế rất khác nhau. Hạ tầng thì sở GT quản lý. Sở QHKT k quản quá trình thực hiện QH, chỉ quản trên giấy tờ về nguyên tắc. Do k có người cầm trịch quản lý (bao trùm là cơ chế quản lý), nên hoạt động qh rời rạc, trách nhiệm của các bên tham gia k rõ ràng.

Vì lương nhân viên thấp quá → làm khó thông tin, làm việc k có trách nhiệm, báo cáo k đúng thực tế tình hình, k thừa nhận khuyết điểm. đó là lỗi cả hệ thống, k sửa chữa từ gốc.

### 7. Những cơ quan nào có tính chất ảnh hưởng đến vấn đề QH giải quyết ngập lụt quận 2? Vai trò của họ như thế nào?

Trong 1 bản QH có sự tham gia của 4 đối tác nhà nước chính:

- Trung tâm chống ngập :làm việc trùng với Sở GT một số dự án chống ngập (ở khu vực nội đô)
- Sở giao thông vận tải: quản hạ tầng giao thông, hệ thống thoát nước dưới mặt đường
- Sở QHKT: chỉ binh QH
- Sở nông nghiệp và phát triển nông thôn: quản hồ điều tiết, đê điều, bờ kè, giữ vai trò ở huyện (nơi còn nông nghiệp)

Luật QH có nhiều, nhưng trách nhiệm quản

District People's Committee has Urban Management Office. However, the responsibility of this Office is unclear; i.e. just checking building on the ground and building permission of each project. Furthermore there is a huge difference between drawing layout and reality. On the one hand, infrastructure system is under control of Department of Transport. On the other hand, Department of Planning and Architecture just manages planning on paper layout. Therefore, planning activity is fragmented and the responsibilities of relevant actors are unclear, because of lacking central leader in particular and mechanism in general.

One more reason is the low salary for state staffs, which makes planning information difficult to access and working attitude lacks responsibility such as wrong report comparing to actual situation or deny of shortcomings. In short, that is the fault of mechanism, which needs the huge effort to fix at root.

### 7. What do organizations affect in solving flood problem in District 2? How are their roles?

In a master plan, there are 4 main partners take part in:

- SCFC: works overlap with the Department of Transport in a number of flood prevent project (in inner city).
- Department of Transportation: manages traffic infrastructure, drainage under the road.
- Department of Planning and Architecture: designs planning drawings.
- Department of Agriculture and Rural Development: manages harmonious lakes, dikes, embankments, playing a role in the

lý sau QH không rõ ràng, không phát huy tác dụng của luật QH.

Thông tin tiếp cận QH không được cập nhật, thông tin QH đang bị bung bít để có thể đem ra kinh doanh với nhà đầu tư. Nhà đầu tư mua xong lô đất mới biết được các thông tin quy định quy hoạch. Đây là cơ chế xin cho. Không công bố công khai QH, gây ảnh hưởng lợi ích nhà đầu tư → nhà đầu tư mất niềm tin trong QH (thu nhỏ tiết diện ống thoát nước và các công trình kỹ thuật khác) để đảm bảo lợi nhuận trong kinh doanh.

#### 8. Có kiến nghị gì để giải quyết vấn đề hiện nay?

Hiện nay giữa hạ tầng và quy hoạch đang tách biệt nhau nên cần có sự tham gia làm việc chan hòa giữa quy hoạch và hạ tầng.

- Luật pháp chặt chẽ, thưởng phạt nghiêm minh đúng mực, theo đúng nền kinh tế thị trường
- Phân vai trách nhiệm rõ ràng, cụ thể (nhà thầu, chủ đầu tư, giám sát, thiết kế, nhà nước) vì hiện nay còn chung chung
- Cải tiến thu nhập vì trách nhiệm đi chung với quyền lợi.

district (which still has agriculture)

Planning laws are a lot, but the management responsibilities after planning is unclear; not promote effects of planning laws.

Planning information access is not updated; planning information is covered in order to do the business with investors. Only after completing buying new plots, the investors can receive specified and accurate information. This is "ask-give" mechanism. The planning is not informed publically which can influence investors' benefit. Therefore, the investors have to cheat in planning (e.g. minimize sewer section and other technical works) to ensure profit in their business.

#### 8. What are your recommendations to solve these current problems?

Currently, infrastructure and planning are separated; thus, we should have harmonious working between planning and infrastructure.

- Tight laws with proper rewards and punishments according to economic market.
- Classify clear responsibilities and concrete (contractors, investors, monitoring, design, state) because this is still too general.
- Improved income since responsibilities always go along with rights.

## II. Interviewees:

**Interview B** - Manager of drainage project, SCFC. Date and time: 13.00 Mon 06/05/2013

**Interview C** - Permanent vice-director, SCFC. Date and time: 08.00 Wed 08/05/2013

Vietnamese	English
<p><b>1. What are the reason of flood in HCMC?</b></p> <ul style="list-style-type: none"><li>- Lũ từ thượng nguồn (hồ Dầu Tiếng, nhà máy thủy điện Trị an)</li><li>- Ảnh hưởng triều từ biển đông</li><li>- Mưa ngày càng gia tăng</li><li>- Chưa có đê bao</li><li>- Hệ thống thoát nước cũ chưa đáp ứng đủ (theo JICA, tp HCM cần có 6500km vừa kênh vừa cống, nhưng hiện nay chỉ có 2100 km)</li><li>- San lấp kênh rạch</li></ul>	<p><b>1. What are the reason of flooding in HCMC?</b></p> <ul style="list-style-type: none"><li>- Flooding from upstream (Dau Tieng reservoir, Tri An hydroelectric enterprise)</li><li>- Tidal influence from the East Sea</li><li>- Increasing rainfall</li><li>- No embankments</li><li>- Old drainage system cannot meet the demand (According to JICA, HCMC 6500km for both canal and sewage, but now just got 2100 km)</li><li>- Filling canals</li></ul>
<p><b>2. Định hướng của chính phủ trong việc quản lý ngập lụt TPHCM như thế nào? Biện pháp và kế hoạch là gì để ứng phó ngập lụt hiện tại và với BĐKH trong tương lai?</b></p> <p>Theo quy hoạch tổng thể lần thứ nhất của JICA đã được Thủ tướng chính phủ phê duyệt tại QĐ số 752/QĐ-TTg ngày 19/6/2001. Trong đó, chi TP.HCM ra làm 6 lưu vực chính: Vùng Trung tâm, Tây, Nam, Bắc, Đông Bắc và Đông Nam.</p>	<p><b>2. What are the orientation of government for coping with flooding in HCMC? What are the plan and measure coping with current flooding and climate change in the future?</b></p> <p>According to the first master plan of JICA approved by the Prime Minister by Decision No.752/QĐ-TTg dated 06.19.2001. Flood plan in HCMC is divided into 6 major watersheds: Centre, West, South, North, Northeast and Southeast.</p>
<p><b>3. Những dự án quản lý ngập lụt trong thời gian gần đây là gì?</b></p> <p>Trước đây các dự án thoát nước do nhiều chủ đầu tư quản lý. Từ 2008, TTCN thành lập thay mặt UBND.TP quản lý toàn bộ hệ thống thoát nước và các dự án được quy về 1 đầu mối là Trung tâm chống ngập:</p>	<p><b>3. What are the flood control projects recently?</b></p> <p>Previously drainage projects invested by many investors. Since 2008, SCFC was established on behalf of HCMC PC in the management of drainage system; since then all the flood projects are under control of</p>

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| <ul style="list-style-type: none"> <li>a. Dự án Tiêu thoát nước và giải quyết ô nhiễm kênh Tham Lương - Bến Cát - Rạch Nước Lên (400 triệu USD, hoàn thành 30%)</li> <li>b. Dự án Vệ sinh môi trường TP.HCM, lưu vực Nhiêu Lộc - Thị Nghè - GĐ1 (300 triệuUSD, hoàn thành 100%)</li> <li>c. Dự án Vệ sinh môi trường TP.HCM, lưu vực Nhiêu Lộc - Thị Nghè - GĐ2 (450 triệu USD )</li> <li>d. Dự án Nâng cấp đô thị lưu vực Tân Hóa - Lò Gốm (200 triệu USD, hoàn thành 40%)</li> <li>e. Dự án cải thiện môi trường nước lưu vực Tàu Hũ-Bến Nghé - Kênh Đôi - Kênh Tẻ - GĐ1 (350 triệuUSD , hoàn thành 80% )</li> <li>f. Dự án Cải thiện môi trường nước lưu vực kênh Bến Nghé - Tàu Hũ - Kênh Đôi - Kênh Tẻ giai đoạn II</li> <li>g. Dự án xây dựng công kiểm soát triều Nhiêu Lộc - Thị Nghè</li> <li>h. Các dự án về kiểm soát triều, đê bao, nạo vét kênh rạch tiêu thoát nước chính thực hiện theo Quyết định 1547/QĐ-TTg</li> <li>i. Chương trình đột phá giảm ngập nước thành phố GD 2011-2015 ban hành theo Quyết định số 26/2011/QĐ-UBND. Bao gồm 159 dự án với TMĐT= 10.000 tỷ</li> <li>j. Các dự án hệ thống thu gom và nhà máy xử lý nước thải</li> <li>k. Các dự án nạo vét kênh rạch</li> </ul> | <p>SCFC:</p> <ul style="list-style-type: none"> <li>a. Drainage and pollution solution project in Tham Luong - Ben Cat - Nuoc Len Rach (400 million USD, 30% completed)</li> <li>b. HCMC sanitation project in Nhieu Loc - Thi Nghe - Phase 1 (300 million USD, 100% completed)</li> <li>c. HCMC sanitation project in Nhieu Loc - Thi Nghe - Phase 2 (450 million USD)</li> <li>d. Urban upgrading project basin Tan Hoa - Lo Gom (200 million USD, 40% completed)</li> <li>e. Water improvement project in Tau Hu- Ben Nghe - Kenh Doi - Kenh Te - Phase 1 (350 million USD, 80% completed)</li> <li>f. Water improvement project in Ben Nghe- Tau Hu - Kenh Doi - Kenh Te - Phase II</li> <li>g. Building tidal-control sewer project in Nhieu Loc - Thi Nghe</li> <li>h. The tide control, levees, canals dredge, drainage projects in Decisions 1547/QĐ-TTg</li> <li>i. Program of flooding reduction - period 2011- 2015 in Decision No. 26/2011/QĐ-UBND, including 159 projects with 10.000 billion</li> <li>j. Wastewater collection projects and treatment plants</li> <li>k. Canal dredge projects</li> </ul> |
|--|---|

**4. Có dự án nào cho riêng biệt cho việc quản lý ngập lụt ở quận 2?**

Chưa có dự án cụ thể cho quận 2, nhưng theo quy hoạch 1547: làm đê bao tiểu vùng vì khu vực rất thấp, chưa có dự án hktk gì, Thủ Thiêm 3.0 m sau 2015 mới làm, 2020 xong. Bờ hữu sông Sài Gòn làm đê bao lớn vì tp

**4. Are there any flood management/control programs only for District 2?**

There are no concrete project for District 2. However, it will follow Decision 1547: dike for small region because of low elevation; no infrastructure project; elevation in Thu Thiem (3.0 m) will be built after 2015,

phát triển lớn. bờ tả làm cụm đê bao.

## 5. Kết quả những dự án chống ngập ra sao?

Tổng số điểm ngập được xóa là 39 điểm, còn lại 31 điểm, giảm 67,7% so với năm 2009. Trong đó Vùng trung tâm còn 14/31 điểm, giảm 79,7% so với năm 2009.

Kết quả xử lý trong 06 tháng đầu năm 2012: Cải thiện tình trạng ngập do mưa: 49 trận mưa, làm ngập 31 điểm, giảm 36,73% so với cùng kỳ.

Xuất hiện 14 điểm tái ngập do ảnh hưởng thi công dự án: Trong đó 06 điểm ngập nặng thuộc dự án Nâng cấp đô thị (lưu vực Tân Hoá – Lò Gốm) và 08 điểm ngập nhẹ.

Ngập do triều: Đã xử lý 03 điểm ngập nặng (Phan Đình Phùng, Nguyễn Thị Thập và Bình Quới); đang xử lý 02 điểm ngập nặng (Ngô Tất Tố và Bùi Hữu Nghĩa).

## 6. Nguồn tài chính cho việc quản lý ngập lụt?

+ Nguồn vốn ODA

từ các tổ chức nước ngoài (các dự án 1547, nhiều lộ thị nghè, tân hóa lò gốm, tàu hủ bến nghé...)

\* JICA

\* FASEAP

\* Các tổ chức nước ngoài khác

+ Nguồn vốn ngân sách thành phố

\* Vốn Ngân sách tập trung - TTCN xin UBND.TP thông qua

\* Vốn Trùng tu thoát nước (20 tỷ) - TTCN

finished in 2020. Right riverside of Saigon river will be protected by big embankment because of new urban development. The left one will be protected by clusters embankment.

