


**HOUSING INFORMATION IMPROVEMENT BETWEEN
DEMAND AND SUPPLY SIDES: A CASE STUDY IN
CANTHO, VIETNAM**

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ABSTRACT

Vietnam is a transition country and according with the renovation in 1986, the country has experienced rapid economic growth, urbanization and population boom. That fact has caused housing issue, especially in urban area, become more crucial in recent decades. And land is also a major input in the process of housing production (Agunbiade et al., 2011). Therefore, land related information and housing related information (HIs) is crucial for demanders such as real estate planner, real estate agency and citizens. However, HIs in Vietnam is mainly produced and disseminated by the public sectors bodies. And the access to HIs from public sector is hindered by several reasons such as legal framework, information infrastructure, organisational structure and human resources (Linh, 2009).

The main aim of this research is to bridge the gap of HIs between the supply side and the demand side in Vietnam. The methodology was used to deal with the problem was divided into 3 phases. Firstly, in order to have an overview about the gap of HIs in Vietnam, the theoretical review was conducted with available literature. Following the theoretical phase was the empirical phase. A field trip was conducted in Can Tho city, Vietnam to insightfully understand the practice of the mismatch of HIs in Vietnam. The structured interview and none-participant observation methods were used during the field trip with the people in both demand and supply sides, and 5 principles including availability, accessibility, usability, accountability and legislation were used to understand the mismatch of HIs. Secondary data and samples were also collected from the interviewees in both sides. And the third phase of the methodology is the improvement for the mismatch of HIs between both sides based on the theory and practice evidences. Modelling design was used to propose conceptual models which might adapt to the case of Vietnam.

The results from the literature and the practice from field are the needs and interactions between the suppliers and demanders which were used as design criteria formulation for the modelling designs. The model of use case, activities, classes and information architecture are the major output for technical and institutional aspects. Besides that, the policy improvements were also proposed to adapt to the needs and interactions between demand and supply sides in term of HIs.

Key words: *land information, housing information, access to information.*

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Sincerely,

Nguyen Phu Cuong

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ACRONYMS

BoC	Bureau of Construction
BoNRE	Bureau of Natural Resources and Environment
CPC	Can Tho People's Committee
DoC	Department of Construction
DoF	Department of Finance
DoNRE	Department of Natural Resources and Environment
DoPI	Department of Planning and Investment
DPC	District People's Committee
GIS	Geographic Information System
HI	Housing information
HI _s	Housing Information in context of the Thesis
LI	Land Information
LIS	Land Information System
LUP	Land Use Plan
LUP _i	Land Use Planning
LUR	Land Use Right
LURC	Land Use Right Certificate
LURC	Land Use Right Certificate
MoC	Ministry of Construction
MoIC	Ministry of Information Communication
MoNRE	Ministry of Natural Resources and Environment
NSDI	National Spatial Data Infrastructure
NRE	Natural Resources and Environment
PPC	Provincial People's Committee
SDI	Spatial Data Infrastructure

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1. INTRODUCTION

1.1. Background

Since 1986, with the introduction of “Doi moi” policy, Vietnam has experienced rapid economic development, urbanization and coupled with population boom. It is currently having the high rate of urban growth in South-East Asia region. In 1986, the proportion of urban population living in Vietnam was 19%. That number has increased up to 30.5% in 2011 (General Statistics Office Vietnam, 2011). Therefore, housing needs driven by the rapid urbanization in urban area has been significantly increased in recent years, and the urban land market is also expanding rapidly (Worldbank, 2011). As a result of that fact, the demand to access to residential land and HI which support for housing production is growing significantly.

In Vietnam, the government is the main provider of land related data. According to Land law 2003 (VNA, 2003) and Housing Law 2005 (VNA, 2005), land and housing related information are almost collected, recorded, produced and disseminated by two government ministries and the agencies in their hierarchies: Ministry of Natural Resources and Environment (MoNRE) and Ministry of Construction (MoC).

In recent years, Vietnam has issued a number of laws and regulations on the disclosure policies and on the simplification of administrative procedures with a view to enhancing public access to information, reducing red-tape and preventing corruption in land administration (Anh et al., 2010). Vietnam Land Law 2003 aims at facilitating the development of a land market due to a lack of access to land information. According to Decree 181 (VNG, 2004) on the implementation of the Land Law 2003 (VNA, 2003) the Ministry of Natural Resources and Environment is obligated to publicize and make online documents relating to land use planning and housing plans that have been approved by the National Assembly. Circular 26 regulates the providing of information and to ensure convenient access to electronic information of government agencies since 2009 (Anh et al., 2010). In addition, Decree 71 (VNG, 2010) guides the implementation of Housing Law 2005 and housing related information are mandated to publicize.

However in practice, there are nine Department of Natural Resources and Management in total 63 provinces which do not have information centres. Many Departments of Construction are waiting for their provincial People’s Committee to approve the plan of collecting, recording, managing, exploiting and using of natural resources and environment data. Therefore, not all information which is produced is actually published, and as a result the access to land related information is limited due to many reasons such as: implementation capacity; poor records management practices; organizational culture; or lack of awareness that land-related information is required by the law to be publicized (Anh et al., 2010). Or the quality of information is not in good condition to meet the user demand, there are many planning and construction maps scanned from analogue maps and publicized in very low resolution, thus people can’t read from those maps. There is only 51.5% report in land use planning, 31.8% urban planning, 22.7% of land use planning map, 12.1% of the draft urban planning have been publicized on the network (Mai, 2012).

On the other hand, in the role of the users including real estate agent, real estate developers, banks, notaries, land buyer and sellers (Linh, 2009). Those stakeholders need accurate and adequate information about land-related administrative procedures, information on land-use planning, information on urban planning which are needed for their decision to invest on land. Although, the legal framework of Vietnam has some provisions on disclosure of proposed and approved investment projects but they are partial and regulated in many different laws such as Land Law, Construction Law, Housing Law, Law on Real Estate Business, Investment Law. And decree 181 in 2004 also requires to publish the list of proposed investment projects together with the land-use planning documents, but the content is quite limited

(World Bank et al., 2011). From these reasons, the users do not have accurate and accessible land information that they need for housing. Consequently, users depend on personal contacts or approach land sellers through informal means. Recently, many land buyers are cheated by fake “red book” (certificate of land use right). The main cause of this phenomenon is the lack of land database to support the users can quickly verify the information related to land or house that they are interested (Mai, 2012).

From the above mentioned description, one can conclude that there seems to be a mismatch between what people need, namely the need for land or house for housing of real estate developers, urban planners and with what the government agencies are able to offer in term of land related information. Therefore, a gap of land related information existing between the governments agencies can record, produce, and provide and what people need for the issue of housing production.

1.2. The information gap of housing and land information can best be described by the concepts of availability, accessibility and usability on the one hand, and housing production on the other hand.

1.2.1. Review of concepts

The concepts availability, accessibility and usability describe the factors how to evaluate and make spatial information use effectively. Derek (2012) defines the concepts as following:

- “The availability should involves requirements: 1) Relevant geo-spatial data to meets user need; 2) Format of data; 3) Maintenance; 4) Essential requirements; 5) Data quality fits for purpose; 6) Co-operation and collaboration between geo-spatial data collectors.
- The accessibility can be viewed as the ability to access, it should involve requirements: 1) User knows what data is available; 2) Source of data transparent to user; 3) ICT infrastructure (including bandwidth and cost); 4) Format of data; 5) On-time; 6) Standards; 7) Affordability (cost) of data; 8) Open data (restrictions).
- The usability needs requirements: 1) User focus – planner, decision-maker, citizen; 2) Meets the needs of the user – purpose; 3) Relevant and not over-burdened; 4) Data quality – fit for purpose; 5) Understanding (semantics); 6) Format required by user; 7) User capability” (Derek, 2012)

Land administration for housing production: a conceptual issue

Whilst the above concepts relate to the information, Agunbiade et al. (2011) argued that “the processes of producing housing can be categorized into four phases: conception and design, land preparation, construction and marketing. Land preparation is highlighted here and it includes: land acquisition and the procurement of development approval (determination of ownership and use rights). The responsibility to facilitate this is laid on the land administration authorities within the context of how housing production is organized. Thus, while land administration is imperative for housing production, it is impacted by how housing production is organized in a particular jurisdiction”. The figure 1-1 below illustrates the two directional links between land administration and housing:

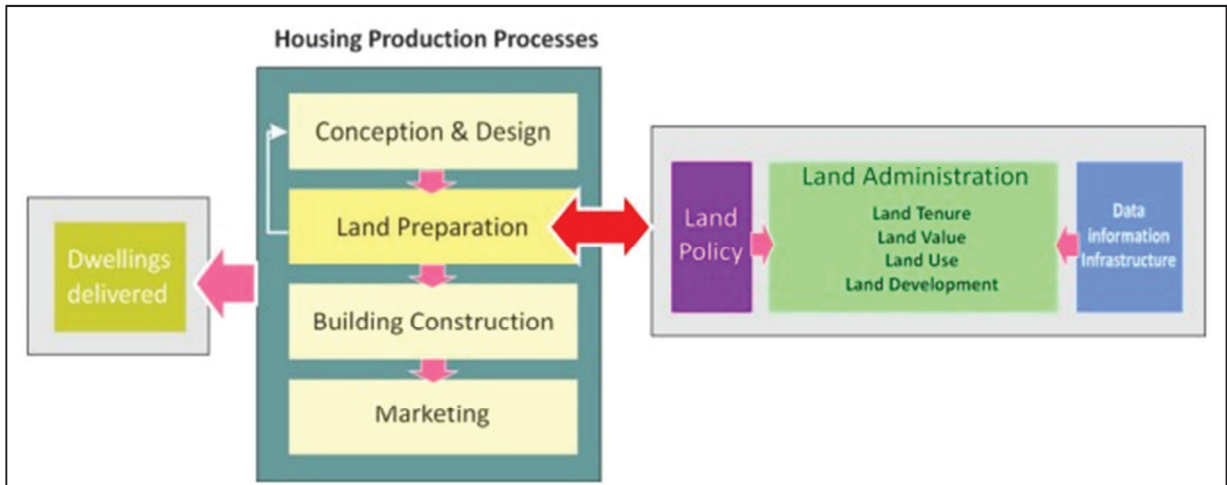


Figure 1-1: Land administration for housing production: a conceptual link (Agunbiade et al., 2011)

Land related information and housing related information in the context of this research (HIs) contains information about: parcel, building, Right Restriction and Responsibility (RRR) table and subject and other thematic data such as road, topography, utility, etc., are useful in land-use planning, development. This information are recorded and disseminated mostly by two departments: Department of Natural and Resources management, and Department of Construction.

1.2.2. Previous works

Linh (2009) focus on the lack of access to land information that impedes the land market in Vietnam. The purpose of the research is to identify factors, players and process of accessibility of land information, and the information that the players of the market need and the methods that they obtain were identified. On the other hand, the mechanism of land information dissemination and factors that characterize a well-functioning system of land information dissemination were also investigated.

Phuong (2009) focus his research on spatial data sharing in urban planning in Hanoi, Vietnam. He investigated the coordination of cooperation between organizations of multi-sectors in Hanoi in area of urban planning. He examines the theoretical frameworks of data sharing and the difference of those frameworks. The changes and trends of coordination in practice are observed. However, this study only focus on the government agencies working in urban planning field, and input data need for that activity.

Besides that, legal aspect was investigated by Abdulharis et al. (2005) on the access to spatial-information in Indonesia in spatial data infrastructure. This research examine legal aspects of geo-information within Indonesian SDI to initiate the study of the most suitable policy on access to spatial-information, comparable to legal status of spatial-information in Indonesian SDI based on existing law and regulations. Besides that, this research provides recommendations to the arrangement of the policy on access to spatial-information in Indonesian SDI. Nonetheless, technical aspects is not examined and it information is not for housing suitably.

Interaction mechanism and motivation of sharing geo-information system data across organizational boundaries also was investigated by Nedovic-Budic et al. (2011). This research only focus on exploring the nature of many data-sharing arrangements, in terms of variables such as the reasons for data sharing, the extent and nature of interaction, standardization activities, and levels of participation and contribution across multi public organizations at centre level in US (Nedovic-Budic et al., 2011).

1.3. Research problem

Despite of the policies, land law, housing law and many related circulars which primarily relate to stimulate housing and the housing market, additional regulations have been established recently which aim to increase the accessibility of the user to access to land information. In other the words, these should increase the accessibility of land information for housing to deal with the dwelling matter for citizen, enhance the legal security of tenure and stimulate the land market, which is contributing huge revenue to the country.

In practice, however, several issues from formal reasons such as: technical aspect, weakness in the contents of guidance for the implementation, information is partial in many documents, maps and land records still in analogue form, tenure records are not computerized yet (MoNRE, 2007) to informal reasons such as: lack of transparency in organizations, behaviour of officers, lack of cooperation between organizations are restricting users to access to information that they need, and also the data quality or data content does not meet the demand or even data has not been produced yet.

From the practice, it seems that there is a gap of access to land information existing between the providers and the users. That gap hinders users to obtain complete and accurate data for housing. Therefore, the main research problem is focus on evaluating the gap of land information and how to bridge that gap between the supply and demand of housing data in policy and technical aspects.

1.4. Research Objective

Given the research problem of the information gap and the main objective of the research is to evaluate the extent of the accessibility to housing information in Can Tho, Vietnam and to design possible solutions to decrease the gap between the government supply and the user demand for HIs.

To reach the main objective, the following sub-objectives are formulated:

1. To define the concepts of HIs on the basis of supply and demand practice in Vietnam.
2. To identify the current existing process of producing, retrieving and sharing data for housing from the government agencies in CanTho (Supply side).
3. To identify the current situation of access to information for housing of users in CanTho (Demand side).
4. To design policy and technical mechanisms to gain the accessibility to HIs between supply and demand sides.

1.5. Research question

The research objectives are specified by following research questions:

1. To define the concepts of HIs on the basis of supply and demand practice in Vietnam.
 - Q1.1 How do laws in Vietnam define HIs and refer to constructing HIs? (Supply side)
 - Q1.2 How do users define HIs and refer to HIs in their spatial layers and their attribute information of housing data? (Demand side)
2. To identify the current existing process of retrieving, producing and sharing data for housing from the government agencies in CanTho (Supply side).
 - Q2.1 Which agencies in Can Tho systematically retrieve, acquire and produce HIs?
 - Q2.2 What information that they have and in which format, using which laws?
 - Q2.3 How do they make their data accessible to other?
3. To identify the current situation of access to information for housing of users in CanTho (Demand side).
 - Q3.1 Who are the main users of HIs in CanTho?
 - Q3.2 Through which access mechanisms can they access and what type of HIs can they obtain?

4. To design policy and technical mechanisms to gain the accessibility to HIs between supply and demand sides

Q.4.1 What is the gap in supply and which things are needed but cannot be supplied?

Q.4.2 Which data in government can be fused in which way to ensure supply?

Q.4.3 What is the gap in demand and which things that users can contribute to make the supply more complete?

Q.4.4 Which mechanisms could be set in place and how to make sure the supply / demand are better met?

Q.4.5 Which technical, institutional, formal / informal, coordination measures must be taken to ensure better supply/demand?

Conceptual framework:

This study addresses the aspects of the accessibility of HIs for housing purpose, which is determined by the available of shared data from providers, the constraints of data sharing mechanism. The access is restricted by main factors: technical aspect, policies, legal framework and involved regulations related to HIs for housing purpose. In those factors, policies and legal framework are considered as factors can control the openness, data types, price, and category that users can require and receive data. Other involved regulations is the element that guides or supports for the implementation of policies and law. In the meantime, technical issue is related to the standard of data, hardware, software that allow data to be available and accessible. The conceptual framework of this research can be described as the figure 1-2 below:

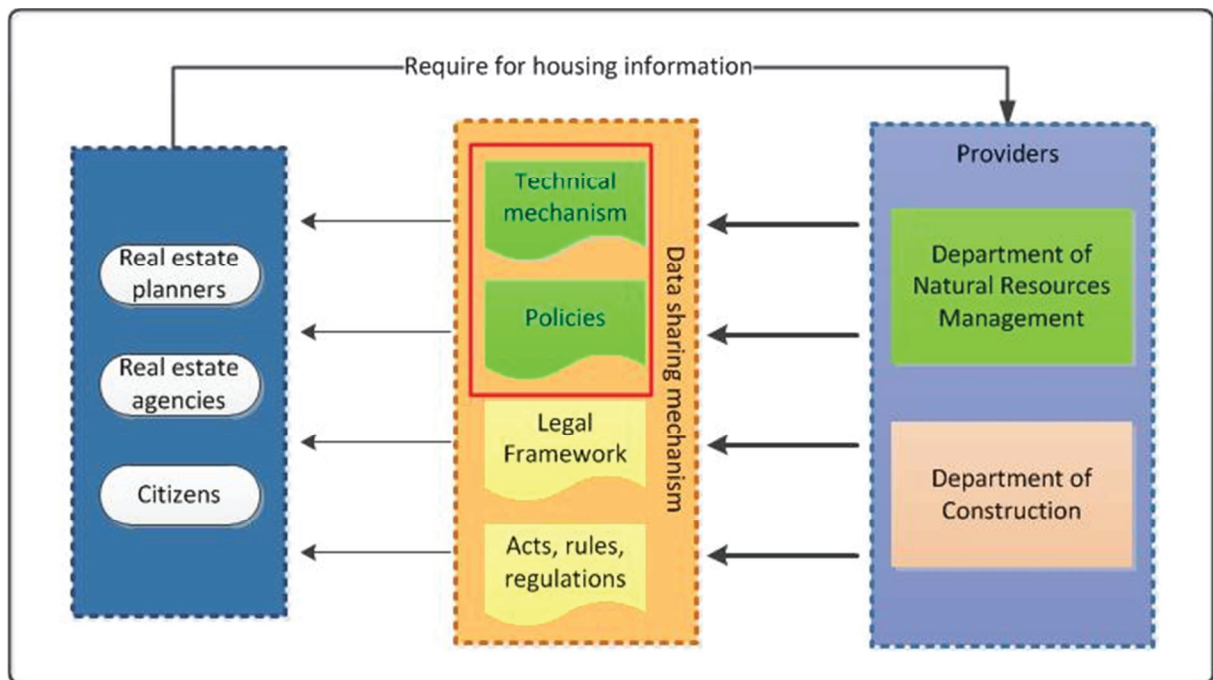


Figure 1-2: Conceptual framework

1.6. Research Methodology

1.6.1. Research methods

The methodology includes three main parts: desk research, case study research and system design. The introduction of each part will be explained as followed:

Interpretative methods

Interpretative methods are applied for literature review and the analysis of interviews. Quantitative and qualitative analysis are adopted to review the rules and theory refers to constructing HIs. It also identifies users and formats of data that they need for housing.

Case study Research

“The case study is used in many situations to contribute our knowledge of individual, group, organizational, social, political, and related phenomenon” (Yin, 2003). Therefore, a case study has been applied for the proposed research problem because the context of housing production is not clearly defined. The involved actors such as citizens, real estate agencies, housing planners, etc., are not correctly identified yet. The phenomenon of access to data and the link between supply and demand in term of HIs are unclear. That is why a case study methodology is appropriate for this context and I sample one case, the case of the governmental agencies in Can Tho to know how they produce and make available of HIs. And to know which other agencies need housing data. Therefore, the case would be the case of HIs interface in Can Tho.

System Design Research

This part will analyse data collected from field to evaluate the gap of HIs existing between the supply and the demand sides. Then technical mechanisms and policies will be proposed to bridge the gap by using UML modelling method.

1.6.2. Research design

To well answer for each sub-objective, the research plan will take that task to give answer in scientific and systematic way. They can be described as followed:

- Answer of sub-objective 1: will be obtained through desk research based on laws, rules and regulations, reports, papers, articles, website of organization related to HIs access in demand and supply sides.
- Answer of sub-objective 2: will be derived from quantitative and qualitative analysis based on data collected from interviews to officers in government agencies; from observation will get the data specifications, data formats and sharing mechanism from case study
- Answer of sub-objective 3: will be extracted from quantitative and qualitative analysis based on data collected from interviews to housing planner, real state agencies, citizens; from observation of data specifications, data formats and sharing mechanism from case study
- Answer of sub-objective 4: will be derived from analyzing the gap between supply and demand sides from research objective 2 and 3 and policy and technical mechanism using UML

The research would be conducted in phases:

Pre-Field Work: this phase focus on literature review work to identify research problems. Documents about laws, rules, regulations, articles, papers related to HIs will be reviewed to extracted relevant information that needs for the research. Then after, necessary preparation for the field work would be completed, which includes schedule for the field work, semi-structured interview, list of interviewees would be interviewed.