## 5. How are the results of these projects?

The total flooding points deleted is 39, still left 31 points, reduced 67.7% compared to 2009. In the central region left 14/31 points, reduced 79.7% compared with 2009.

Results in the first 06 months of 2012: improve flooded by rain: occurred 49 rains, 31 flooding points, reduced 36.73% compared to the same period.

Appearing 14 serious re-flooding points affected by construction project: 06 serious points in Tan Hoa - Lo Gom project and 08 light points.

Flooded by tides: 03 serious points was deleted (Phan Dinh Phung, Nguyen Thi Thap and Binh Quoi); 02 serious points are on progress (Ngo Tat To and Bui Huu Nghia).

## 6. What are the financial source for flood management?

+ ODA capital from foreign institutions (for project 1547, Nhieu Loc Thi Nghe, Tan Hoa Lo Gom, Tau Hu Ben Nghe, etc)

\* JICA

\* FASEAP

\* Other foreign organizations

+ City budget

\* Concentrated budget - SCFC ask HCMC PC's permit.

\* Water restoration budget (20 billion) - SCFC directly allocate.

trực tiếp phân bổ

\* Vốn Ủy quyền 30 tỷ - TTCN trực tiếp phân bổ.

**7. Mối liên hệ và sự phối hợp giữa các sở ngành thành phố trong công tác chống ngập như thế nào?**

Các cơ quan giữ các vai trò khác nhau; trong những giai đoạn khác nhau của 1 dự án lại có những ràng buộc khác nhau. Ví dụ: Về phân cấp của UBND TP thì TTCN làm chủ sở hữu quản lý toàn bộ phần hệ thống thoát nước (kể cả kênh rạch, nhà máy xử lý nước thải); Sở GTVT quản lý đường bộ (một số kênh rạch có chức năng giao thông); UBND quận huyện quản lý đường cấp quận, vỉa hè; Ngoài ra còn các đơn vị công trình hạ tầng khác (cấp nước, điện, điện thoại,...)

Khi trình duyệt dự án phải thông qua thẩm định của Sở GT. Khi 1 dự án chống ngập thì công cần sự phối hợp giữa tất cả các bên.

**8. Dự án của Royal Haskoning như thế nào? Có điểm khác biệt gì với những dự án trước đó ?**

Trước khi thành lập trung tâm, có dự án JICA của Nhật tài trợ (đây là dự án chủ yếu đào tạo nhân lực cho cán bộ quản lý nhà nước). Sau đó, FACEP của Châu Âu tài trợ 2 triệu usd để làm dự án chống ngập. Để nhận được quỹ đó, phải ký hợp đồng với tư vấn của Hà Lan – Royal Haskoning. Dự án kéo dài 3 năm (2010-2013), năm đầu tiên chỉ để thu thập dữ liệu về hiện trạng cơ sở hạ tầng và dự án chống ngập cho tương lai, tích hợp trên phần mềm có kèm theo yếu tố lún đất và BĐKH (2 yếu tố mới trong việc nghiên cứu ngập lụt thời điểm này). Dựa theo kịch bản nước biển dâng của Bộ tài nguyên và môi trường để ra biểu đồ ngập - ứng với các điều kiện như hệ

\* Authorized budget 30 billion - SCFC directly allocate.

**7. How is the relationship and cooperation between municipal institutions in flood prevention?**

Different institutions hold different roles in different stages of the project with different constraints. For example: According to the hierarchy system of HCMC PC, SCFC manages entire drainage system (including canals, sewage treatment plants), Department of Transportation manage road and some canals have transport function); District PC manage smaller road, sidewalks; other infrastructure agencies (water supply, electricity, telephone, ...)

SCFC submit the project for Department of Transportation' approval. When the project operate, it needs the coordination between all parties.

**8. Tell me about Royal Haskoning's project? What is the difference with former projects?**

Before SCFC was established , JICA project of Japan financed for flooding management (the project mainly built capacity for government personnel). After that, European fund FACEP financed 2 million USD for flood prevention projects. To receive that funds, SCFC has to sign a contract with the Dutch consultancy - Royal Haskoning. The project lasts three years (2010-2013); the first year is just for collecting the data of current infrastructure and future flood control projects to integrate in software with land subsidence and climate change factors (2 new elements in the research of flooding this

thống hạ tầng, dân số phát triển, lún đất - ở 1 năm nào đó. Sau đó SCFC sẽ chọn 1 kịch bản để phát triển.

Dự án xây dựng chiến lược tổng hợp tích lược lâu dài trong tầm nhìn 2020: bảo vệ - thích nghi – hòa hoãn. VD: chiến lược thích nghi : trả lại một số vùng nào đó cho mặt nước tự nhiên; hy sinh một số vùng ngoại ô (không cho nâng code nhà) để cứu vùng trung tâm vì không thể bảo vệ toàn thành phố; chuẩn bị thể chế - thông báo tăng suất ngập và hỗ trợ người dân bằng chính sách thuế

Bên cạnh đó dự án cũng có những giải pháp kỹ thuật:

- Nhà đối phó với lũ: nhà có kiến trúc đặc biệt, cao hơn
- Quy hoạch: không đặt các công trình công cộng quan trọng (trung tâm hành chính) trong vùng có khả năng lũ, xây dựng nhà cao tầng xanh, chỉ xây công viên. Đối với những vùng đã có dân cư: tái định cư
- Giả thuyết chiến lược để để tính toán mức độ ngập, tần số và thiệt hại do ngập lụt gây ra. Thành phố chưa quyết định thực hiện vì vấn đề kinh phí

Tóm lại, có sự cải tiến trong phương pháp tiếp cận công trình và phi công trình song hành (trong khi trước kia chỉ thiên về công trình kỹ thuật – chỗ nào ngập thì nâng đường hoặc làm cống) → k hiệu quả → phi công trình : tuyên truyền người dân ý thức hơn trong việc bảo vệ hệ thống nước thải.

time). Based on scenarios of sea rise of MONRE, flooding chart was built with the current conditions of infrastructure, population growth, land subsidence - in a certain year. Then SCFC will choose one scenario to develop.

Synthetic long-term strategic vision to 2020 includes protection - adaptation - mitigation; e.g. Adaptation concept: return a certain areas for natural water; sacrifice suburb areas (do not allow to raise building code) to save the center because it is impossible to protect the entire city; prepare legislations - inform density of flooded and support local resident by tax policy.

Besides, the project also has technical solutions:

- Houses deal with flood: the special architecture, high elevation.
- Planning: do not allocate important public buildings (administrative center) in flood-prone areas, building green building, leave space for park, resettle the existing residential areas.
- Hypothesis strategy of building sea dyke: calculate the degree of flooding, frequency and damage caused by flooding. Municipality has not decided because of financial problems.

In short, there is improvement in structural and non-structural approach parallel. Whereas structural approach was used previously - flooding was solved by increasing height or building sewer). Now non-structural approach will be used: propaganda people' awareness of protecting water systems.

### III. Interviewee D - Director of Planning Information Center, DPA

Date and time: 10.30 Tues 07/05/2013

Vietnamese	English
<b>1. Quy trình QH liên quan đến quản lý ngập lụt là như thế nào?</b>	<b>1. How is planning procedure related to flood management?</b>
<p>Liên quan đến vấn đề san nền và thoát nước mưa. Đồ án QH chung và chi tiết đều có thiết kế san nền và thoát nước mưa. Tuy nhiên, về mặt thực tế, không đủ điều kiện kinh tế để làm đồng bộ hệ thống hạ tầng. Chúng ta có vài vấn đề triển khai trên thực tế:</p>	<p>It is related in ground leveling and drainage. All of the general and detail projects have ground leveling and drainage design. However, in reality, our economic condition is not enough to synchronize infrastructure systems → we have some practical problems such as:</p>
<ul style="list-style-type: none"><li>- Nguồn lực tài chính có đủ tiềm lực để triển khai đồng bộ không</li><li>- Quản lý phải phối hợp và đồng bộ với nhau</li><li>- Cơ chế, thông tin, kỹ thuật...</li></ul>	<ul style="list-style-type: none"><li>- Do we have enough financial resources to implement synchronously</li><li>- The managements must coordinate and synchronize with each other</li><li>- Mechanism, information, technical, etc.</li></ul>
<b>2. Tổ chức nào đóng vai trò quan trọng trong việc quyết định thực thi chính sách quy hoạch có liên quan đến vấn đề quản lý ngập lụt? Vai trò của họ là gì?</b>	<b>2. Which organizations play the important role in implementing planning policy concerning the flood management? To what extent can they play?</b>
<p>Cụm từ "chống ngập" thay vì "ngăn ngừa ngập" trong tên "Trung tâm chống ngập" thể hiện tư thế bị động, chỉ đi giải quyết chuyện đã rồi. Mức độ quan tâm của TP về ngập lụt (thành lập SCFC) chưa đầy đủ</p>	<p>The term "flood control", instead of "flood prevent", in the name of SCFC represents a passive posture; i.e. it only solve problems which have been already happened. Municipality's concern about flooding (by establishing SCFC) is still not enough.</p>
<p>SCFC đi làm kế hoạch riêng của họ, làm theo mệnh lệnh bộ gt. Họ làm dự án ngắn hạn trực tiếp, khả thi, cục bộ trong đô thị trên năng lực tài chính, tổ chức thực tế. Vì thế, SCFC làm việc k hiệu quả vì tính bị động và ngắn hạn. Nhận thức về trách nhiệm và phạm vi công việc chưa đầy đủ. K thấy xây dựng định hướng kế hoạch giải pháp, tổ chức bộ máy thực hiện, kiểm tra đôn đốc, nghiệm thu, chỉ lo đi xin tiền nhà nước, gọi thầu, ăn chênh</p>	<p>SCFC is making their own plans following the orders of the Ministry of Transportation. They are making short-term, feasible, and local projects based on the financial capacity and actual organization. Therefore, SCFC's works are ineffective due to its passive and short-term features. The awareness of responsibilities and scope of work is insufficient. There is no plan to build oriented solutions, to implement the</p>

lệch. K nhận thức dc trách nhiệm lớn, k có đối thoại với sở qhkt, k thấy vai trò của SCFC.

Nếu có bắt buộc (cơ chế phối hợp) thì k làm việc chung vì sợ vướng việc của nhau, gây rắc rối, làm chậm tiến độ công việc. k chia sẻ cùng mục tiêu làm việc chung, k phối hợp trong công tác. Mỗi institution làm việc độc lập, nhất là vào triển khai kỹ thuật. 2 hay nhiều ông dờ ngời với nhau, chia sẻ thông tin để đưa ra giải pháp tốt nhất. Để ngời lại với nhau từ giai đoạn xác định nhiệm vụ thiết kế, chia sẻ mục tiêu, định hướng từ ban đầu.

### 3. Những QH gần đây có chú ý đến vấn đề ngập lụt do BĐKH gây ra hay chưa? Nếu chưa, tại sao?

Lập kế hoạch – master plan (lớn đến nhỏ) : sở QH thuê các cty tư vấn thiết kế (ảnh hưởng đến chất lượng đồ án qh). Sở làm nhiệm vụ duyệt bản vẽ. Các cty tư nhân tự động cập nhật thông tin về qh (BĐKH) → nếu k có kiến thức toàn diện, vĩ mô → giải pháp tức thời, ngắn hạn.

Chỉ có thông tin chung về bdkh, chưa có tiêu chuẩn quy phạm bắt buộc chi tiết về vấn đề này, vd: áp dụng hợp lý về kỹ thuật, kinh tế tài chính để bắt buộc chủ đầu tư, nhà thiết kế, cơ quan quản lý nhà nước áp dụng và thi hành. BĐKH là 1 từ rất mơ hồ, vì nó chung chung, chưa thành tiêu chuẩn cụ thể. Vì thế, nên có giải pháp khác nhau, áp dụng trên thực tế từ quy mô lớn đến nhỏ : giải pháp thiết kế, quản lý, đầu tư, dài trung ngắn hạn.

organizational structure, or to test the result to find problems. They just care about asking financial aid from the government or tenders and possess the differences. They do not aware their own responsibility nor communicate with the Department of Architecture and Planning.

In some cases, they rejected to work with others because they are afraid of disturbing others, creating more problems and slowing the process of the work. They did not share their opinion with others to come up with the same goals nor coordinate in the work. Each institution works independently, especially in developing technical aspect. Two or more disadvantage institution get together to share information to provide the best solution and to determine the design tasks, shared objectives and initial orientation at the beginning of planning stage.

### 3. Do the recent plans consider flood factors caused by climate change? If not, why?

DPA hires consultants companies to set up master plan (from general to detail), which affect to the quality of planning projects. Then DPA judges and approves the drawings. The private companies automatically update information on planning (related to climate change). In case they do not have comprehensive knowledge, the solution will be instant and short-term.