Field Work: this phase will focus on collecting primary data from the interview with the government officers in three related department of the supply side and the stakeholders that are using HIs. Secondary data will also be collected including relevant maps, documents, digital data and attribute for constructing HIs.

Post Field Work: this phase will use the data collected from the pre-field work and field work also to evaluate and analyse the gap of HIs from both supply and demand sides. Then I will bridge the gap by designing policies and mechanisms in term of access to HIs.

Framework of the research

The research framework is given below:

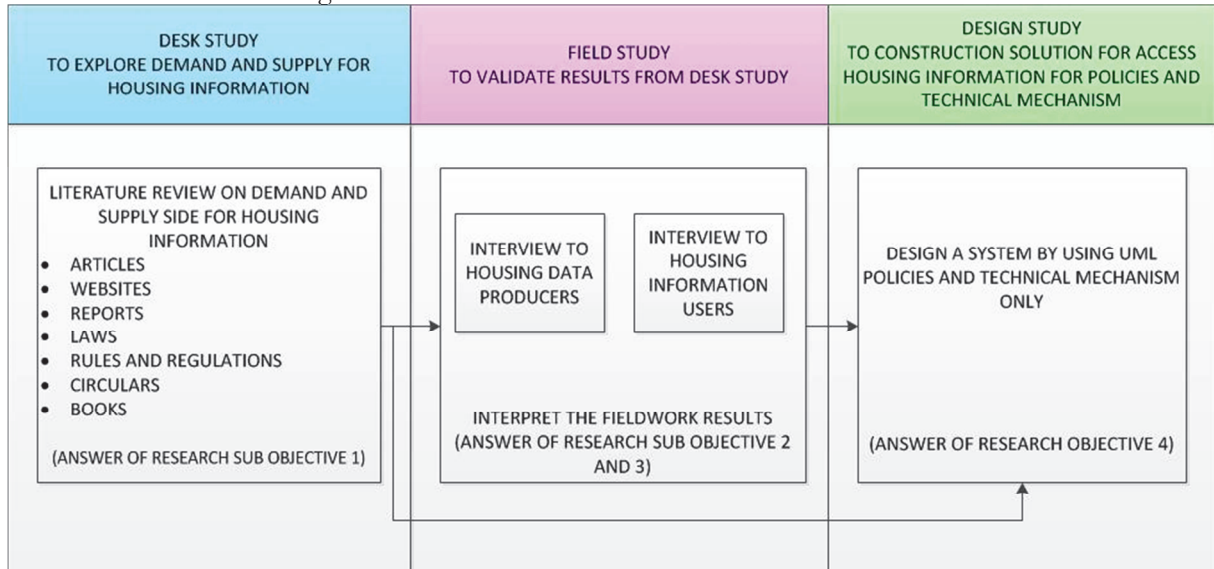


Figure 1-3: Research framework

Study approach: For theory and concept building that related to HIs, I will use literature review as the desk study. To validate the result I will conduct case study in Can Tho and finally I will design a system only concentrate on policies and technical mechanism by using UML modelling methods as research cycle as below

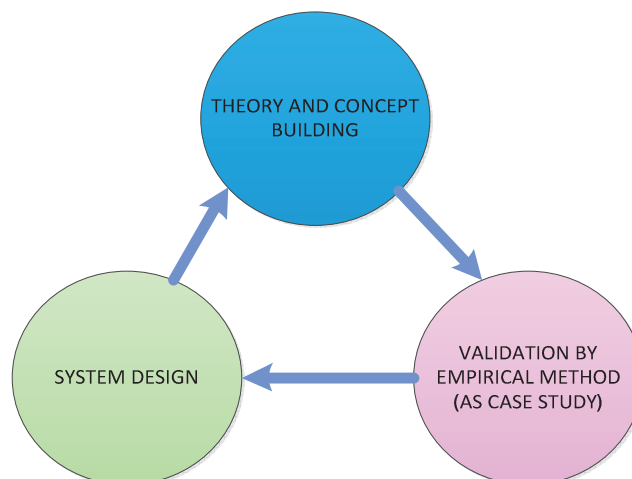


Figure 1-4: Study approach

The research would be implemented in 3 phases as in 3 following tables:

Table 1-1 Theoretical work (phase 1)

Phase 1	Objective	1. To define the concepts of HIs on the basis of supply and demand practice in Vietnam	
Theoretical work	Question	Supply	Demand
		Q1.1 How do laws in Vietnam define HIs and refer to constructing HIs?	Q1.2 How do users define HIs and refer to HIs in their spatial layers and their attribute information of housing data?
	Method	- Literature review	- Literature review
	Source of data	Laws, rules and regulations, reports, papers, articles, website of organization related to housing and land information access.	Laws, rules and regulations, reports, papers, articles, website of organization relates to housing and land information access.
	Expected output	List of data, users, laws and policy related housing data in tabular format.	List of data, users, laws and policy related housing data in tabular format.

Table 1-2 Empirical work (phase 2)

Phase 2	Objective	2. To identify the current existing process of producing, retrieving and sharing data for housing from the government agencies in CanTho (Supply side) 3. To identify the current situation of access to HIs of users in CanTho (Demand side)	
Empirical work	Question	Supply	Demand
		Q2.1 Which agencies in Can Tho systematically retrieve, acquire and produce HIs?	Q3.1 Who are the main users of HIs in CanTho?
		Q2.2 What information that they have and in which format, using which laws?	Q3.2 Through which access mechanisms can one access and what type of HIs that they can obtain?
		Q2.3 How do they make their data accessible to other?	Q3.3 How satisfy that the data meet their need in term of quality, completeness?
	Method	Qualitative analysis	Qualitative analysis
	Source of data	- Interviews to officials in government agencies in hierarchy of two ministries related - Observation: for data specifications, data formats and sharing mechanism - Case study: focus on CanTho city only (Supply based approach).	- Interviews to planner, Real state agencies - Observation: for data specifications, data formats and sharing mechanism (need based approach) - Case study: focus on Can Tho city only.
	Expected output	- List of data producer, data specification, data format and data sharing mechanism, policy on housing data in a tabular format	- List of data users, data specification, data format and data sharing mechanism, policy on housing data in a tabular format (Need based approach)

Table 1-3: Improvement work (phase 3)

Phase 3	Objective	4. To design policy and technical mechanisms to gain the accessibility to HIs between supply and demand sides.	
Improvement work	Question	Supply	Demand
		Q4.1 What is the gap in supply and which things are needed but cannot be supplied? Q4.2 Which data in government can be fused in which way to ensure supply?	Q4.3 What is the gap in demand and which things that users can contribute to make the supply more complete? Q4.4 Which mechanisms could be set in place and how to make sure the supply / demand are better met? Q4.5 Which technical, institutional, formal / informal, coordination measures must be taken to ensure better supply/demand?
	Method	Analyse the gap in supply side from research objective 1 and 2 and policy and technical mechanism using UML	Analyse the gap in demand side from research objective 1 and 3 and policy and technical mechanism using UML
	Source of data	Output of research objective 1 and 2	Output of research objective 1 and 3
	Expected data	Policy and technical mechanism to access to geo-information in conceptual level	Policy and technical mechanism to access to geo-information in conceptual level

Data collection methods adopted in the research:

- **Literature review:** is applied to describe basic knowledge of the theory and concept building. It means that, it gives the contextual description of HIs applied for whole country. The review will be based on legal framework, technical aspect, regulation, policies and laws are influencing to the availability and accessibility of HIs between the supply and demand sides in Vietnam.
- **Interview:** structured interviews will be adopted to understand deeply which regulation, laws, reasons, factors, etc., influencing the availability of housing data in reality. Interview is applied to the staff of relevant governmental agencies and information users. The interview also helps to validate the result from desk study for demand and supply of HIs as case study.
- **Observation** is adopted to observe the data format, data standard and existence system for HIs and also deal with behavior of individual and alignment among agencies.

Designing: analyse the gap in supply and demand side by Research objective 1, 2 and 3 and policy and technical mechanism using UML.

1.7. Thesis structure

The contents of the thesis will be arranged in six chapters as below:

Chapter 1: Introduction

This chapter gives the overview of the research such as: the background and justification of the research. Then it presents the research problem, research objectives and research questions, methodology and research design. The outline of thesis structure is also presented at the end of this chapter.

Chapter 2: A literature review of housing information and accessing housing information.

This chapter will focus on literatures of theoretical concepts of building and context description of HIs in context of Vietnam. Which legal framework, technical aspect, regulation, policies and laws are influencing to the availability and accessibility of HIs between the supply and demand actors in Vietnam.

Chapter 3: Data collection process

This chapter will present the methodology and activities of the data collection from the fieldwork to data from the practice of supply and demand in term of HIs.

Chapter 4: Interpreting results of data collection

This chapter will summarize and interpret the results of data collection through the field trip to identify the gap between the demand and supply of HIs.

Chapter 5: Design model based on supply and demand sides in aspects of policies and technical mechanism

This chapter will modelling the HIs based on practice of supply and demand sides in chapter 4 and synthesis information from the findings and theory concept in chapter 2 to propose policies and technical mechanisms to bridge that gap.

Chapter 6: Conclusions and recommendations

This chapter gives conclusions of the research findings; give answers for research questions and give recommendations based on the whole research findings

2. A LITERATURE REVIEW OF HOUSING INFORMATION AND ACCESSING HOUSING INFORMATION

2.1. Introduction

The objective of this chapter is to address research objective 1. This chapter evaluates and synthesizes literature about HIs, the urbanisation and the need of HIs for housing development and dwelling according to the theory from the demand side. On the other hand, this chapter also looks at the activities of collecting, producing, sharing and publicizing HIs from the supply side based on the regulation of legal framework and the current method that users can derive that information. That theoretical background will formulate the research framework provides answer to research question 1. In addition, the chapter also explores the criteria for designing model, which is essential for the improvement phase in the later chapter.

The chapter is built up with 6 sections. Section 2.2 is the exploration about HIs, legal framework and legislation issues in Vietnam. Section 2.3 will describe the theory about availability, accessibility and usability. The demand of HIs is discussed in section 2.4. Section 2.5 is the discussion on the supply and demand of HIs. Section 2.6 is the criteria for designing model. And the last section in the conclusion.

2.2. Housing information in Vietnam and legal framework in term of access to housing information

Due to the difference in the context of this research, definition of HIs will be defined in this section. Besides that, issues related to legislation and legal framework related to the activities of supply side and demand sides also discussed in this part.

2.2.1. Definition of housing information

In the context of this research, HIs has its distinguished characteristics. Hence, in this section, the definition of HIs is given, and then definitions of rights on land and immovable properties associated with land parcel.

Definition of HIs: according to Agunbiade et al. (2011), land is the major important input among many elements such as: policies, capital, labour, physical infrastructure and ideas in the process of producing housing for dwelling purpose. However, land is not well managed to facilitate housing production due to the lack of integration across land administration (Agunbiade et al., 2011). Since land is increasingly seen as an asset (Enemark, 2004), the access to land become more important and difficult. Amongst that, land information plays an important role to stimulate equally access to land, which is the important input for housing product. Therefore, in the context of this research, HIs would be the input information for housing purpose and it is mostly related to parcel, building, right restriction and responsibility (RRR) , subject and other thematic data such as road, topography, utility, etc., which are useful for residential planning development, land-use right and property transaction.

Land use rights and property ownership rights in Vietnam are another noticeable issues in Vietnam related to land and property is the definition of land tenure and property. Since the early 1980s, Vietnam has begun to reform agricultural sector and economic sectors. And similar to China and Lao, Vietnam started to make clear the matters of control, use and ownerships of land in term of legislation and policy (Le et al., 2012). The land law promulgated in 2003 defined three key rights of land are hold by different entities including: controlling rights (quyền quản lý) of the state, ownership rights (quyền sở hữu) belong to the entire people and the use rights (quyền sử dụng) to be allocated to individuals, family households and organizations for a certain period of time. And the law stated that land is belonged to entire people and the State acting as the representative owner (Le et al., 2012). From that statement, the citizens are not

able to get the land ownership rights, but they can have only the land use rights instead. Furthermore, in case of immoveable properties located on land, the owners can be issued the property ownership rights. Thus, there are two distinguished rights related to land parcel and property associated on that parcel (Le et al., 2012).

2.2.2. Legislation and law enforcement in Vietnam

In Vietnam, the promulgation of law enforcement documents has followed the order: the National Assembly (legislative body) issued the Law; State Government (executive body) issued Decree; the Ministry is in charge to implement the Decree by formulating Circular; Provincial People's Committee issues Decision to implement the Circular. However, the implementation of the Law will depend practically on every province or city by the difference between the plain, mountainous, urban, rural or remote areas. Therefore, there are cases where each province has difference in law enforcement, and issued many documents in multiple levels also cause the delay in the implementation of the Law. The figure 2-1 below shows the organizational structure of organizations and how laws are promulgated and enforced in Vietnam:

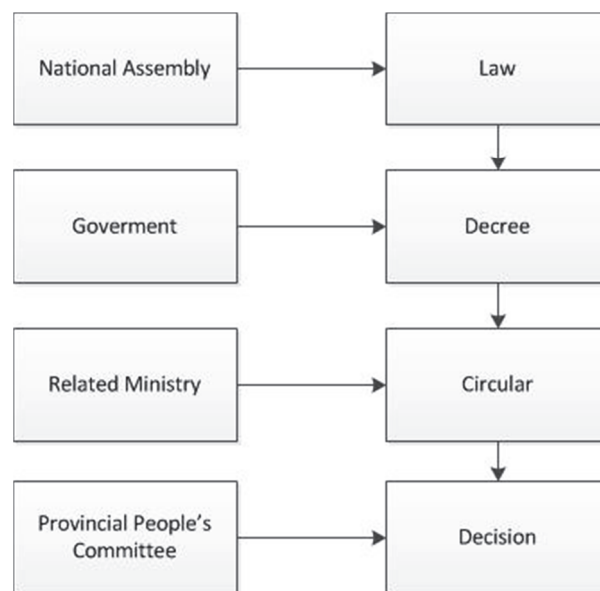


Figure 2-1: Process of building legal framework to implement the Law in Vietnam

2.2.3. Hierarchy of housing information organizations in Vietnam

(Azad et al., 1995) argue that policy is a vital guidance to the coordination and cooperation of organizations in the institutional environment. He further identified some institutional factors, data sharing amongst the government. He further identified inter-organization relationships, inter-organization structure play vital role for information sharing. These are the factors for the examination of data sharing mechanism in organization aspect. Geoffrey (2006) defines “*institutions are systems of established and embedded social rules that structure social interactions*” and they are “*the kinds of structures*”. Therefore institution might structure social interactions and behaviours. From a research in Vietnam, de Vries et al. (2012) argue that “*at first glance, Vietnam has a relatively complex institutional system of land administration. Because of the existing of a historical legacy of different type land administration systems, which gradually adapted to new societal challenges such as rapid industrialization and urbanization. Partly as a result of this situation, land information products and services are the responsibility of various public agencies and government authorities in an interrelated system at national, provincial, district and commune level*”. From that situation, the use of HIs in Vietnam is influenced by the complex of institutional system.

In Vietnam, according to the Land Law 2003 and Housing Law 2005, land and housing information is mainly collected, produced and disseminated through the three levels hierarchical structure associated in two ministries: Ministry of Natural and Resources Environment and Ministry of Construction. Each level has mandate and responsibility to manage and deal with land and housing information. The hierarchy of those organisations can be described as figure 2.2 below:

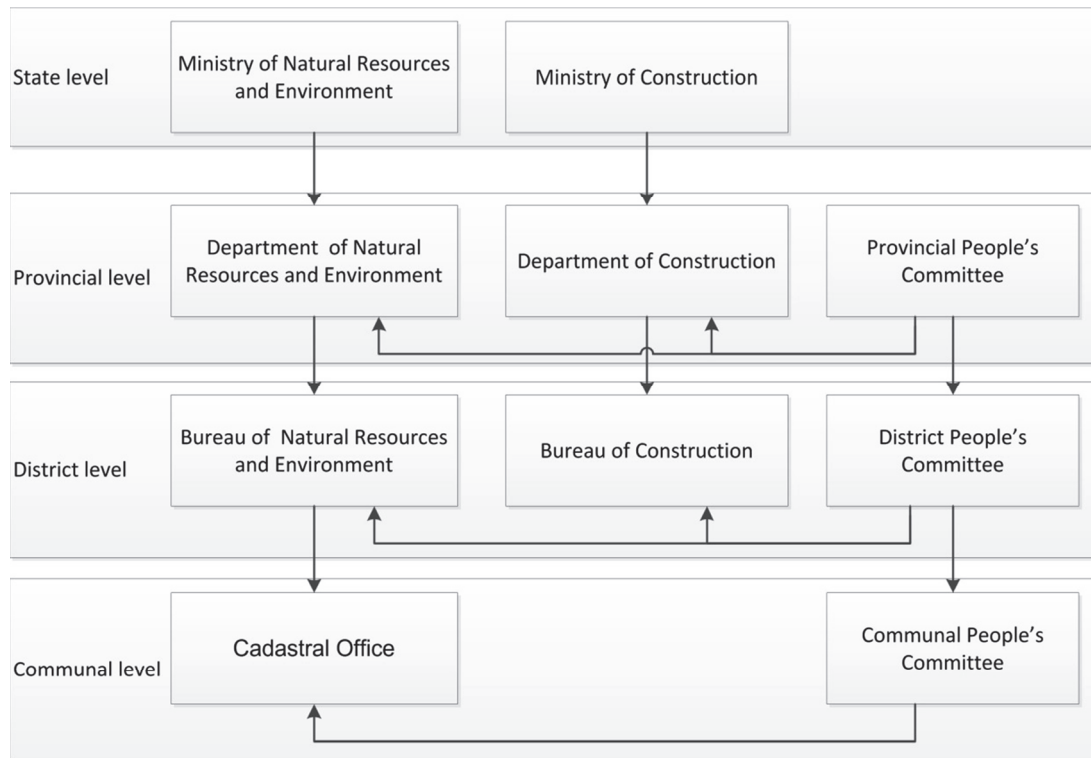


Figure 2-2: Hierarchy of organisations of HIs in supply side

From the figure 2.2 above, the role of each organisation can be explained as below:

Land administration is carried out in Vietnam through a hierarchical structure of four administrative management levels and each level has mandate and responsibility in dealing with land administration functions which were described by Tuan (2006) as in the following parts:

- The Ministry of Natural Resources and Environment (MoNRE): is an agency of the Government at the central level is responsible for the production of the natural resources and environment database and its utilization thereof for the LIS activities at national level.
- The Department of Natural Resources and Environment (DoNRE): is a specialized agency of the CPC and has function to advise and assist the CPC in performing the state management of natural resources and environment at provincial level. Therefore it is responsible for the production of the natural resources and environment database and its utilization, thereof for the LIS activities at provincial level.
- The Bureau of Natural Resources and Environment (BoNRE): advises and assists the district People's Committees in performing the State management: land, water resources, mineral resources, environmental at district level and is responsible for the production of the natural resources and environment database and its utilization thereof for the LIS activities at district level.
- Some Cadastral Officials in each commune are responsible for the production of the natural resources and environment database and its utilization at communal level. (Tuan, 2006)

Construction management: is carried out through a three level hierarchy, and each level has the functions as followed:

- Ministry of Construction (MoC): is an agency of the Government in performing the state management: construction; architecture and construction planning; urban infrastructure, industrial parks, economic zones, high-tech zones; urban development; houses and offices; business property; building materials; state management of public services in the fields of state management in accordance with the law (MoC, 2012).
- Department of Construction (DoC): is a specialized agency of the Provincial People's Committee (PPC), has the function to advise and assist the PPC in performing the state management areas: construction; architecture, planning construction; urban infrastructure, industrial parks, export processing zones, economic zones and high technology (including: urban transport infrastructure; water supply, drainage, wastewater treatment, lighting, green parks, cemeteries, solid waste in urban areas, industrial zones, export processing zones, high-tech economic zones); urban development; houses and offices; any business Estate; construction materials; public services in the field of state management of the department; perform a number of tasks and powers as assigned by, authorized by the city people's Committee and in accordance with law. DoC has legal status, seal and accounts; subject to the direction and management of the organization, staffing and the work of the PPC, and subject to the direction and guidance testing and inspection of professional services of the MoC (DoC, 2012).
- Bureau of Construction: has the functions to advise and assist the District People's Committee in performing the state management architecture; construction planning; urban development; houses and offices; building materials; traffic; urban infrastructure (including: water supply and drainage; park trees; lighting; station car park, urban); disaster (floods, storms, floods, etc.) (BoC, 2012).