They only have the general information on climate change. There is no normative standards required details on this issue, which can apply appropriately on technical, financial and economic factor that can force investors, designers, agencies state to apply and implement. Climate change seems to be a fuzzy word, because it's general scenario without any concrete solution. They should

Sở QH phải là người đưa ra quy định cụ thể nhưng thông tin chưa cụ thể, rất chung chung. Chỉ có giải pháp đắp nền: thụ động đối phó, k tương tác . Cần đưa ra chiến lược lớn đề ra giải pháp cụ thể. Hơn nữa hiện nay chưa có người cầm trịch.

**4. Vai trò của trung tâm thông tin QH liên quan đến các vấn đề quản lý ngập lụt? Thành quả và khó khăn trong quá trình tiếp cận với thông tin ngập lụt là gì?**

K có liên quan, tiếp cận thông tin cũng khó khăn.

Sở QH thiết kế phê duyệt mạng lưới hạ tầng kỹ thuật, triển khai trên thực tế là đầu tư, SCFC (kiểm tra thực tế bản vẽ) chỉ quản lý hệ thống chính và điều phối các dự án. Sở QH quản lý về mặt quy hoạch (vẽ và phê duyệt)

Sở quy hoạch vật thể - giải pháp cứng. chưa có phối hợp liên ngành. Không có văn hóa quản lý liên ngành. Kế hoạch đi theo hàng dọc, k có hàng ngang.

VD: sở qh vẽ mặt bằng tổng thể thoát nước, có cái nhìn toàn thể nhưng không khả thi (k dựa trên năng lực tài chính, quản lý) vì làm theo mệnh lệnh bộ xd.

giữa qh và tổ chức thực hiện là 2 phần rời rạc, k liên quan. Tất cả các stakeholders trong QHĐT không làm việc phối hợp với nhau.

QH hiện nay phụ thuộc rất nhiều vào kinh tế tài chính, k theo kế hoạch phát triển hợp lý . Nguồn lực tài chính hạn chế vừa bị phân tán, đầu tư k hiệu quả, hủy hoại tài nguyên.

have different solutions applying practical scale (from large to small); e.g. designing solution, management, investment, long-middle- short term.

DPA must provide specified information. However, they just give out only the general solution currently such as ground leveling which is a passive interaction. They need to make major strategy to propose specific solutions. Moreover, there is no leader in solving this problem.

**4. What is the role of Planning Information Center related to flood problem? What are the achievements and difficulties in accessing flooding information?**

It is not relevant, and difficult to access to available information.

DPA approves the design of network infrastructure; investors will deploy it; SCFC (testing the actual drawing) only manage the main system and coordinate all projects. Department of Planning manages the planning (drawing and approval)

DPA plans the physical and hard solutions. There is neither inter-sectoral coordination nor interdisciplinary management culture. Planning follows vertical direction, not horizontal direction.

Ex: DPA design the general drainage system; but the whole look is not feasible (it is not based on financial capacity and management) since it is based on the order of Ministry of Construction.

Planning and implementation are discrete, not related. All stakeholders in urban planning do not work together.

Planning is now heavily dependent on the financial economy without following the

**5. Chú nghĩ như thế nào về quy hoạch chung quận 2? QH này đã có quan tâm đến vấn đề cao độ địa hình và BDKH?**

Quận 2: chưa nhiều người ở chưa có kêu la từ người dân → k giải quyết.

Chưa có ai là người kiểm tra thiết kế và thi công quận 2 – đô thị mới. Trách nhiệm k rõ ràng. Phòng quản lý đô thị quận kiểm tra và quản lý rất cục bộ từng nhà, k quản lý toàn khu đô thị (code sai, thiếu xây xanh, sai thiết kế, xây trái phép...) k có người chịu trách nhiệm và quản lý sơ sài. K nghiệm thu cụ thể.

Sasaki hiểu và có đầu bài tốt về ngập lụt trong khi các khu dân cư nhỏ lẻ khác chỉ tận dụng triệt để quỹ đất để phát triển kinh tế. Đô thị hóa thì san nền để phục vụ đô thị hóa.

rational development plan. Limited financial resources have been scattered, inefficient investment and resource destruction.

**5. What do you think about master planning in District 2? Does it care about elevation or flooding in this map?**

Since there are not many people living in District 2, we don't hear any complains yet → we won't resolve.

There is nobody responsible for design checking and implementing District 2 – new urban area. The responsibility is unclear. The District Urban Management Broad checks and manages locally each house instead of the whole urban areas (wrong building code, a lack of greenery, design error, unauthorized construction, etc.). No one is responsible for this work and they also manage poorly with no specific test.

Sasaki has a good knowledge about flooding while the other small residential areas just take full advantage of land source for economic development. Leveling all natural ground to serve urbanization.

#### IV. Interviewee E - Former vice-director of DPA.

Date and time: 08.00 Tues 07/05/2013

Vietnamese	English
<b>1. Văn bản pháp luật riêng về quản lý ngập lụt tại TPHCM</b>	<b>1. Are there any specific regulation of flood management in HCMC?</b>
Nghị định 93 – chế độ quản lý đặc thù cho TPHCM.	Decree 93 - specific management regime for HCMC in administration
Vấn đề ngập lụt được đề xuất trong văn bản QH ở mục "chuẩn bị hạ tầng - san nền và thoát nước". Tất cả đề án qh từ chung đến chi tiết đều có.	Flooding problem is proposed in the planning documents in the section "prepare infrastructure - drainage and ground leveling." All planning projects from general to detail are all in there.
Luật QH chỉ có quy định chung về thoát nước, thuộc về QH hạ tầng kỹ thuật đô thị - nghị định hướng dẫn, quy chuẩn xây dựng.	Planning law only has general regulation of drainage system which is belong to urban infrastructure and the guideline for building codes.
<b>2. Mối quan hệ giữa hệ thống quy hoạch và quản lý ngập lụt hiện nay?</b>	<b>2. How is the relationship between planning system and flood management nowadays?</b>
Trong quá trình thiết kế QHĐT có nội dung chuẩn bị đất xây dựng và thoát nước đô thị, trong đó có chống ngập. ngoài ra còn có QH chi tiết cụ thể cho từng công trình thoát nước.	The process of designing urban planning includes all the content and preparation of land for construction of urban drainage, which can prevent flooding. In addition it also includes specifically plans for each drainage works.
VD như TPHCM đã có những công trình thoát nước và cải tạo đô thị lớn như kênh Tàu Hủ - Bến Nghé – đại lộ Đông Tây (kết hợp cải tạo thoát nước), Tân Hóa – Lò Gốm (kết hợp cải tạo đô thị), công trình rạch Hàng Bàng (thoát nước), đang nghiên cứu cải tạo Tham Lương – Bến Nghé.	Ex: HCMC has many drainage works and urban renewal such as Tau Hu canal - Ben Nghe - East-West Highway (combined drainage improvement), Tan Hoa - pottery (combined urban renewal) , Hang Bang canal works (drainage). Tham Luong - Ben Nghe canal is in research.
QH thoát nước liên quan đến QH giao thông đường thủy, liên quan đến hệ thống kênh rạch TP → quản lý ngập lụt liên quan rất nhiều đến QHĐT, cụ thể:	Drainage planning is related to water transport planning as well as the canals systems →flooding management is very much related to the urban planning, in particular:
<ul style="list-style-type: none"><li>- Cải tạo và phát triển đô thị</li><li>- Hệ thống hạ tầng giao thông đô thị</li><li>- Môi trường chiến lược đô thị</li></ul>	
Các đề án QHĐT đều có liên quan đến vấn	

đề nghiên cứu và chống ngập đô thị, từ QH chung tới QH chi tiết.

### 3. Mâu thuẫn giữ quản lý ngập lụt và sử dụng đất tại TPHCM, Quận 2?

Hiện nay TP đang còn lúng túng trong QH chống ngập và QH đô thị. Vì phương án chống ngập do BDKH sẽ quyết định phương án cao độ nền của TP. Trong khi đó cao độ nền đã thiết kế lâu nay chưa tính đến BDKH và ngập theo nước triều dâng (đặc biệt là quận 2). Hiện tại, cao độ nền tính theo đỉnh tần suất ngập lịch sử (đỉnh ngập lịch sử, k phải theo dự báo tương lai BDKH)+ cao độ giao thông (50-60cm).

Bộ Nông nghiệp và phát triển Nông thôn có trách nhiệm đưa ra phương án chống ngập, kết hợp giữa lũ và triều cường. Cho tới nay, chưa thấy công bố QH chống ngập đó. Họ đưa ra phương án đê biển để chắn triều cường ngay từ biển Vũng Tàu : đây là phương án giải quyết rất sai lầm (báo đăng tuổi trẻ, 2012) vì họ chỉ tính mực nước biển dâng mà quên mất ngập lụt từ thượng nguồn sông đồng nai. Trong khi chống ngập phải chống vào thời điểm vừa là cao độ thủy triều, vừa là cao độ lụt. nghĩa là lụt cao và thủy triều cao → đê biển k hiệu quả → phương án duy nhất là khoanh vùng nhỏ lại, chỉ bơm nước mưa ra, nc triều chắn bằng đê. Tuy nhiên, phương án khoanh vùng chưa thấy công bố rõ ràng dù một số công trình dự kiến làm ở quận 2.

Nếu có đê thì code san nền như cũ. Tuy nhiên hiện nay không thể nâng code san nền vì không khả thi và bị lún. Cho nên cần đắp đê

- Restoration and Urban Development
- The system of urban transport infrastructure
- Strategic Urban Environment

The urban planning projects are related to the problem of searching and combating the urban flooding, from general to details.

### 3. How are conflicts between flood management and land use in HCMC, District 2?

Currently, we still confused in urban planning and planning against urban flooding because the plan to prevent flooding caused by climate change plan will determine the ground level of the city. Meanwhile, the ground level has long been designed not to mention climate change and flooding by tidal surges (especially District 2). Currently, the ground level has been determined by the historical frequent high peak of the flooding + traffic elavation (50-60cm).

Ministry of Agriculture and Rural Development is responsible for developing a plan to prevent flooding, a combination of high tides and flooding. Until now, they have not announced the plan of flood prevent. They have made the sea dyke plan to prevent flood tide in Vung Tau sea: this plan is totally wrong (youth published, 2012) because they only calculated the sea level rise but forgot that the flooding was started from upstream Dong Nai River. In the fight to prevent flooding, we need to consider the time of high tide and flood elevation → dyke plan is not efficiency → the only option is to localize small, just pump out rainwater and the tidal is prevented by dykes. However, the zoning plan has not explicitly stated even though some plans has been expected to work in District 2.

bao xung quanh các khu vực. khi có lũ lớn, đóng hết cống lại và bơm nước ra ngoài.

Tóm lại, mâu thuẫn ở đây là: chưa có phương án chống ngập về đê, nên code sử dụng đất chưa phát triển.

Hồ điều tiết chỉ có ý nghĩa với nước mưa, nên làm phía thượng lưu. Đối với thủy triều thì làm đê ngăn triều. Việc này liên quan đến diện tích sử dụng đất phát triển và ngập lụt.

Ngoài ra diện tích SĐĐ cần phải ưu tiên diện tích rất lớn để đắp đê và hành lang an toàn sông rạch: đã có trong QH.

#### **4. Những tiêu chuẩn/ vấn đề cốt lõi nào trong vấn đề quản lý ngập lụt cần được chú ý trong quy hoạch ở TPHCM? Làm thế nào để đưa những vấn đề ấy vào quy hoạch không gian?**

Vấn đề cốt lõi nhất là phương án chống ngập phải rõ ràng và phải gấp : chỗ nào đắp đê? nâng nền? phân định vùng mục tiêu chống ngập thật rõ → phương án đắp đê rõ ràng → không gian đô thị bên trong phụ thuộc vào đê.

Sở QH chờ phương án chống ngập bên SCFC nên chậm tiến độ thời gian. Tuy nhiên phương án chống ngập phải theo định hướng QHĐT (nghĩa là chỗ nào phát triển đô thị cần chống thì chống chứ k nên chống cho rừng Cần Giờ hay vùng phát triển nông nghiệp ngắn ngày) → cần sự kết hợp.

Cốt lõi: code san nền phụ thuộc vào phương án chống ngập – do bộ thủy lợi làm. Nhưng việc phối hợp k rõ ràng và khá độc lập với sở QH kiến trúc. Vì thế phải giao ban thường

If embankments are built, building elevation will be the same. However, we cannot raise building elevation, because of impossibility and subsidence. Therefore, it needs the embankment surrounding areas. When large floods come, we will shut off the sewage and pump the water out.

In short, the conflict is that there is no plan to prevent flooding by dyke, so building elevation cannot be decided.

Harmonious lakes only makes sense with the rain, so we should create it in the upstream location. To tide control, building dyke to prevent flood tide. It is related to land use and flooding in developing areas.

Besides, the land use needs huge priority area for dykes and rivers corridor, that is already in the urban planning.