2.2.4. State legal framework

In Vietnam, all activities of collecting, producing, disseminating and publicizing of HIs from the supply side must follow the laws, policies and regulations of state legal framework and also the rules and regulations of the local government.

In order to operate the activities associated to land, after the liberty of the country, three versions of land law has been introduced from 1987, 1993 and the last one is in 2003. The current Land Law 2003 provides the formal details on how to operate the land administration in Vietnam (Lemmens, 2008), however, despite the universality of this Land Law for the whole country, the implementation problems vary per district (Bui et al., 2012). The Land Law 2003 is considered the legal framework to manage natural resources and environment in Vietnam. However, to execute the land administration in Vietnam, many additional documents enable the proper implementation of the Land Law 2003:

- The Decree 181 in 2004: it provides detailed guidance how to implement Land Law 2003 through 14 chapters and 186 articles with totally 105 pages. The Decree states all aspects related to land including the scopes and objects of the land law 2003; the hierarchy structure of land management and land administration system; functions and responsibilities of each organisation in the hierarchy; process of planning and plan for land use; the process of land allocation, land lease, land exchange, land acquisition, land requisition; Land registration, land use right; cadastral document, land statistics; land use rights in the property market; rights and responsibility of land user; order of administrative procedures and land use management; implementing provisions; punishments to the land administrators in case of law violations; disputes, claims on land. Amongst that, article 27 guides the rights and obligations of NRE organisations and people's committee at 3 levels to the publication of planning, land use planning in clauses 2, 3 and 5 (VNG, 2004).

- Decree 84 in 2007: with 7 chapter and 68 articles, the Decree focuses on additional provisions for the issuance of certificates of land use rights, land acquisition, the order and procedures for compensation and resettlement process when state land acquired and settlement complaints on land. It specifies the provisions of treatment for some cases may change on land use rights and provisions applicable to certain land acquisition and compensation cases, land of support if the state land acquisition. And a noticeable point is in chapter 5 which states the order and procedures for land acquisition and implementation of the compensation, resettlement and support if the state land acquisition, these issues have cause lot of disputes in practice. Besides that is the issue of publicity of the compensation, support and resettlement plans.

Likewise, the Housing Law 2005 is a legal framework to manage construction, architecture, construction planning, urban infrastructure. It also needs documents to implement as below:

- Decree 71 in 2010: this Decree detailing and guiding a number of contents of house ownership, housing development, the management of the use of housing, housing transactions and state management of housing regulations in the Housing Law 2005. It describes the functions and responsibility of provincial people's committee and DoC at provincial level. The first considerable point is in article 7, which describes the scale of residential project can be approved from which level of the government by which individuals. The second point is article 14, mentions about the selection of investors for bidding commercial housing development projects. The provincial People's Committees instructs the Department of Construction directly the publicity on electronic portal (website) of the provincial People's Committee information related to 8 items to stimulate the use of information from real estate planners and citizens. Another point is the managing and providing information on housing, which is regulated in article 76. The rights and obligations for managing of the government to the local housing are stated in article 81 (VNG, 2010).
- Circular 16 in 2010: provides specific provisions and guiding the implementation of some articles of Decree 71. The circular updates and modify regulations relates to some aspects in Decree 71. For instant, housing development; the ownership, management, and use of housing; state management of housing. Amongst that, article 3 defines the classification of housing development projects, the order and procedures for selection of investor's commercial housing development projects in case of specified investors is defined in article 4. Moreover, it also regulates the transactions of commercial real estate in the real estate market.

Besides that, the implementation of Land Law and Housing Law also needs other legal documents to execute and disclosure related information to public, for instant:

- IT Law 2006: this Law provides for the development and application of information technology, the measures to ensure the application and development of information technology, the rights and obligations of agencies, organizations or individuals.
- Anti-corruption law 2005: this Law provides for the prevention, detection and treatment of persons who commit acts of corruption and responsibilities of agencies, organizations, units and individuals in the fight against corruption.
- Ordinance on Grassroots Democracy 34 in 2007: regulates the content of information to be publicized to let people know; contents of draft decision and decision; contents people consulted before the competent authority decision.
- Circular 26 in 2009: this Circular provides information and ensures convenient access to electronic information by state agencies to create comfortable conditions for organizations and individuals to easily exploit and use information.

2.2.5. Local regulations

Agunbiade (2012) argues that “the integration of land administration processes and the collaboration of land agencies are considered essential for the effective delivery of developable land for housing production. However, in most countries, housing and land management policies are usually split between multiple government agencies. The background literature suggests that the activities of governments’ agencies that perform these functions are disparate and lack harmonisation. The lack of integration allows land administration agencies to operate according to their internal norms and functions. As a result, policy responses are inevitably disjointed across and between different levels of government?”. This argument reflects the practice in the operation and management of land and housing in Vietnam in all administrative levels. It is easy to see from separation of two ministries: Ministry of Natural Resources and Environment (MoNRE) and Ministry of Construction (MoC). Following that separation is the dependent data resources belongs to each ministry and their in line agencies. And each one has introduced their rules and regulations in all activities. This fact causes the lack in coordination, collaboration between agencies in both vertical and horizontal axes. From those reasons, it impedes data sharing between agencies and then cause to the access to HIs from the users.

At the local government in Vietnam, the Provincial People’s Committee has the responsibility to manage and allocate the rights and obligations to its assisting departments. Thus, DoNRE and DoC and their in line hierarchy agencies have the responsibility to collect, produce and disseminate information that they are assigned by the Law and regulations at each province. Moving to the lower level, district level, BoNRE and BoC also receive the assignments from DoNRE and the district people’s committee (DPC). Due to the different situation at province and district levels, the CPC or DPC has issued particular regulations, rules or decisions to implement the Laws and Decrees from the State.

2.3. Theory about availability, accessibility and usability

In order to insist the value of information, it should be used widely, efficiently and effectively by users. However, the utilisation of information is determined by three factors: availability, accessibility and usability. Hence this section will address the factors and requirements that influent to the utilisation of information and the standards of access to information.

2.3.1. Availability, accessibility, usability

According to Derek (2012): **availability** is the availability of relevant geo-spatial Information; **accessibility** is the access to geo-spatial information and **usability** is the ability of the user to use the geo-spatial information. Those three factors are constrained by requirements in table 2.1 below:

Table 2-1: Concepts and indicators for the utilisation of information

Factors	Requirements
Availability	1) Relevant geo-spatial data to meets user need; 2) Format of data ; 3) Maintenance; 4)Essential requirements; 5) Data quality fits for purpose; 6) Co-operation and collaboration between geo-spatial data collectors.
Accessibility	1) User knows what data is available; 2) Source of data transparent to user; 3) ICT infrastructure (including bandwidth and cost); 4) Format of data; 5) On-time; 6) Standards; 7) Affordability (cost) of data; 8) Open data (restrictions)
Usability	1) User focus – planner, decision-maker, citizen; 2) Meets the needs of the user – purpose; 3) Relevant and not over-burdened; 4) Data quality – fit for purpose; 5) Understanding (semantics); 6) Format required by user; 7) User capability

In the context of this research, the mismatch of HIs is determined through information provided from the providers compared with information needed from the users. Therefore the mentioned factors can be considered concepts, because concepts are perceptions and their meanings vary from individual to individual (Kumar, 2000). And the sets of requirements above are linked to indicators, because indicators are sets of criteria reflective the concepts (Kumar, 2000).

2.3.2. Standards on access to information

Another considerable aspect in term of access to information is standards of the access, because many countries enshrine the right of access to government-held information in their constitutions (OSF, 2004) . Therefore, the Council of Europe's Recommendation has provided the guidance on the right of access to official documents and 15 standards has been summarized as follows:

1. *“Principle of Openness: all information held by public bodies shall be publicly available unless subject to a legitimate exemption, as clearly defined in law”.*
2. *All bodies performing public functions should be obliged to respond to information requests: all government bodies, including the legislative and judicial branches, should be under a duty to provide information to the public, as should all bodies performing public functions.*
3. *Anyone may request information without having to specify grounds: all persons, whether or not they are citizens of a given country or resident there should be able to file information requests and should not have to provide grounds or reasons for their request.*
4. *There shall be no discrimination in the provision of information: information requests shall be treated equally without discrimination with regard to the requestor.*
5. *Information shall be provided in a timely fashion.*
6. *Requests can be made either orally or in writing.*
7. *Access shall be to information rather than to documents: this is an important distinction as it permits requestors to seek information about the activities of a public body without having to name or reference the exact documents.*
8. *Information shall be provided in the format specified by the requestor wherever possible: this provided convenient for the requestor.*
9. *Requests filed with an inappropriate institution shall be transferred or referred to the correct body, wherever this is known: because it is often difficult for requestors to identify exactly which public body holds certain information.*
10. *The cost of access to information to the requestor should be limited to the supply costs and should in no instance be so high as to prove an obstacle to access.*
11. *Refusals to provide information must be grounded in law and must be made within the timeframes specified by law: if an information request is to be refused, then the refusal should detail the grounds for not disclosing the information, as established by law.*
12. *If exemptions apply, then there shall be partial access to relevant documents: if part of a document containing requested information is subject to an exemption from disclosure, then that part of the document shall be severed (blacked-out) and the remainder provided to the requestor.*
13. *There shall be a duty to assist requestors: it should not be necessary for the requestor to cite the exact law or the relevant provisions of the law in order for the information request to be processed.*
14. *An office or officer shall be designated to handle requests for information: the official in question should be able to make a clear distinction between the respective duties and loyalties - to the institution as spokesperson; to the public as information officer.*

15. *Every public body should publish certain routine information on a regular basis even absent any information requests*” (OSF, 2004).