#### **4. What kinds of criteria and key issues of flooding have been raised by flood manager for strategic (spatial) planning in HCMC? How can they transfer to the criteria for spatial planning?**

The core issue is that the anti-flooding plan must be clear and urgent: where need dykes? Raise ground level or not? Defining clearly the target areas against flooding. It need clear plans of embankment, because the urban space depends on the dykes.

Department of Planning waits for the flooding prevention plans from SCFC. It make time delayed. However, the flooding prevention plan must be oriented by the urban planning (i.e. urban development need flood prevent, instead of building dykes for Can Gio forest or the short-term agricultural areas). Therefore, it needs a combination.

Core issue is building elevation depends on

xuyên hàng tuần, ngồi lại để xem tiến độ dự án, nếu không phương án QH sẽ chủ quan và lãng phí.

**5. Thầy nghĩ như thế nào về quy hoạch chung quận 2? QH này đã có quan tâm đến vấn đề cao độ địa hình và BDKH?**

Quận 2 chỉ mới tổ chức không gian phát triển, có đặt vấn đề san nền thoát nước, nhưng chưa có phương án chống ngập trong phương án QH chung quận 2. Ít nhất phải có phương án đắp đê quanh rạch

QH chung hiện nay chỉ nêu ra phương án sử dụng đất và cho cao độ nền chung (2m) → can thiệp vào địa hình tự nhiên (nâng toàn bộ cao độ nền lên 2m

**6. Vai trò của các cấp chính quyền trong việc quản lý ngập lụt và đất đai? Vai trò này có phân biệt rõ ràng không?**

Quản lý đất đai (bộ/sở Tài nguyên và Môi trường) và ngập lụt (bộ/sở Nông nghiệp và phát triển Nông Thôn + sở GT + Ban chống ngập) hoàn toàn khác biệt nhau. Vì thế cần có sự phối hợp mục tiêu. Tuy nhiên, vấn đề quản lý đất đai phục vụ cho sự phát triển đô thị thuộc chính quyền đô thị; và đơn vị trực tiếp tham mưu về vấn đề SDD nên là ngành QH. Bộ/ sở Tài nguyên môi trường nên quản lý về quỹ đất và chế độ SDD, còn việc sử dụng vào mục đích gì nên là cơ quan QH.

Phân cấp trung ương và địa phương, phối

the against-flooding plan which done by the Ministry of Irrigation. However, the combination is unclear and quite independent with the Department of Architectural and Planning. Hence, it needs to regular cooperation every week to follow the progress of the project. If not, the plan will be subjective and wasteful.

**5. What do you think about Master planning in District 2? Does it care about elevation or climate-change flooding in this map?**

District 2 is only organized the space for development. It has been questioned in the drainage platform, but there is no plan to prevent flooding in the master plan of district 2. At least we need to have the canal embankment.

Current general planning only states the plan for land use and general ground elevation (2m). This is an intervention in natural terrain, because of lifting the entire natural elevation up to 2m.

**6. What are the role of the various levels of government in flooding and land use management? Are these roles and responsibilities clearly defined?**

Land management (Ministries/Department of Natural Resources and Environment) and flood management (Ministries/ Department of Agriculture and Rural Development + Department of Transportation + SCFC) is totally different . Hence, it needs to coordinate toward the mutual goal. However, land management servicing for the urban development belongs to the municipal administration; and the institution directly giving the advice for landuse should be planning institution. Ministries/Department

hợp các cơ quan chuyên môn là vấn đề khác. Chính quyền nên là đầu mối nối kết các ngành lại để giải quyết vấn đề này

**7. Vai trò chính của nhà quy hoạch trong vấn đề đối phó với ngập lụt/BĐKH là gì?**

Nhà QH tổ chức không gian phát triển và hạ tầng kỹ thuật đô thị - là nội dung cơ bản và cốt lõi của QHĐT. Bắt buộc phải làm việc chung với SCFC về phương án đề với nguyên tắc cập nhật tất cả thông tin vào và tuân theo cơ sở quy hoạch đô thị. Đây là điều bắt buộc không nên làm việc độc lập.

Sau khi dự án hoàn thành, thì hệ thống hạ tầng bàn giao lại cho chính quyền địa phương quản lý – phòng quản lý đô thị. Chưa có sự phân công nên chế độ trách nhiệm chưa được chặt chẽ, người dân tự lo (tự thuê người nạo vét cống, dịch vụ từ công ty thoát nước).

Vai trò chính là tích hợp được phương án QH vào chống ngập đô thị. Hiện nay, chúng ta phải chờ phương án chống ngập từ Bộ thủy lợi, đáng lẽ sở/ viện QH phải đảm nhận. Thực tế hiện nay QH tính theo code san nền cũ, chưa tính đến BĐKH. Chưa có cụ thể phương án kỹ thuật đề như thế nào để quyết định sử dụng đất và code nền bên trong, chỉ mới có định hướng qh.

**8. Thầy có lời nhận xét hay giải pháp gì**

of Natural Resources and Environment should manages land sources and landuse regulations; and the usage for what purpose should belong to planning institution.

Division of central and local level and coordination of specialized institution is another matter. The government should connect different insitutions to solve this problem.

**7. What are the major responsibilities of urban planners to deal with flood-related problems?**

The planners organize development space and urban infrastructure architecture - this is the basic and core content in the urban planning. It is a force to work with SCFC about plans for dyke with rule of updated information and obey urban planning rule. This is a must to avoide working independently.

After completing the projects, the infrastructure is handed over to local government - Urban Management Board. There is no task allocation, so the responsibility is not closed. Local people take care of their own living environment (e.g. self-hiring dredging-sewer service from water companies).

Key role is integrating planning into flood prevent in urban areas. Currently, we have to wait the flood plans from the Ministry of Irrigation, instead of from Department of Planing. In current reality, planning follow the old building code and doesn't take climate change into account. There is also no concrete dyke plan in order to determine land use and building elevation. There is no specific details, just be planning orientation.

**8. What are the comments and suggestions on the cooperation between**

**cho vấn đề liên kết giữa quản lý ngập  
lụt và qh đô thị hiện nay không?**

Có khả năng UBND TP phải chủ động liên kết với Bộ Thủy lợi thông qua SCFC để có phương án rõ ràng, khoanh được vùng mục tiêu, mỗi vùng có thiết kế thoát nước riêng, vừa đảm bảo thoát nước và giao thông thủy.

**urban planning and flood  
management?**

People's Committee need to proactively associate with the Ministry of Irrigation through SCFC in order to have an clear plan which defines target areas - each area has its own drainage design to ensure drainage and water transportation.

**V. Interviewee F** - Professor and Dean of Urban Planning Department, HCMC University of Architecture

Date and time: 14.30 Wed 08/05/2013

Vietnamese	English
<p><b>1. Mối quan hệ giữa hệ thống quy hoạch và quản lý ngập lụt hiện nay?</b></p>	<p><b>1. How is the relationship between planning system and flood management nowadays?</b></p>
<p>Có thể thấy theo nhiệm vụ số 7 trong Chương trình Mục tiêu Quốc gia về ứng phó với Biến đổi khí hậu, trong đó có yêu cầu tích hợp vấn đề ứng phó với biến đổi khí hậu vào trong công tác quy hoạch:</p>	<p>It can be seen as according to the task of 7 (attached) in the National Target Program to Respond to Climate Change, it requires to integrate the problems coping with climate change in planning project :</p>
<p>Chương trình mục tiêu quốc gia ứng phó với biến đổi khí hậu được thực hiện trên phạm vi toàn quốc theo ba giai đoạn: giai đoạn khởi động (từ năm 2009 đến 2010), giai đoạn triển khai (từ năm 2011 đến 2015) và giai đoạn phát triển (sau năm 2015) với chín nhiệm vụ. Trong đó có "Tích hợp vấn đề BĐKH vào các chiến lược, chương trình, quy hoạch, kế hoạch phát triển kinh tế-xã hội, phát triển ngành và địa phương."</p>	<p>National Target Programme to respond to climate change is implemented on a national scale in three phases: start-up phase (from 2009 to 2010), the implementation phase (2011 to 2015) and development stage (after 2015) with nine tasks. Among them, it mentions " Integrate climate change issues into strategies, programs, plans, socio-economic development, sectoral and local development."</p>
<p><b>2. Mâu thuẫn giữ quản lý ngập lụt và sử dụng đất tại TPHCM, Quận 2?</b></p>	<p><b>2. How are conflicts between flood management and land use in HCMC, District 2?</b></p>
<p>Thực ra theo tôi thì không có sự mâu thuẫn (conflict) giữa hai công tác này mà chỉ có việc không tương thích giữa chúng với nhau, vì trong quy hoạch sử dụng đất người ta chú ý tới các chiến lược phát triển, trong đó nội dung chọn đất xây dựng đô thị là một nội dung quan trọng;</p>	<p>Actually, I think there is no conflict between these works, only the incompatibility between them; because in the land use planning, people pay attention to the development strategy, in which the content of selecting urban construction land is a key;</p>
<p>Vậy chọn đất (đối với quy hoạch xây dựng mới) hay điều chỉnh quy hoạch (điều chỉnh quy hoạch sử dụng đất) có liên hệ mật thiết với các chiến lược sử dụng đất, kể đến yếu tố chống ngập hay hạn chế tác động của ngập lũ; ví dụ: chuyển các công trình chiến lược</p>	<p>Thus, selecting the land (for new construction planning) or adjusting plans (adjustment of land use planning) is closely associated with the land-use strategy, including factors that prevent flooding or limit the impact of flooding. For example, we are transferring the strategies (grain</p>

(như kho lúa thóc, nhà máy phát điện, trạm truyền tải, bệnh viện) kể cả các khu dân cư đến các vùng cao hơn; như vậy sẽ có thể chuyển các khu thường ngập lũ thành các mục đích sử dụng đất khác (như công viên sinh thái, bể điều hòa nước, sản xuất nông nghiệp, du lịch cảnh quan, ..);

Flood management không chỉ cần được gắn với quy hoạch xây dựng, mà còn với các quy hoạch khác như quy hoạch sử dụng đất nông nghiệp, các quy hoạch ngành như thủy lợi, các đề án quốc gia như an ninh lương thực, an ninh năng lượng;

Quy hoạch xây dựng cho quận 2 –TPHCM thể hiện rõ điều này khi bố trí công viên sinh thái ở phía Đông Nam, cũng là khu vực có cao độ thấp nhất.

Như vậy không có sự mâu thuẫn, mà chỉ có sự thiếu nhất quán, hoặc các chiến lược này chưa được lồng ghép với nhau một cách có hiệu quả; dù chương trình mục tiêu quốc gia ứng phó với biến đổi khí hậu đã chỉ rõ tầm quan trọng của sự phối hợp này.

**3. Những tiêu chuẩn/ vấn đề cốt lõi nào trong vấn đề quản lý ngập lụt cần được chú ý trong quy hoạch ở TPHCM? Làm thế nào để đưa những vấn đề ấy vào quy hoạch không gian?**

Một trong những tiêu chí quan trọng trong công tác quản lý ngập lụt trong quy hoạch không gian tại TPHCM hiện nay là “khả năng thấm thấu của bề mặt; người ta chú ý nhiều hơn đến vật liệu bề mặt của đô thị (ví dụ: lát vỉa hè hay lối đi bộ với các loại gạch rỗng, kết hợp với các thảm cỏ xen kẽ thay vì xi măng hay bê tông; sử dụng nhiều thảm xanh thay vì “bê tông hóa” các bề mặt trong các khu đô thị; Các tiêu chí này có thể được chuyển thành các chỉ số đánh giá, ví dụ: tỉ lệ rỗng/đặc của bề mặt; nghĩa là “lượng hóa”

warehouses, power stations, transmission stations, hospitals), including residential areas to higher ground; we also will be able to transfer flooded areas into other land uses (such as ecological parks, pools of water conditioning, agricultural production, tourism landscape, ..);

Flood management is not just associated with construction planning, but also with other plans such as agriculture use planning, plans for irrigation sectors and other national schemes such as food security, energy security;

Construction planning for the District 2-HCMC is an evident because the layout ecological park in the southeast, is also the region with the lowest altitude.

So there is no contradiction, but only inconsistencies, or because these strategies are not integrated with each other effectively. The national target program to respond to climate change has clearly shown the importance of this collaboration.

**3. What kinds of criteria and key issues of flooding have been raised by flood manager for strategic (spatial) planning in HCMC? How can they transfer to the criteria for strategic (spatial) planning?**

One of the most important criteria for flood management in spatial planning in the city recently is "the permeability of the surface"; people pay more attention to the material of urban surfaces (ex : pavement or footpath with hollow bricks, combining with grass interleaved instead of cement or concrete, using many green carpet instead of "concrete" surfaces in urban areas). These criteria can be transformed into assessment indicators, for example: the rate of empty /

(quantified-quantification) các tiêu chí (criteria) định tính (qualitative) thành các chỉ số đánh giá (index) định lượng (quantitative).