2.4. The demand of housing information

As regards Welle Donker et al. (2010), the government is both the provider and the user of information and they can decide what information should be collected and maintained. And the open of access to information is determined through policies, laws and regulations. Thus, there are many controversial issues raised currently surrounding the open access to government-housed geographic databases (OSF, 2004)

Zevenbergen (2007) argues that the development of an economy might be affected harmfully if an urban land market does not run efficiently and effectively. Furthermore, that consequence may cause to the access to residential land from low income citizens. In fact, for the residential land, the price has even increased much faster. A study by one research team from Harvard University’s John Kennedy School of Government has shown that in Vietnam, land price in the large urban area is very expensive, which is equal to land price in comparable places of Japan, where densely populated country with the average income per head of 50 times higher than that of Vietnam (Van Suu, 2009). That high price can be easily explained by the investment of a number of wealthy people and also because of the lack of information or information is delayed to publicize from the public sector, which causes the land price increase significantly in recent years.

“The access to urban land is increasingly difficult for urban poor and low income groups. And the governments play a prominent role and are directly engaged in the land market as a sole conveyer of land use rights. The way this kind of urban land market responds to issues such as equity, transparency, efficiency and access to information are the foundations of a land market” (Koroso et al., 2013). Therefore, the use of information should be stimulated by consistent or harmonised access policy from the government (Welle Donker et al., 2010).

In Vietnam, According to Article 17 of the Constitution of the Socialist Republic of Vietnam in 1992, the land is owned by the whole people and the State acting as representative owner of the whole people. Hence, all activities of collecting, producing, disseminating and publicizing of HIs from the supply side must follow the laws, policies and regulations of state legal framework and also the rules and regulations of the local government. The current Land Law 2003 (VNA, 2003) provides the formal details on how to operate the land administration in Vietnam (Lemmens, 2008), however, despite the universality of this Land Law for the whole country, the implementation problems vary per district (Bui et al., 2012).

On the other hand, the implementation of Housing Law also gets many problems as Land Law. Vietnam has faced *“the challenge of how to integrate the widespread informal property market in a formal framework without losing the beneficial characteristics that have made informality the preferred channel”* and *“the widespread informal property market operates relatively well to allocate urban living space but fails to provide affordable housing for low-income groups, upgrading of services and long-term urban expansion. Increasing demand on urban and peri-urban land has created a speculative land price boom in major cities that has not been met with sufficient development of new peri-urban areas or densification of existing areas. This is inhibiting provision of affordable housing and upgrading of services”* (Worldbank, 2011). However, amongst that situation, Vietnam still does not have Law of Access to Information, though that law might provide a strong foundation for transparent public institutions in many countries (OSF, 2004).

In the context of this research, 3 main groups of HIs user are chosen including real estate planner, real estate agency and citizen. They are defined as in following sections:

- Real estate Planners: in land market, it involves developers and users (individual consumers or organizations) with the State plays role as a regulator (facilitating and moderating). Here the developers act like sellers and users are the consumers. After developing land (building houses and offices) they lease it out to users in a competitive market (Koroso et al., 2013). Thus, the developers are the users that need the much information from the public sector to

support for housing development. And the information that they need must meet their work standard. Thus, they may need the access to digital data such as cadastral map, land record, topographic maps (hydrology, transport), thematic information (land use, land use planning, land valuation)

- Real estate agency: the role of real estate agency can be seen as real estate brokers in the market for residential housing. Thus they play both roles the provider and the users as well. They need information from the public sector (land record, thematic information, cadastral map) and from the real estate planners (residential planning, land/housing value) as well to stimulate the transaction and improve the reliability of their information.
- Citizens: are people need information about urban planning and details of that project. They expect to know the location, detail of the parcel or housing that they can buy directly as the first buyers to get the best price. Or to know information about compensation, allocation and resettlement in case of land clearance or expropriation.

2.5. Practice of supply and demand of housing information system

Vietnam is a country in transition period. That fact is followed by the somewhat high rate of urbanization in society. According to that issue, the information and communication technology and services are not introduced well to the societal and public administrative system have cause some new problems such as the management the demand and supply of public and private land which are increasing and diverging (Bui et al., 2012).

Welle Donker et al. (2010) argued that “*the public sector bodies govern the access and use of information through specific access policies*”. In two last decades, the demand for secured tenure and equitable access are two important factors which are standing behind the rapid growth of economic and reducing poverty task. According to the development of the country, the land market is also speedily growing in immature stage. Although, the government has provided much supports for land and property for commercial purposes by promulgating policies and legislation, the market is much dedicated investment on commercial purposes. From that fact, it causes majority of land transactions are finished outside of formal sector, so it introduces the limitation in the success of extending formal land market and property (Worldbank, 2011).

In Vietnam, the latest Land Law was promulgated in 2003 aims at facilitating the development of land market, but there are still impediments to the growth of the land market due to a lack of access to land information. Consequently, the users of land information need to use personal contacts or approach land sellers through informal way (Anh et al., 2010). Many officials in public agencies were very surprised when users require land information. They often ask people to show a referral or to explain why finding information, although that information is mandated to publicize (Viet, 2011).

Another report from Mishra (2011), he stated that citizens often use intermediaries in dealing with land related issues, and half of the intermediaries are land officials themselves. The report indicates that 76 per cent of land officers chose their current job because they can get benefits from the access to land early from their work. This issue means that citizens did not know about the rights that they have and the private benefits derived from the holding information of officials.

From the legislation aspects, Decrees 84 in 2007 and 69 in 2009 have set up the procedures for compulsory land conversion and compensation. They provide guidance for compensation at market prices and coverage of income recovery costs. And MoNRE is working with the donor community to consider several options and develop guidelines to improve the Decrees implementation (Worldbank, 2011). However, not all people have access to that information and the first reason is because that people are not aware to their rights and obligations. Another reason may be due to local officials deliberately did not want to publicize such information.

Another study focuses specifically on transparency and examines the degree to which transparency provisions already in Vietnamese legislative documents are implemented in practice such as Decree 84, 102, 69, circular 26 and IT law. There are many land-related types of information are required to be publicized to public either on web sites or at offices. But the results of visited website vary considerably. Although nearly 90 per cent of the visited web sites contain information regarding list of procedures and forms related to certificates for land use rights, and only about one in three had the required information that citizen would need to file a complaint. The results from the checks at the offices were much more different. At the province level, a half of the provinces did not made available some mandated information to publicize such as detailed land use plan and planning and it was more difficult to see in lower administrative level. However, that study also could find some non-mandatory information such as criteria for land allocation or land allocation decisions was made available at some offices at all three levels of government.(World Bank et al., 2011)

2.6. Modelling criteria

The design modelling is based on the concept of Tuan (2006). The figure 2-3 gives overall information model for HI and LI in Vietnam. He considered a land information model as a combination of a static and dynamic model. The static model contains organisation model (structure) and data model (land administration domain model). The organisational model explores about the organisational structure. In Vietnam case, organisational structure presents ministry level, provincial level, district level and commune level respectively. The rights, restrictions and responsibilities are described in the laws. On the other hand, the data model contains data with national standard and specification to deal with overall land administration system (Lemmen et al., 2009).

The **dynamic model** contains function model (activities of different land administration and housing administration process in different administrative levels). The land administration functions contain land taxation, land functions, land rights, land development and land management. The housing administration process model contains processing in the overall HIs system. The HIs system contains information related to house, building construction type, price of building, area of building, number of floor and roof type.

The **process model** contains major activities in different administrative level for real estate business. The full parcel transaction, parcel subdivision, housing transaction, single room or floor transaction in an apartment, and multiple ownerships for property are the major activities in the information model. Process model contains overall HIs system and administration system, activities.

The **functional model** contains data acquisition, standardisation and conversion of data, data updating, production printing, data statistics, information dissemination, analysis and decision support and data sending to different administrative levels (Tuan, 2006).

The land information (LI) system is steering by national legal and technical framework and housing information (HI) system also is steering by national technical and legal framework. Based on that model, the figure 2-3 shows the HI system and LI system separately. Therefore, it is necessary to integrate HI system and LI system for new design concept.

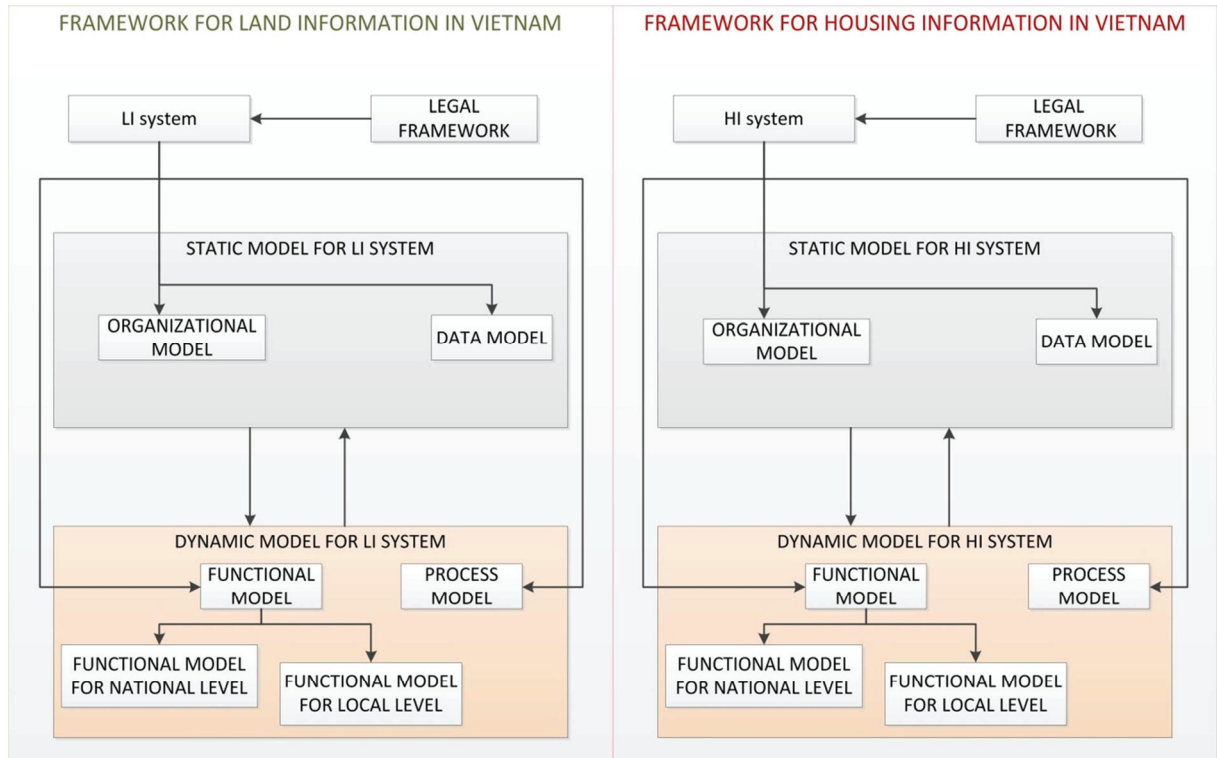


Figure 2-3: LI and HI model in Vietnam adopted form (Tuan, 2006)