**4. Thầy nghĩ như thế nào về quy hoạch chung quận 2? QH này đã có quan tâm đến vấn đề cao độ địa hình và BĐKH?**

Quy hoạch quận 2 của Sasaki đã tính đến các yếu tố địa hình - cao độ, và địa chất thủy văn; tập trung xây dựng mật độ cao vào khu phía Tây Bắc, giảm mật độ xây dựng ở phía Đông Nam vốn là khu trũng thấp, dành khu Đông Nam cho phát triển các vùng sinh thái thực vật và công viên đất thấp, chú trọng các yếu tố chống ngập cho các tầng hầm; và phân bổ hợp lý mật độ xây dựng;

**5. Vai trò của các cấp chính quyền trong việc quản lý ngập lụt và đất đai? Vai trò này có phân biệt rõ ràng không?**

Quyết định số 1183/QĐ-TTg của Thủ tướng Chính phủ về Phê duyệt Chương trình mục tiêu quốc gia ứng phó với biến đổi khí hậu giai đoạn 2012 – 2015 đã chỉ ra:

- Từng bước triển khai kế hoạch hành động ứng phó với biến đổi khí hậu tại các Bộ, ngành, địa phương (điều 1), trong đó đặc biệt là Dự án 2: “Xây dựng và triển khai các kế hoạch hành động ứng phó”, trong đó đề cập việc Phân công thực hiện đối với các cấp Bộ, Ngành, Ủy ban nhân dân các tỉnh, thành phố trực thuộc Trung ương tổ chức thực hiện các nội dung, nhiệm vụ của dự án trong phạm vi quản lý của mình; trong đó, phân công Bộ Tài nguyên và Môi trường chủ trì, phối hợp với các Bộ, ngành liên quan rà soát, sửa đổi, bổ sung các quy định về quản lý tài chính, kỹ thuật,... tạo điều kiện thuận lợi cho quá trình thực hiện Chương trình; rà soát, xây dựng cơ

solid of the surface that means to quantified-quantification all the qualitative criteria into the evaluation quantitative index.

**4. What do you think about Master planning in District 2? Does it care about elevation or climate-change flooding in this map?**

The District 2 plans of Sasaki takes into account the topography - altitude, hydro geological, and also focuses on building high-density areas in the northwest, reducing building density in the southeast where is low-lying areas, and the Southeast should be used for the development of flora and lowland parks, focusing on the elements to prevent flooding for the basement, and the rational allocation of building density;

**5. What are the role of the various levels of government in flooding and land use management? Are these roles and responsibilities clearly defined?**

Decision 1183/QĐ-TTg of the Prime Minister about "Approving the national target program coping with climate change in the period of 2012-2015" has pointed out:

- Gradually implementing action plans coping with climate change in Ministries, Department and localities (Clause 1). which Particularly, Project 2 "Develop and implement an action plan" mentions the task allocation for the Ministries, Departments, Provincial People's Committees, municipality about the content and tasks of project in own sphere of control. Among these, the task of Ministry of Natural Resources and Environment is coordinating with relevant ministries and agencies to review, amend and supplement financial and technical regulation, etc in order to facilitate the

chế phối hợp giữa các Bộ, ngành, địa phương để thực hiện Chương trình có hiệu quả, đúng mục tiêu.

- Có bảy dự án thí điểm đang được tiến hành thực nghiệm trong việc lồng ghép biến đổi khí hậu vào quy hoạch xây dựng bằng cách thực hiện song hành quy trình Đánh giá môi trường chiến lược (SEA – strategic environment assessment) trong quy hoạch đô thị tại một số đô thị ở Việt Nam, tôi cũng đang thực hiện một công việc tương tự cho Đầm Đông Hồ- thị xã Hà Tiên – Kiên Giang.

- Ngoài ra việc đề xuất khung pháp lý và thể chế cho sự tích hợp này cũng đang được thực hiện nhằm pháp lý hóa các yêu cầu này;

#### **6. Hiện nay đã có tổ chức nào đứng đầu trong việc phát triển không gian và liên kết với các cấp chính quyền cũng như các tổ chức giáo dục, tư vấn, NGOs?**

Trích dẫn: nguồn: Nguyễn Khắc Hiếu - Phó Cục trưởng Khí hậu Thủy văn và Biến đổi khí hậu

Nhà nước bảo đảm các nguồn lực cần thiết và huy động sự đóng góp của cộng đồng quốc tế và trong nước khuyến khích sự tham gia của các thành phần kinh tế-xã hội, các tổ chức đầu tư cho việc ứng phó với BĐKH... Kinh phí cho các hoạt động Chương trình MTQG giai đoạn từ năm 2009 đến 2015 (không bao gồm kinh phí triển khai kế hoạch hành động của các bộ, ngành, địa phương) khoảng 1.965 tỷ đồng, trong đó vốn nước ngoài là 50%, vốn trong nước là 50% (ngân sách Trung ương khoảng 30%, địa phương khoảng 10% và các nguồn vốn khác khoảng 10%).

Về tổ chức thực hiện, Ban Chỉ đạo quốc gia, Ban Chủ nhiệm và Văn phòng Chương trình sẽ được thành lập. Ban Chỉ đạo quốc gia về

program; reviewing and coordinating the mechanism between Ministries, Departments and localities to implement effective programs and objectives.

- Seven pilot projects are being experimented to integrate climate change into urban planning by implementing the Strategic Environmental Assessment (SEA - strategic environment assessment) in some cities in Vietnam. I'm also doing a similar work for Dong Ho Lagoon - Ha Tien town- Kien Giang Province.

- In addition, the proposal of legal and institutional framework for this integration is also being undertaken in order to legitimize these requirements.

#### **6. What organizations have a leading role in the development of spatial scenarios and how is the cooperation among municipality, academic entities and consultancy?**

Quote from source of Nguyen Khac Hieu - Deputy Director Hydrology and Climate Change.

"The Government has guaranteed the necessary resources, mobilized the contribution of the international and national community and encouraged the participation of all socio-economic sectors, the investment organizations for responding to climate change. .. Funding for MTQG program from 2009 to 2015 (excluding funds deploy action plans of ministries, branches and localities) is about 1,965 billion, which is 50% foreign capital , 50% national capital (the central budget of about 30%, about 10% local and other sources about 10%).

For implementation, the National Steering Committee, Management Committee and the Program Office will be established. National

Chương trình mục tiêu quốc gia ứng phó với biến đổi khí hậu bao gồm: Thủ tướng Chính phủ làm Trưởng ban, Bộ trưởng Tài nguyên và Môi trường làm Phó Trưởng ban thường trực, Bộ trưởng Kế hoạch và Đầu tư, Tài chính làm Phó Trưởng ban, các ủy viên là Bộ trưởng Nông nghiệp và Phát triển nông thôn.

Cũng như toàn cầu hóa, tác động của BĐKH không chỉ ảnh hưởng đến một nước mà nhiều nước. Vì vậy, giảm nhẹ tác động tiêu cực của BĐKH cũng như tăng cường năng lực thích ứng với BĐKH cần phải có sự hợp tác và hỗ trợ của các nước phát triển và các tổ chức quốc tế có liên quan cả về mặt công nghệ và tài chính.

Chương trình mục tiêu quốc gia ứng phó với BĐKH được nhanh chóng xây dựng trong thời gian qua cho thấy nỗ lực của nước ta trong cuộc chiến bảo vệ hệ thống khí hậu. Với quan điểm ứng phó với BĐKH dựa trên nguyên tắc phát triển bền vững và nguyên tắc "trách nhiệm chung nhưng có phân biệt" giữa các nước phát triển và các nước đang phát triển được quy định tại Điều 4 của Công ước Khí hậu, Chương trình mục tiêu quốc gia ứng phó với BĐKH được triển khai và thực hiện tốt trong thời gian tới sẽ góp phần tích cực trong công cuộc đổi mới, bảo đảm để đất nước phát triển bền vững.

→ Như vậy có một Ban chỉ đạo ở tầm mức quốc gia (national steering committee), Bộ Tài nguyên Môi trường có trách nhiệm chính, các lãnh đạo bộ có trách nhiệm phối hợp.

**7. Vai trò chính của nhà quy hoạch trong vấn đề đối phó với ngập lụt/BĐKH là gì?**

Steering Committee of the National Target Program to respond to climate change includes: Prime Minister will be head sector, Minister of Natural Resources and Environment will be permanent deputy sector, Minister of Planning, Investment and Finance will be deputy sector, Minister of Agriculture and Rural Development will be commissioner.

Same as globalization, the impact of climate change affects many different countries in the world. Thus, mitigating negative impacts of climate change as well as increasing the capacity to adapt to climate change need to have the cooperation and support of the developed countries and the international organizations concerned, both in terms of technology and finance.

The National Target Program coping with climate change is an evident of our efforts in the fight of protecting the climate system. With the idea of responding to climate change based on the principles of sustainable development and the principle of "shared responsibility but differentiated" between developed countries and developing countries which is stipulated in Article 4 of the UNFCCC, National Target Program to respond to climate change, which will be implemented and performed in the future, will contribute actively in the renewal process in order to ensure the country's sustainable development."

→ Hence, there is a Steering Committee at the national level (national steering committee), Ministry of Natural Resources and Environment has primary responsibility, the leader is responsible for the coordination.

**7. What are the major responsibilities of urban planners to deal with flood-**

Các urban planner trong thiết kế quy hoạch và thiết kế đô thị cần tổ chức môi trường ở – làm việc-sinh hoạt trong đô thị, chú trọng tới các yếu tố dự phòng cho tương lai, không chỉ là cung cấp chỗ ở, nơi làm việc, đi lại, nghỉ ngơi giải trí; mà còn chú trọng quy hoạch chiều cao nền;

- Trong việc chọn đất xây dựng đô thị, không chỉ là các quan hệ theo phương ngang, như là vị trí trung tâm, gần hay xa trung tâm, vị trí cửa ngõ, điều kiện tiếp cận đường bộ, đường sông và hàng không, và các hạ tầng kỹ thuật điện – nước – khí đốt, thông tin, bảo tồn tài nguyên nước đô thị, .. (câu chuyện của phương ngang trên mặt bằng); mà còn, cần chú trọng phương đứng (chiều cao, chiều sâu ngập, khả năng ngập, kịch bản ngập, dự trữ ứng phó thiên tai, quản lý thiên tai – disaster management, quản lý rủi ro – risk management; dự trữ các tuyến sơ tán – thoát người khi có sự cố ngập, hoặc tuyến cung cấp lương thực thuốc men và nước sinh hoạt khi có thiên tai-bão lũ khiến khu vực có thể bị cô lập)

- Các nhà quy hoạch đô thị cần chú trọng yếu tố định hướng phát triển hạ tầng kỹ thuật đô thị theo hướng ứng phó và giảm nhẹ tác động; dự trữ các bể chứa điều hòa khi mực nước cao; theo hướng thích nghi với thiên tai hay thảm họa, chứ không phải chống lại thảm họa;

- Các biện pháp chủ động như giảm mức tiêu thụ và phát thải, tránh những bề mặt kín chống thấm, mà thay vào đó là sử dụng các bề mặt thấm thấu nhằm tăng cường khả năng thoát nước tức thời trong đô thị;

### 8. Thầy có lời nhận xét hay giải pháp gì cho vấn đề liên kết giữa quản lý ngập lụt và qh đô thị hiện nay không?

Chúng ta đã có chương trình mục tiêu quốc

### related problems?

The urban planners in the design of planning and urban areas need to organize work-in-living in urban areas, focus on preventive factors for the future, not only providing shelter, workplace, travel and resting places, but also focusing on planning elevation;

- Selecting land for urban construction focuses on not only the horizontal relationship, as the central location, near or far from the center, gateway location, the access road, river and air, and electrical engineering infrastructure - water - gas, communication, water resource conservation, urban .. (story on the horizontal plane), but also the vertical relationship (height, depth of flooding, the possibility of flooding, inundation scenarios, planned disaster response, disaster management, risk management; planned evacuation routes in flood condition, or provide food and drinking water service, medication for isolate flooding area)

- The urban planners should focus on developing navigational elements of urban infrastructure in terms of responding and mitigation (plans to regulate the tank according to the water level) in the direction of adapting to the natural disaster or catastrophe, but not against disaster;

- The proactive measures such as reducing consumption and emissions; using permeable surfaces instead of waterproof surface will be used to enhance drainage in urban instantaneous;

### 8. What are the comments and suggestions for the cooperation between urban planning and flood management?

We already had the national target programs

gia trong đó có cơ cấu bộ máy tổ chức phối hợp và cơ chế phối hợp hàng dọc và hàng ngang; vấn đề là các dự án cụ thể và chương trình hành động triển khai về các địa phương, trong đó liên quan đến kinh phí cho các chương trình; thuê tư vấn nước ngoài hoặc tư vấn trong nước; chi phí khảo sát và thu thập dữ liệu; và một Ban chuyên trách của địa phương làm vai trò gạch nối giữa các Ban chỉ đạo cấp trung ương và các Ban chỉ đạo cấp vùng (ví dụ Ban Chỉ đạo Tây Nam Bộ) và cấp địa phương, với sự tham dự của người dân trong đó việc xây dựng ý thức và năng lực cộng đồng; một khi thiếu sự tham dự của cộng đồng thì dự án sẽ không có hiệu quả cao!

Sự phối hợp liên ngành (inter-disciplinary) và đa ngành (multi-disciplinary) giữa Bộ Tài nguyên Môi trường (lãnh vực đất đai) và Bộ Xây dựng (lãnh vực xây dựng) là rất quan trọng, bên cạnh các bộ khác như Bộ Nông nghiệp và Phát triển Nông thôn (sử dụng đất nông nghiệp), Bộ Giao thông vận tải, bộ Thủy sản, ... cũng rất cần thiết.

including organizational structure for vertical and horizontal coordination. The problem is the specific projects and action plans in localities, which involved funding for the program; hiring foreign consultants or local ones, cost for collecting survey data; and the Local Specialized Board will link the Central Steering Committee and the Regional Steering Committee (e.g. Southwest Steering Committee) and the local level with the participation of local people in that building awareness and community capacity; once lack of community involvement, the project will not be effective!

The inter-disciplinary and multidisciplinary between the Ministry of Natural Resources and Environment (land area) and the Ministry of Construction (building area) is very important, in addition to the others such as the Ministry of Agriculture and Rural Development (agricultural land), Ministry of Transport, Ministry of Fisheries, .. is also very important.

## VI. Interviewee G - Director of Institution of water management and climate change.

Date: 12/03/2012

Source: <http://dothivietnam.org/2012/03/12/pvholongphi/>

Vietnamese	English
<p><b>1. Sau một thập niên chống ngập và bắt đầu ứng phó với BĐKH tại TP HCM, là người vừa trực tiếp tham gia triển khai nhiều dự án, vừa làm nghiên cứu, ông đánh giá như thế nào về chặng đường vừa qua?</b></p>	<p><b>1. After a decade of anti-flooding and climate change adaption in Ho Chi Minh City, as a person who directly involving in many different projects and doing a research on those problems, what is your opinion about our last journey ?</b></p>
<p>Các dự án chống ngập cho TPHCM đã khởi đầu từ bản QH tổng thể thoát nước do JICA tài trợ và được thực hiện bởi công ty tư vấn PCI (Japan). Nhìn chung, đây là một QH khá tốt, tạo điều kiện cho các dự án ODA triển khai từ 2003 đến nay. Tiến độ của các dự án kéo dài đến 10 năm và thực sự chưa có dự án nào hoàn tất. Tuy nhiên kết quả quan trắc cho thấy rằng các dự án này và nhiều dự án nhỏ khác cũng đã dần phát huy tác dụng từ 2008 trở lại đây. Các khu vực ngập triều cục bộ cũng đang dần được kiểm soát bằng giải pháp tại chỗ với hơn 600 van một chiều và máy bơm đã được lắp đặt. Có thể nói rằng đỉnh điểm của tình trạng ngập ở TPHCM là năm 2007 với trên 100 vị trí. Con số này chỉ còn 31 trong năm 2011. Năm 2011 cũng là năm mà lần đầu tiên không thấy chất vẩn của HOND TP về tình trạng ngập.</p>	<p>The flood control projects in Ho Chi Minh City were begun by the sewer master plan which is sponsored by JICA and performed by the consulting firm PCI (Japan). Overall, this is pretty good plan since it facilitated the implementation of ODA plans from 2003 to present. The progress of those projects has been lasting for 10 years until today. However, the results showed that this project and many other smaller projects have also gradually taken effect from 2008 up to now. The local intertidal areas are also gradually being controlled by local solution with more than 600 one-way valves and pumps have been installed. We can say that the peak of the flood situation in the City in 2007 happened in over 100 locations. This figure was only 31 in 2011. This is the first year that we were not being questioning by the status of City Council about flooding situations of the city.</p>
<p>Những thành công bước đầu minh chứng cho luận điểm chưa cần thiết triển khai dự án kiểm soát triều trên diện rộng mà kinh phí ước tính hiện tại sẽ không dưới 3 tỉ USD. Thay vào đó nên can thiệp từng bước và có trọng điểm như đã được triển khai trong thời gian qua trong khi chờ đợi những giải pháp can thiệp dài hạn.</p>	<p>The initial success demonstrates that this is still not the time for us to implement the project on a large scale to control the tidal which is estimated to cost more than \$3 billion USD. Instead of investing in this new project, we should intervene gradually in some important points while waiting for</p>

## 2. Còn những mục tiêu nào chúng ta chưa hoàn thành?

Điều chưa làm được hoặc sẽ phải làm vẫn còn là thách thức lớn trước mắt.

Thứ nhất, các dự án chống ngập trong hiện tại chỉ mới triển khai cho khu vực trung tâm với tổng diện tích phụ trách chừng 100 km<sup>2</sup>. (Trong khi đó) Phần diện tích đang chuẩn bị đô thị hoá càng lúc càng tăng dần và có thể đạt đến 850km<sup>2</sup> vào năm 2025. Nếu ước tính theo kinh phí đã bỏ ra cho khu vực trung tâm, thì cần đầu tư khoảng 7 tỉ USD cho các khu vực còn lại trong hai thập niên tới, kể cả phần thoát và xử lý nước thải. Với khả năng giải ngân chưa đầy 100 triệu USD/năm như hiện nay thì tình trạng ngập sẽ dần xuất hiện ở khu vực ngoại thành trong những năm tới nếu chúng ta không có giải pháp để khắc phục.

Thứ hai, tình trạng BDKH (BĐKH), có nguyên nhân cục bộ và toàn cầu, đã làm cho hệ thống kiểm soát ngập không làm việc đúng như mong đợi. Thay vì chu kỳ tràn công thiết kế dự kiến là 2-3 năm, những hệ thống này hiện nay chỉ có thể đáp ứng chống ngập với tần suất không quá 1 lần/năm. Con số này sẽ tiếp tục tăng dần đi theo thời gian. Điều này đòi hỏi những cách tiếp cận mềm để bổ sung cho giải pháp công trình. Giải pháp thì đã có, tính toán cũng đã xong. Tuy nhiên vấn đề này chỉ có thể được giải quyết nếu có sự chung tay của các nhà QH đô thị và sự đồng thuận của cộng đồng.

Thứ ba, vấn đề cảnh báo lũ từ thượng nguồn và kế hoạch ứng phó để giảm thiểu thiệt hại cần được đặt lên ưu tiên hàng đầu. Các hiểm họa do thiên tai luôn chực chờ bất chấp tất cả những nỗ lực của con người. Không thể có giải pháp đảm bảo chống ngập 100%. Quan điểm kiểm soát ngập hiện đại cho rằng thay vì chỉ tập trung tìm cách giảm tần suất xuất hiện ngập như cách chúng ta đang làm

another effective long-term intervention.

## 2. What are other goals that we haven't completed yet?

Goals which have not done and need to be done will be a big challenge for us ahead.

Firstly, the current anti-flood project is only deployed for the central region with a total area of approximately 100 km<sup>2</sup> in charge. Meanwhile, the urbanized areas keep increasing and will reach approximately 850km<sup>2</sup> in 2025. According to the investment spending for the central area, we need to invest roughly \$7 billion USD for the remaining areas in the next 2 decades, including the drainages and sewage treatments. With the ability to disburse less than \$ 100 million / year, the current flooding situation will gradually appear in the suburban areas in the upcoming years if we do not have solutions to rectify.

Secondly, the status of climate change (CC), which causes locally and globally, has made flood control system to not work as expected. Normally, the drain cycle is designed as 2 to 3 years; however, the cycle of our current system to against flooding can only meet less than 1 time/ year. This number will continue to increase over time. This approach requires the soft solutions to supplement the constructions. Even though we already have solutions, we still need the consensus of the National Assembly and the urban community in order to solve the problem.

Thirdly, the warming of upstream flood and the plans of minimizing damages are needed to place on top priority. As we know that the threat of natural disasters always exists despite all the efforts of human. There is no guarantee solution to against flooding solution totally. According to the modern

hiện nay (flood protection), thì giải pháp thông minh hơn là: tìm cách để sao cho xảy ra thiệt hại ít nhất khi bị ngập (flood resilience). Đây là một vấn đề có tính liên ngành, trong đó QH đô thị đóng vai trò trung tâm.

Thứ tư, các hồ chứa ở thượng nguồn vẫn được hoạt động theo chế độ tối ưu hóa lợi nhuận ngành. Do đó, vào cuối mùa mưa, các hồ này đều tích đầy nước để chuẩn bị cho mùa khô năm tới. Chỉ cần một trận bão lịch sử xảy ra vào cuối mùa mưa là một Bangkok thứ hai sẽ có thể tái diễn tại TPHCM. Do đó việc phối hợp liên ngành và trên toàn lưu vực trên quan điểm lợi ích tổng thể là điều cực kỳ quan trọng. Quản lý nước lưu vực vẫn còn là một vấn đề vượt ngoài khả năng giải quyết của các nhà kỹ thuật.

Thứ năm, nhiều dự án có quy mô lớn và cực lớn đang tìm cách viện cớ chống ngập để can thiệp thô bạo vào tự nhiên. Những dự án này thường dựa vào các kịch bản dài hạn mang tính hù dọa để tác động vào chính sách theo hướng có lợi cho họ. Đặc điểm chung của các dự án này là cách tiếp cận “dự báo và hành động”. Phương pháp này nguy hiểm ở chỗ các dự báo dài hạn thường không chính xác, đặc biệt là trong điều kiện rất không chắc chắn của BĐKH. Do đó các tác động kiểu “can thiệp một lần” hàm chứa khá nhiều rủi ro cả về kinh tế lẫn kỹ thuật. Phương pháp tiếp cận hợp lý là phải dựa vào tự nhiên để hành động và chỉ can thiệp từng bước để có thể thích nghi tốt nhất với các diễn biến không chắc chắn trong tương lai xa.

Cuối cùng, một vấn đề nan giải khác là tình trạng lún trên diện rộng do khai thác nước ngầm và tải trọng nhà cao tầng trên đất yếu. Đây là tình trạng phổ biến có tính quy luật và đã xảy ra ở nhiều thành phố khác như Thượng Hải, Bangkok, Jakarta... Quan trắc ở TPHCM cho thấy tốc độ lún trung bình ở

flood control center, instead of only focusing on reducing the frequency of flooding such as the way we are doing now ( flood protection), the smarter solution should be finding the way to minimize all damages when flood happens ( flood resilience). This is a cross-sectoral issue in which the urban planning center plays a central role.

Fourthly, the upstream reservoirs are still operating under optimized mode-profit sectors. Thus, at the end of the rainy season, those lakes are full of water in order to prepare for next year's dry season. If a historical storm occurred at the end of the rainy season, our city would become a second Bangkok . Therefore, inter-sectoral and overall coordination with the perspective on the overall benefits are extremely important. Basin water management still remains a problem which goes beyond the ability of our technicians.

Fifthly, many large-scale projects and large are on the pretext of prevent flooding for intervene aggressively into the natural. These projects are often based on long-term scenarios scare nature to influence policy in their favor. The common feature of these projects is the approach of “prediction and action”. This method is dangerous because the long-term forecasts are usually inaccurate, especially in terms of uncertain condition of climate change. Therefore, the impact of "intervention once" contained many risks, both on economic and technique. Thus, the best approach is to rely on nature to act and intervene step by step in order to adapt to the uncertain changes in the future.

Finally, another serious problem of our City is the widespread subsidence situation which is caused by groundwater extraction and load building on soft soil. This is the common situation that has occurred in many other

TPHCM trong thời gian 1995-2010 cao gần gấp 5 lần so với tốc độ dâng của mực nước biển cùng thời kỳ.

**3. Một lần nữa ông cho rằng chưa cần thiết phải triển khai các dự án kiểm soát triều tốn kém. Trước đó ông cũng đưa ra những nghiên cứu thực nghiệm về nguyên nhân gây ngập lụt tại TP HCM và kết luận rằng chính là việc phát triển đô thị đã là nguyên nhân chính. Những kết luận này đã thuyết phục được chính quyền thành phố và có tác động đến chính sách phát triển đô thị hay chưa?**

Tác động của những hoạt động của con người đối với ngập lụt đô thị là đều có thể khẳng định cả về khoa học lẫn thực tiễn. Tôi cũng đã chứng minh được rằng việc theo đuổi những giải pháp quy mô lớn vào thời điểm hiện nay sẽ sai lầm cả về kinh tế lẫn kỹ thuật. Bài học ỷ lại vào hệ thống chống ngập quy mô lớn của Bangkok vào cuối năm 2011 đã chứng minh cho luận điểm này.