2.7. Conclusion

This chapter has compared the definitions and perspectives on HIs, legal framework of HIs in Vietnam. The hierarchy of HIs organisations and their users were also mentioned in the followed parts. The HI and LI are mainly collected, produced, disseminated by the public sector associated with two ministries and their in line agencies. There was much effort from the government to promulgated laws, decisions and regulations to facilitating land market and the utilisation of HIs. However, because of complex institutional system, the limited in the technical facilities, human awareness and the cooperation between organizations would lead to limited of available information and lack of access to that information from the supply side. To further investigate the cause of those limitations, the next chapter is designed to explore the access to HIs in Can Tho, Vietnam.

3. DATA COLLECTION PROCESS

3.1. Introduction

In chapter 2, by reviewing literature the framework of the activities for HIs in suppliers and users has been addressed. Through that framework, this chapter aim to provide the input to answer the research objectives 2 and 3, which will explore the mismatch of the interactions between both sides of HIs in practice based mainly on the results of interview and observation during the four week fieldwork conducted in Can Tho city in Vietnam.

This chapter is built up with the following subsections: section 3.2 describes the fieldwork design. Section 3.3 presents the activities were used to collect data in the field. Section 3.4 is the concluding remarks.

3.2. Fieldwork design

To collect data effectively, strategy was formulated before the conduction of field trip, thus fieldwork design was built for that purpose. Besides that, primary data and secondary data that need to be collected also described in this section.

3.2.1. Fieldwork objectives

The strategy of a research is mainly depending on three conditions: (1) the type of research question; (2) the control an investigator has over actual behavioural events; and (3) the focus on contemporary as opposed to historical phenomenon. And case study is one of several ways of doing social science research (Yin, 2003). A case study is generally preferred to the strategy when “how” and “why” questions are defined, when the investigator has little control over the events, and when the focus is on contemporary phenomenon within some real-life context (Yin, 2003).

In this research, in order to answer research questions regarding to research objective 2 and 3, a case study was conducted in Can Tho city, Vietnam with 3 main objectives as follows:

- Objective 1: to acquire responses from the interview in both sides. The results would be the input for the interpretation in next chapter to understand the current existing activities of both sides of HIs in the field to validate the theory. In practice, the situation of each specific location was very different. It was because of the differences in geography, culture, human resources, financial capacity and information infrastructure, etc. Therefore, the implementation of legal framework was adapted to suit with the situation of each specific location.
- Objective 2: to obtain opinions from the interviewees from both sides to further investigate the real mismatch of HIs between the providers (the governmental organisations) and requirements of the users (the real estate developers, real estate agencies, citizens) in the next chapter through the interviews with data managers and users were working with HIs and need HIs for dwelling matter.
- Objective 3: to collect primary data and further related secondary data for the interpreting procedure phase of the research. Secondary data was the legal documents and samples from the supply side. For further purpose was to observe the interaction and behaviour of the stakeholders.

Kumar (2000) argued that there are two major approaches to gathering information about a situation, person, problem or phenomenon. Hence, to achieve the mentioned objectives, primary data and secondary data from interview and observation are necessary to be collected at the field. The primary data is to comprehend the practice of the situation. The secondary data is to deeply understand and validate the literature in chapter 2. The figure 3.1 below describes the methods of data collection phase:

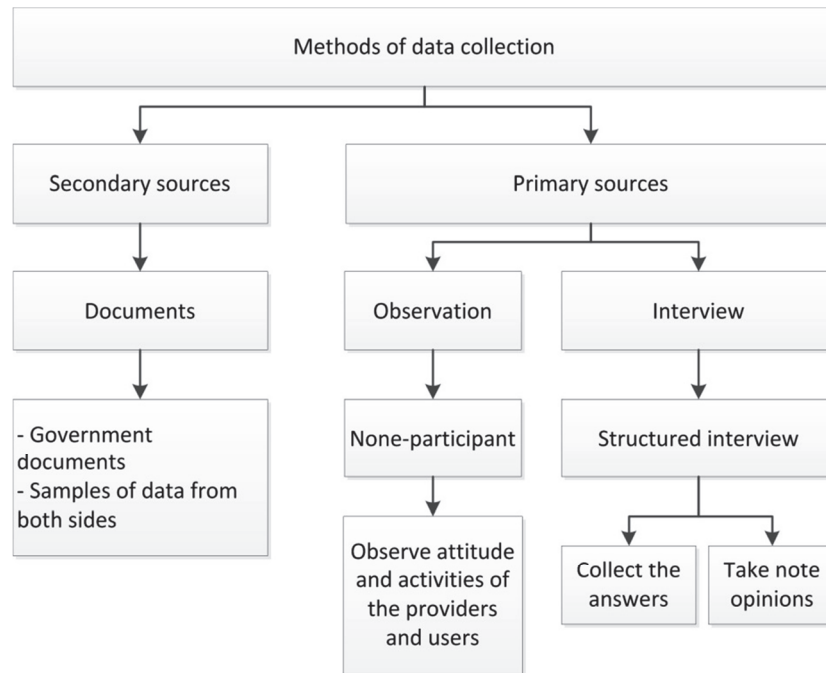


Figure 3-1: Methods used for data collection

3.2.2. Primary data sources

3.2.2.1. Methods of data collection

There are several methods can be used to collect primary. However, the purpose of the study and the resources available would determine the choice of a method (Kumar, 2000). Besides that, none of the methods of data collection can best provide accurate and reliable information (Kumar, 2000). Thus, in this research the structured interview and none participant observation are chosen to collect primary data. The detail of each method will be described as follows:

Structured interview: open-ended and closed-ended interview schedule

As the research focus on the supply and demand of HIs, the interview is mainly based on the legal framework of Vietnam which was defined in chapter 2. The scope of the study is to deal with the provided and publicized products of HIs versus the accessibility of those products. According to Vietnam land law 2003 (VNA, 2003), there are four levels of land administration. On the other hand, housing law 2005 describes 3 levels of construction administration. In this study, I focused on provincial level organisations (DoNRE and DoC) and district level (BoNRE and BoC), because they were responsible for the management and administration of HIs of the city. The demander of HIs was divided into 3 groups based on their interest and their specific needs were: real estate planner, real estate agency and citizen.

None-participant observation by narrative recording method

Observation method is a way of watching and listening to an interaction or phenomenon as it takes place (Kumar, 2000). It was useful to observe behaviour and activities, thus I used none-participant observation method during the field trip in Vietnam to observe the attitude, reaction, behaviour and awareness of interviewees during the interview. I observed how laws and regulations were implementing; how activities were operating; how data and information were publicized and provided to users; how available of internal rules and procedures were. On the other hand, I looked for the reaction of users on the legislation, policy; how they and which method they often used to access HIs; how they felt when required HIs and worked with the public organizations; how they were aware about the availability of HIs and their rights to access to a specific HIs.

3.2.2.2. Interview schedule designing (questionnaire designing)

Structured interview method was used with both closed-ended and open ended questions. The aim of closed-ended question was posed to collect uniform information to assure the comparable data (Kumar, 2000). Besides that, open-ended question was used to get in-depth information from the stakeholders to know their opinions and reasons that cause the mismatch between two sides.

The questionnaire was built up in three different sets. One was for the operational organisations of land information (natural resources and environment). The second one was for the interview with people from construction department. Those two sets of questionnaire were used to conduct interview at either provincial and district levels. The third one was used to interview users (real estate planner, real estate agency and citizen). Those three sets of questionnaires were designed as in appendixes 3, 4 and 5 respectively.

Interview schedule for natural resources group was concentrated on aspects as following:

- Current situation of some information was mandated to publicized by Decree 181 in 2004
- Kinds of information and data that they had and in which format. Laws, rules, regulations and procedures that they used to collect and share to users.
- The horizontal and vertical interaction among related organisations.
- The practice needed and the mismatch with their users.
- The reasons and shortcomings that caused to the mismatch with users.

Interview schedule for construction information group was concentrated on aspects as following:

- Current situation of some information was mandated to publicized by Decree 71 in 2010
- Kinds of information and data that they had and in which format. Laws, rules, regulations and procedures that they used to collect and share to users.
- The horizontal and vertical interaction among related organisations.
- The practice needed and the mismatch with their users.
- The reasons and shortcomings that caused to the mismatch with users.

Interview schedule for user group was concentrated on aspects as following:

- Current situation of some information that they could derive and in which format that they could derive according to the guidance of Decree 181 in 2004 and Decree 71 in 2010.
- Their awareness about the available situation of HIs. Their rights to access to specific information. Their awareness and attitude to the behaviour, services and procedures from the supply side.
- The methods they used to access HIs, in which sources and format.
- Their needs and the gaps.