Những giải pháp quy mô lớn sẽ không đủ tính mềm dẻo cần thiết cho việc thích nghi với những yếu tố không chắc chắn, nhưng lại đòi hỏi tập trung nguồn lực quá sớm và quá nhiều trong điều kiện kinh tế vĩ mô còn rất khó khăn. Một yếu tố nữa cũng cần chú ý là việc vận hành và duy tu những hệ thống quy mô lớn như vậy là không đơn giản và hàm chứa nhiều rủi ro.

Trong bối cảnh vẫn còn tồn tại những đối lập về quan điểm như thế, TPHCM đã chọn cách làm song song. Một mặt vẫn triển khai các bước chuẩn bị kỹ thuật cho dự án kiểm soát triều trên diện rộng theo đề xuất của Bộ NN-PTNT vì đây là bản QH đã được phê duyệt bởi Thủ Tướng và trở thành pháp lệnh đối với các cơ quan nhà nước. Mặt khác thành

cities such as Shanghai, Bangkok, Jakarta, etc ... In Ho Chi Minh city, the average subsidence rate in the period from 1995 to 2000 is approximately 5 times higher than the rising of sea level at the same time.

**3. Again, you say that it is still not the time for us to implement those expensive tidal controlling projects. You also did some experimental research on the reasons caused flooding in Ho Chi Minh City and concluded that the urban development is a major reason. So has this conclusion had any impact on the urban development policy of the government?**

The impact of human activities on urban flooding can be confirmed in both science and practice. I have also demonstrated that the pursuit of large-scale solution to the present time will have bad effect on both economy and technique. A lesson about relying on the system's large-scale fight Bangkok flood at the end of 2011 has proved to this point.

These large-scale solutions will be not flexible enough to adapt to the uncertain factors; however, it also requires enormous amount of resources what is totally difficult for our current macroeconomic conditions. Another factor should also be noted that the operation and maintenance of large-scale system is so complicated and risky.

In the context of different arguments on the problem, we have chosen to do in parallel. In the one hand, we are still implementing the technical preparation for the project on large scale tidal control which is opposed by the Ministry of Agriculture and Rural Development as well as the National Assembly; it also has been approved by the Prime Minister and became ordinance for all

phổ vẫn tiến hành song song dự án QH kiểm soát ngập theo quan điểm tích hợp do chính phủ Hà Lan tài trợ. Bản thân Trung Tâm Chống Ngập TP HCM (TTCN) đã triển khai khá nhiều những dự án cục bộ, quy mô nhỏ nhằm giải quyết trực tiếp và tức thời vấn đề ngập lụt chứ không trông chờ vào dự án quy mô lớn và đã có những thành công rõ nét.

Đối với vấn đề quản lý xây dựng đô thị, một số sự kiện gần đây được đăng tải trên báo chí liên quan đến việc khôi phục dung tích điều tiết nội thị (chẳng hạn như vụ lấp rạch Tân Cảng) cũng có thể cho thấy phần nào sự thay đổi về quan điểm của TP. Tuy nhiên để tạo ra một chuyên biến rõ rệt trên diện rộng còn cần nhiều hơn thế.

#### **4. Ông đã nhắc đến giải pháp mềm và nhấn mạnh vai trò của các nhà QH đô thị. Vậy đó là những giải pháp gì và vai trò của QH đô thị như thế nào để thực hiện chúng?**

Giải pháp thứ nhất: hoàn trả và mở rộng từng bước không gian dành cho nước. Quy luật phân bố của nước rất dễ hiểu: Nó chỉ chiếm ngụ ở những nơi thấp nhất. Bất cứ QH không gian nào dành chỗ của nước, trước sau gì cũng sẽ phải trả giá. Một đề án QH đô thị nhất thiết phải tích hợp một không gian tối thiểu dành cho nước, cũng tương tự như không gian dành cho giao thông, công nghiệp, dân cư, cây xanh... thay vì tìm cách đẩy nước đi chỗ khác. Trong điều kiện bắt định của BĐKH, giải pháp không gian dành cho nước sẽ phải đủ mềm dẻo để có thể thích nghi theo thời gian.

Vai trò của nhà QH đô thị là phải tôn trọng quy luật này và phát huy các sáng kiến có thể để giúp không gian dành cho nước có thể thích nghi được với BĐKH, đồng thời đủ tính khả thi về kinh tế, kỹ thuật và dân trí. Các kỹ sư thoát nước chỉ có thể cung cấp số liệu đầu

agencies in the country. On the other hand, the city has also implemented the flood control projects as following to the perspective of the Dutch government. In addition, SCFC has also implemented many local, small-scale projects to solve directly and immediately flooding problems rather than rely on large-scale projects; and that has brought many good results for the city.

For the management of urban construction, numbers of recent events have been published in the press relating to the restoration of urban regulatory capacity (eg the Newport canal filling). As we can see, it has showed that some parts of the city somehow have changed their opinions. However, in order to create a visible change on a large scale, it is needed more than that.

#### **4. You was mentioning about the soft solutions and emphasizing the role of the urban plans. So what are those solutions and what is the role of urban planning on how to implement them?**

First solution is to refund and gradually expand space for water. The law of distribution of water is very easy to understand since it is only occupied in the lowest places. Any strategic (spatial) planning of storing water, sooner or later will pay the price. An urban planning scheme is needed to incorporate a minimum space for water, the same as for space transportation, industrial, residential, green ... instead of trying to push water away. In terms of uncertain climate change, solutions for water space needs to be flexible enough in order to adapt to the change over time.

The role of urban planners is to respect this rule and promote all possible initiatives which can help the water space to adapt to climate change, while providing the

vào về dung tích cần thiết và vị trí của các khu vực điều tiết chính, nhưng thể hiện chúng ra thành giải pháp đô thị sẽ cần sự đóng góp của các nhà QH.

Còn trong thực tế hiện nay, cách làm thông thường vẫn là: Các bản QH được vạch ra trước, thể hiện mong muốn của nhà chuyên môn hoặc thật ra là của người đặt hàng và không loại trừ là dưới tác động của các nhóm lợi ích. Sau đó, nhiệm vụ của các kỹ sư thoát nước là phải giải quyết ngập lụt dựa theo đề án QH không gian đã được duyệt.

Một quy trình như vậy thường làm hạn chế chọn lựa về phạm vi và giải pháp của các kỹ sư thoát nước. Ví dụ điển hình là bản QH không gian của TPHCM đến 2025 đã đề xuất phát triển bốn khu vực vệ tinh chung quanh khu đô thị hiện hữu. Ba trong bốn khu vực này nằm ở vùng trũng, thấp và dễ thương tổn do ngập lụt. Từ cách tiếp cận này mà Bộ NN-PTNT đã có lý do để đề ra những bản QH chống ngập trị giá nhiều tỉ USD theo kiểu bao đê quanh thành phố hay thậm chí xây dựng hẳn một tuyến đê biển nối từ Vũng Tàu qua Gò Công. Những tác giả của bản QH này có được trong tay một lý lẽ biện minh rất thuận lợi chính là đề án QH chung TPHCM đến 2025 do Thủ Tướng phê duyệt. Tuy nhiên không nên quên rằng: không giống như Bangkok hay Hà Lan, nơi mà các đô thị đã "lờ" phát triển từ lâu trên những vùng đất thấp; TPHCM vẫn còn có những lựa chọn khác để phát triển.

Cách là hợp lý hơn là: Các nhà QH đô thị nên ngồi cùng bàn với các kỹ sư thoát nước ngay từ đầu để cùng nhau vạch ra những giải pháp QH tốt nhất có thể, trong đó các yếu tố thích nghi và giảm nhẹ thiệt hại phải được quan tâm ngay từ đầu chứ không nên chỉ trông chờ vào các công trình chống ngập.

Có thể nói rằng: tất cả những giải pháp chống ngập mà không có yếu tố bảo toàn hay hoàn

feasibility to economic, technical and the intellectual. The drainage engineers can only provide input data about the required capacity and location of the main regulatory areas, but in order to express them into urban solutions, we will need contributions from the urban planner.

In reality, our common practice is that the master plan will be outlined first which is expressing the desire of the expertise or the orders and also it is not excluded under the action of the group benefits. Then, the task of the engineer is to solve sewer flooding based on the strategic (spatial) planning which has been already approved.

This process often limits the selection of the engineers about the scope and selection of solutions. A typical example is the strategic (spatial) planning of the city up to 2025 has been proposed to develop four satellite areas around existing urban areas. However, three out of the four areas are located in low-lying, low and vulnerable to flooding. Based on this approach, the Ministry of Agriculture and Rural Development has set out some anti-flood plans which cost multi-billion USD such as diking around the city or even building an entire sea dikes connecting from Vung Tau to Go Cong. The authors of this plan always have a very favorable justification which is based on the general planning scheme of the city in 2025 approved by the Prime Minister. However, since our city is unlike Bangkok or the Netherlands, where the city has "missed" to develop on long low lands, we still other options for development.

The more sensible way is that the urban planners should discuss with the drainage engineers from the beginning to outline the best possible solutions, in which the adaptive and reducing damage factors are needed to be

trả không gian cho nước đều ít nhiều mang tính di chuyển rủi ro từ nơi này qua nơi khác, hay tích lũy nguy cơ từ thế hệ trước sang thế hệ sau. Nếu ý thức điều này, các nhà QH cần phải giải quyết vấn đề không gian cho nước một cách rứt ráo ngay từ bây giờ.

Giải pháp thứ hai: Giảm nhẹ thiệt hại thay vì chỉ giảm nhẹ nguy cơ. Đặc điểm chung của giải pháp cứng là giới hạn thiết kế. Tất cả các công trình chống ngập đều có năng lực thiết kế của nó, do đó không-bao-giờ-xây-ra-ngập-lụt là điều hoang tưởng. Dự án kiểm soát triều khu vực TPHCM dự kiến có mức đảm bảo là 95%, có nghĩa là cứ trung bình 20 năm khu vực được bảo vệ có thể bị ngập một lần. Một biến cố vượt qua năng lực thiết kế của công trình sẽ mang lại thiệt hại cho tất cả khối tài sản tích lũy trong thời gian trước đó. Một ví dụ gần đây: Bangkok được bảo vệ ở mức 97%, tương ứng với chu kỳ lặp lại là 30 năm đã không thể chịu đựng nổi biến cố tương ứng với chu kỳ lặp lại là 50 năm, dẫn đến hàng chục tỉ USD thiệt hại.

Như vậy quan trọng là làm sao cho tổn thất khi xảy ra ngập lụt là nhỏ nhất. QH không gian đóng vai trò quan trọng vì nó hướng dẫn và nhắc nhở cộng đồng về nguy cơ ngập lụt. Việc tiếp tục phát triển đô thị trên những vùng trũng thấp cần được hạn chế và trong trường hợp phải chấp nhận thì các giải pháp giảm nhẹ thiệt hại cần phải được nghiên cứu thực hiện.

Tóm lại, một bản QH đô thị nên chú ý đến ba nguyên tắc sau: Thứ nhất, trong mọi trường hợp, không được phép gây ra dòng chảy tràn phát sinh thêm bởi dự án. Điều này được thực hiện thông qua các không gian điều tiết phân bố. Thứ hai, không gian QH dành cho nước phải cho phép mở rộng nếu cần thiết để thích nghi với tính bất định của BĐKH. Thứ ba, việc xảy ra ngập lụt ở các khu vực dễ thương tổn cần được kết hợp giải quyết bằng các giải

considered initially rather than only relying on anti-flooding constructions.

It can be said that all the anti-flooding solutions without securing or returning spaces to water are more or less moving risks from place to place, or cumulative it from prior generation to the next generation. In this sense, the planners must solve space problems for a country ultimately now. If those problems have been aware, the planners need to find the space for water starting from now.

Second solution: Mitigation of damage instead of mitigating risk. The common feature of the tough solution is the design limitation. All the flooded against constructions have its own capacity, so the idea of not -going-to-flood-again is a impossible. The tidal levels control project is expected to ensure about 95%, which means that average of 20 years, protected areas could be flooded once. An incident through the design capacity of the facility will bring damage to block all assets accumulated in the previous period. A recent example: Bangkok is protected at rate 97%, corresponding the cycle of 30 years. However, it cannot stand the iteration cycle of 50 years, which lead to tens of billions of dollars damage.

Thus, the most important thing is that how to minimize the loss caused by flooding. strategic (spatial) planning plays a very important role because it reminds and guides the community about the risk of flooding. Also, the urban development in low-lying areas should be limited and in any acceptable cases, we need to focus more on implementing the damage mitigation.

In summary, urban planning should pay attention to the following three principles: Firstly, in all cases, we should not allow any additional overflow which is generated by the

pháp mềm để giảm nhẹ thiệt hại trong trường hợp xảy ra các biến cố cực lớn, chứ không chỉ trông chờ vào các công trình chống ngập.

Việc nghiên cứu các giải pháp chống ngập dài hạn không chỉ dựa chủ yếu vào thủy học (hydrology) mà tốt nhất phải là thủy học sinh thái (eco-hydrology), trong đó bao hàm cả yếu tố con người. Công tác chống ngập trong điều kiện BĐKH đã không còn là lĩnh vực độc quyền của các nhà kỹ thuật thủy lợi.

**5. Đối với TPHCM, để nhìn lại và tổng kết một bài học về QH, ông đánh giá như thế nào về chiến lược phát triển đô thị về phía Nam, với trung tâm là đô thị Nam Sài Gòn (NSG), liệu đây có phải là một sai lầm về quy hoạch như nhiều học giả gần đây lên tiếng phê phán?**

Công bằng mà nói thì vào thập niên trước, khi thực hiện dự án này, các nhà QH Việt Nam (và cả trên thế giới) vẫn còn bám theo tư duy truyền thống: Cứ phát triển trước và sẽ được bảo vệ bởi các công trình chống ngập. Tuy nhiên, quan điểm phổ biến hiện nay về BĐKH là bất chấp mọi nỗ lực, con người sẽ không bao giờ thể kiểm soát được ngập lụt 100%. Xét trên quan điểm này thì việc phát triển khu đô thị NSG có thể ví như “nhúng một chân xuống nước”.

Khu đô thị NSG và cả những dự án phát triển trên vùng đất ngập triều chung quanh TPHCM đều còn có thể điều chỉnh được và cần phải được điều chỉnh theo hướng thích nghi; không đặt cược sự an toàn của mình hoàn toàn dựa vào hệ thống chống ngập, dù với quy mô nào đi nữa. Một sự điều chỉnh

planning project. This is done through regulating spatial distribution. Secondly, the space for water should be allowed to expand in necessary to adapt to the uncertainty of climate change. Thirdly, the occurrence of flooding in vulnerable areas should be solved by the soft solutions to mitigate the damages in extreme events, rather than relying only on the anti-flooding constructions.

The study of the long-term solution to prevent flooding should not only rely heavily on hydrology (Hydrology) but also need to base on the aquatic ecological (eco-Hydrology), in which including human factors. The project of against flooding in climate change conditions is no longer the exclusive domain of the irrigation technique.

**5. To HCMC, if we look back and summarize a lesson from all our plans, how do you think about the strategy of urban development to the South, especially with the Saigon South urban enter (NSG), is this caused by a planning mistake as many scholars recently criticize?**

It is fair to say it in the last decade when we implemented this project, the planner of Vietnam (and the world) still follow traditional thinking: we just need to develop the city first and then it will be protected by our anti-flooding constructions. However, the common view on climate change is changing now; despite all efforts, people will never be able to control flooding entirely. At this point, the Nam Sai Gon urban development is like to "dip a foot into the water."

The Nam Sai Gon urban development projects on wetlands around HCMC can still be modified and need to be adjusted in the direction of adaptation; we should not bet our security based entirely on anti-flood system.

như vậy phải được cân nhắc trên tầm chiến lược ứng phó chứ không thể chỉ đưa ra khuyến cáo và để mặc cho các nhà đầu tư và dân cư tự xoay sở một cách cục bộ.

Tôn trọng không gian dành cho nước là nguyên tắc số 1. Tuy nhiên nếu hiểu là cần phải tuyệt đối không phát triển ở vùng thấp thì lại đi vào cực đoan và phi thực tế. Mọi vấn đề kỹ thuật và duy lý luôn cần phải đối chiếu với hành vi con người để tránh sa vào những quyết định: đúng về lý thuyết nhưng sai khi đưa vào áp dụng trên thực tiễn. Quy luật của nước là chiếm những chỗ thấp trũng. Nhưng tại sao con người lại luôn thích sống gần nước? Có cách nào để thỏa mãn tâm lý ấy mà không làm tăng rủi ro? Có cách nào sống chung với nước nhưng không chiếm chỗ của nước? Nhưng nếu để mặc cho sự phát triển đô thị và khu công nghiệp trên vùng đất thấp ngoại thành diễn ra như thời gian vừa qua mà thiếu sự điều chỉnh về yếu tố thích nghi và không tôn trọng không gian dành cho nước; chỉ dựa vào ảo tưởng là sẽ được bảo vệ bởi các công trình kiểm soát ngập hàng tỉ USD thì lại là một cực đoan nguy hiểm như trường hợp Bangkok.

Thay vì tiếp tục tranh luận Đúng-Sai, Nên-Không-Nên trong trường hợp này thì điều cần làm là tìm cách phát triển những giải pháp “luỡng toàn”. Tôi cho rằng luôn luôn nên cố gắng tìm kiếm Lời giải thứ ba trong mọi trường hợp.

#### **6. Và ông đã thấy những dự án đã và đang tìm kiếm Lời giải thứ ba đó?**

Mục đích của Lời giải thứ ba là hòa giải giữa các xu hướng cực đoan: Kỹ thuật thì xem các hiểm họa do nước như là yếu tố có thể kiểm soát được bằng các giải pháp công trình; Sinh thái và Môi trường thì xem không

One such adjustment must be considered on a range of coping strategies instead of only making recommendations and letting the investors and residents to handle it by themselves.

Respecting the space for water is the most important rule. However, if you we just understand as we absolutely cannot develop in the lower back region; this perception will go into extreme and unrealistic. All technical and rational issues need to be comparing with human behaviors to avoid falling into the irrational decisions which are right in theory but wrong in practical. The law of the water is to occupy the low-lying places. Why do people always want to live near the water? Is there any way to satisfy this psychological logic without increasing risk? Is there any way to live with water but does not take the place of water? However, if we just left to develop the urban areas and industrial parks in low-lying suburban places as last time without adjusting any adaptive elements or respecting the space for water, or we just based on the illusion that the billions of dollars construction will protect us from flooding, our city will soon fall into a extremely dangerous situation as one happening in Bangkok.

Instead of continuing debate Right-Wrong, Should-Shouldn't; the best thing to do in this case is to find ways to develop "parallel perfect" solutions. I think that we should always try to find the third solution for every case.

#### **6. Have you seen any project which is trying to find this third solution yet?**

The purpose of the third solution is to reconcile the extremist trends: the technique considers that the threat caused by water can be controlled by the constructions; Ecology and Environment view that the space for

gian dành cho nước là bất khả xâm phạm và phải bảo tồn thiên nhiên bằng mọi giá; còn Kinh tế thì muốn lạm dụng nước để sinh lợi tối đa.

Chung sống với nước một cách bền vững và ít rủi ro là mục tiêu của lời giải thứ ba. Để làm được điều này cần phải vượt qua khá nhiều trở ngại, trong đó chủ yếu là sự thông hiểu, đồng thuận và cộng tác giữa các bên có liên quan. Các yếu tố kỹ thuật dù phức tạp nhưng sẽ không phải là trở ngại chính.

Đối với TPHCM, những khởi đầu của sự phối hợp đó đã được thể hiện qua một số đề án, trong đó đặc biệt quan trọng là đề án về QH không gian điều tiết nước và đề án QH kiểm soát ngập theo hướng tích hợp cho TPHCM. Đề án đầu tiên hy vọng sẽ được bắt đầu thực hiện vào khoảng giữa năm 2012 và kết thúc vào giữa năm 2013. Đề án thứ hai đang được thực hiện và sẽ kết thúc vào cuối năm 2012. Ngoài ra, một số dự án công trình cụ thể cũng đang trong quá trình chuẩn bị để tìm kiếm sự đồng thuận.

Tuy nhiên từ QH đến thực tế là một khoảng cách khá xa và trong nhiều trường hợp một lời giải hay chưa chắc đã vượt qua nổi những thách thức dọc đường. Một lần nữa, quá trình Thông hiểu – Đồng thuận – Cộng tác lại phải được lập đi lập lại cho từng dự án cụ thể. Cần phải có những đơn vị hay tổ chức đứng trên quan điểm khoa học và khách quan để làm tác nhân nối kết về mặt kỹ thuật (liên ngành và đa ngành) và về mặt quan hệ (giữa cộng đồng, nhà nước và các nhóm lợi ích). Như vậy, Lời giải thứ ba sẽ luôn là lời giải Tích hợp và Đa mục tiêu.

**7. QH dường như là vấn đề vĩ mô quá lớn để mỗi cá nhân có thể nhận thức trọn vẹn và tham gia tích cực. Xin được hỏi**

water is inviolable and must be preserved totally; while the economy like abuse water to maximize profitability.

Living with water in a sustainable way and less risky solution is the objective of the third solution. In order to achieve this objective, we need to overcome many obstacles, in which we need the understanding, consensus and collaboration among related parties. Any complicated technical matters should not be a major obstacle.

For HCMC, the beginning of this cooperation has been shown in some projects, especially the project of strategic (spatial) planning for water regulation and of planning for flood control towards integration direction for the city. The first project will hopefully be implemented in mid-2012 and ended in mid-2013. The second scheme is being implemented and will be completed in late 2012. In addition, a number of specific projects are also in the process of preparing to look for consensus.

However, from the planning to the reality is a long distance; and in many cases, a good solution is not enough to overcome challenges in reality. Again, the process of Understanding - Consensus - Collaboration must be repeated for each specific project. We need some organizational standing for the scientific and impartial perspective to link all the factors together in term of technique (interdisciplinary and multidisciplinary) and relationship (between the community, the state and the group benefits). Thus, the third solution is always the multi-objective and integrated solution.

**7. Planning seems to be a big macro issues for each individual to fully realize and actively participate. So, as your opinion, what can each citizen, each**

**ông mỗi công dân, mỗi cộng đồng có thể làm gì để giúp thành phố mình giảm bớt nguy cơ ngập lụt?**

Trong trường hợp TPHCM thì điều đáng chú ý là việc chấp nhận và khởi xướng các giải pháp mềm lại xuất phát từ các cơ quan Nhà nước thay vì từ cộng đồng. Việc thực hiện chiến lược Thích nghi và Giảm thiểu thiệt hại có thể sẽ dẫn đến một xáo trộn đáng kể cho cư dân vùng ngập lụt, do đó cần phải có một lộ trình phù hợp, phối hợp đa ngành và hợp tác giữa chính quyền và cộng đồng để thực hiện việc này. Gần đây, chúng tôi có tiến hành khảo sát về khía cạnh Kinh tế – Xã hội của ngập lụt đô thị. Kết quả sơ bộ cho thấy đa số người được phỏng vấn đồng ý đóng góp trực tiếp cho công tác chống ngập với các mức độ khác nhau chứ không chỉ trông chờ vào ngân sách nhà nước.

Tôi luôn cho rằng nếu thiếu sự Thông hiểu – Đồng thuận – Cộng tác thì không thể thực hiện được những ước mong về giảm thiểu nguy cơ và thiệt hại cho ngập lụt. Xuất phát từ hai nguyên tắc: tôn trọng không gian giành cho nước và giảm thiểu thiệt hại một cách chủ động, mỗi người tùy theo năng lực, vị trí, nghề nghiệp, gia cảnh của mình sẽ có thể đưa ra được những hoạt động phù hợp nhất. Về phía chính quyền, sẽ phải thể hiện hai nguyên tắc này dưới dạng luật. Về phía cộng đồng, đừng trông chờ là sẽ được tuyệt đối an toàn bằng các công trình chống ngập mà hãy chủ động tìm cách giảm nhẹ thiệt hại cho chính mình với sự giúp đỡ hỗ trợ của chính quyền. Về phía các nhà kỹ thuật, hãy ưu tiên cho những ý tưởng, đề án, giải pháp có tính liên ngành thay vì đơn ngành như hiện nay. Một khi chúng ta xuất phát với cùng những nguyên tắc định hướng, sự đồng thuận và cộng tác sẽ trở nên dễ dàng hơn.

**community do to help our city reducing the risk of flooding?**

In the case of Ho Chi Minh City, the acceptance and initiation the soft solutions come from the State agencies instead of the community. The implement of the adaptation and loss reduction strategies could lead to a significant disturbance to the residents of flooded areas, so it is necessary to have a consistent schedule, coordinating the multidisciplinary as well as cooperating between the government and the community to do this. Recently, we have carried out a survey of economic and social aspect of urban flooding. The preliminary results show that the majority of interviewed people have agreed to contribute directly to the fight against flooding with different levels rather than to rely only on the state budget.

I always said that if we are lacking of Understanding - Consensus – Collaboration, we cannot achieve the desire to minimize the risk of flooding and damages. There are two principles: respect for the space of water and minimize damage in a proactive way; each person, depending on capacity, location, occupation and situation, will be able to come up with the most appropriate activities. To the government, they have to imply two principles as laws/ regulations. To community, they should not expect that they would be perfectly safe with anti-flooding constructions. In addition, they should actively find the way to mitigate the damage for themselves with the support of government. To technicians, they should give the priority to interdisciplinary ideas, proposals, and solutions instead of working dependently as they are doing now. Once we come with same oriented principles, the consensus and the collaboration will become easier.