Those questionnaires were built to collect practice information to answer research questions regarding to research objectives 2 and 3. It is important to examine the factors as followed:

- Availability
- Accessibility
- Usability
- Accountability
- Legislation

3.2.3. Secondary data sources

Beside the primary data could be collected through interview and observation. Secondary data was also needed to be collected from both sides such as: legal documents, rules, regulations, decisions, maps, reports, etc. Those documents were necessary for insightfully understand the theory about framework of organisations activities. In addition, it was to validate what interviewee's responses in the interview.

3.3. Fieldwork activities

The study area will be introduced in this section. Besides that, it also presents all activities in during the field study.

3.3.1. Study area

Fieldwork was conducted in Can Tho city, which has coordinates geographic of 105°13'38 - 105°50'35 east longitude and 9°55'08 - 10°19'38 north latitude. The city is located in the lower bank of Hau River and in the centre of the Mekong Delta, which is in the south west of Vietnam. It is also called “Tay Do” from hundred years ago, the capital of the south west region. It is encompassed by An Giang province to the north, Dong Thap and Vinh Long provinces in the east, Kien Giang province in the west; Hau Giang province in the south.

Can Tho stretches over 55km along the west bank of the Hau River, the total natural area is 1401 km². The total population of Can Tho is around 1.2 million people and the residential density is 852 people/km² (General Statistics Office Vietnam, 2011). Administrative units of Can Tho city consists of five inner districts (Ninh Kieu, Cai Rang Binh Thuy, O Mon and Thot Not) and 4 outer districts (Phong Dien, Co Do, Vinh Thanh, Thoi Lai) with 85 administrative units communes, wards and townships (5 towns, 36 villages, 44 wards). In case of district level, Ninh Kieu district was selected for the survey because it is the centre of economic and administration of the city. It is marked in figure 3.2:

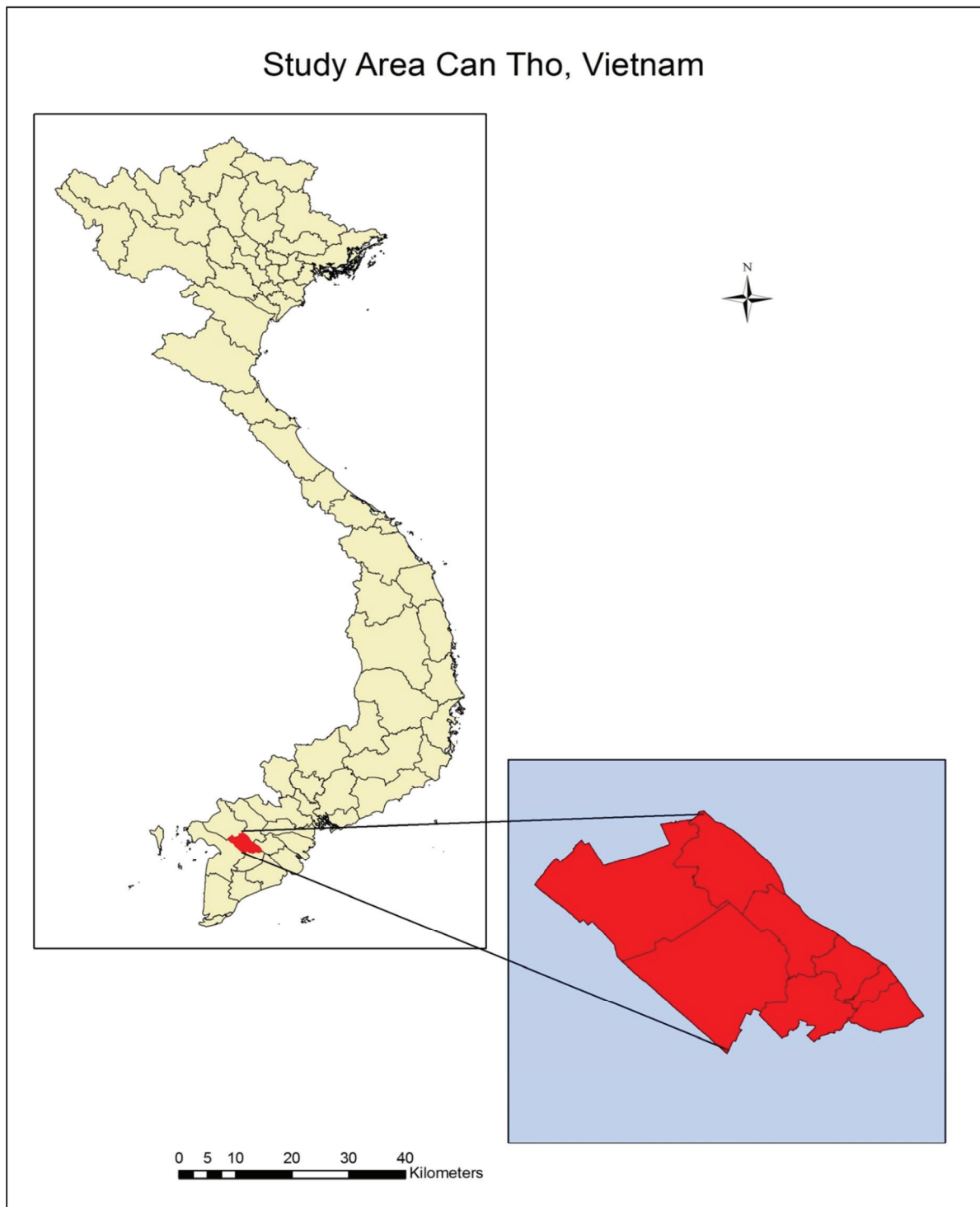


Figure 3-2: Map of Vietnam and location of Can Tho city

3.3.2. Data collection

During the four week fieldwork in Vietnam (from 28 September to 24 October, 2012), the mainly activities were:

- Modified 3 set of questionnaires by discussing with people had experience in HIs and conducted the pilot interview.
- Contacted interviewees and arranged the interviews
- Went to field to observe the activities and took photo of field situation
- Collected government documents and samples such as maps, data

3.3.2.1. Primary data activities

Interview is one of two primary sources in this study. The process of the interview can be divided into 4 steps as following:

❖ Preparation phase

In this phase, questionnaires and tools for the interview were prepared. Discussion with people that have experience and knowledge about HIs was conducted to modify the questionnaires. Then conducted the pilot interview to test the questionnaires

❖ Identify the interviewees

The offices which were included in the field survey were identified based on their responsibilities, their functions were stated in Vietnamese land law 2003 and housing law 2003. Besides that, I also used my experience and knowledge to identify the interviewees. The expected information might be derived from each interviewee group is described as below:

For the supply side:

- Department of Natural Resources and Environment (DoNRE): is the organization at provincial level, so it can provide information such as: land use planning maps and details, cadastral map, land cover map, boundary and location map, compensation and resettlement plan and decision, site clearance, procedures of land and property registration, land and property mortgage, land and property transfer,
- Bureau of Natural Resources and Environment (BoNRE) has the function almost similar with DoNRE but it administers NRE information at district level.
- Department of Construction (DoC): is an organization at provincial level. It can provide information about: urban planning map and details, zoning planning map and details, planning requirements, requirements for operational management and exploitation of the project after construction is completed, administrative procedure, conditions to attend the bid of choosing investors for housing projects, planning and constructing legal documents (DoC, 2012).
- Bureau of Construction (BoC) operates the functions almost similar with DoC but at district level. It was unable to approve and manage residential project with more than 500 houses or 7 billion VND. Besides that, it provides information about housing and construction at its local area (BoC, 2012).

For the demand side:

- Real estate planners: this group of user might need information to develop housing or to planning residential land, then sell to the citizens. Thus, information that they often needed were: land use planning including map and details, cadastral maps, land cover map, land use plan, zoning plans, site clearance, map of location and boundary of land to develop commercial housing, land value, planning requirements, conditions to attend the bid of choosing investors for housing projects, land use right certificate, land lease, land use conditions, land mortgage, land transfer, related legal documents.
- Real estate agency: the main function of this group is to stimulate the transaction of land and property, thus information that they needed were: land price, land use planning including maps and details, administrative procedures related to residential land and property, procedure to derive residential land use right certificate and housing certificate, land mortgage, related legal documents.
- Citizens are people needed HIs for their dwelling purpose might need information about: land price, taxes, cadastral map, land and property mortgage, land and property transfer procedure, administrative procedures, compensation details, resettlement plan, land use right or property

ownership certificate. Further, other people might want to investigate to real estate market, they may need information such as: land use planning maps and details, zoning plan, land use plan, map of location and boundary of area to develop commercial housing, infrastructure details.

Division of interviewees and number of conducted interviews

Because of the limitation of the field trip time, I conducted the primary data collection in four agencies (two in provincial level, two in district level) because of their mandate, function, responsibility and their related data. The respondents of the interview were assigned by their heads or their agents or the heads themselves in some cases. On the other hand, users were citizens were purposive people. They were asked about the purpose and the content of the questionnaires generally before the conduction of the interview, so they had knowledge or experience with the content and the activities of the related information. Table 3-1 below will show the divisions and numbers of respondents were expected and were conducted during the field trip.

Table 3-1: The divisions of interviewee and number conducted interview

	Group	Name of interviewee group	Number of interviewee expected	Number of interviewee conducted
Suppliers	Group 1	Department of Natural Resources and Environment (DoNRE)	3	3
		Bureau of Natural Resources and Environment (BoNRE)	3	2
	Group 2	Department of Construction (DoC)	3	4
		Bureau of Construction (BoC)	3	3
Demanders	Group 3	Real Estate Planner	5	5
		Real Estate Agent	5	2
		Citizens	10	9
Total			32	28

❖ Contact the interviewees

To contact the interviewees in public organisations: I needed the introductive letter from ITC and also from Department of Internal Affairs in my city. Then I used that letter to contact with the director, deputy or header of an organisation to assign people for the interview. After that I needed to collect their phone number or email to contact those officials to arrange date, time and location for the interview and collected data and sample if possible.

On the other hand, the users were divided into 3 groups. In case of real estate planners and real estate agency, I first had to collect the name of those companies on mass media or personal relationship. Then I needed to directly visit their office or call them if I could require for the interview. If the requirement was accepted, then I arranged for the interview. In case of citizen group, I chose the interviewees mainly based on personal relationship, I could contact friends or relatives to seek for a person might answer or know about the information that I might ask. Then I could call them to explain generally about my questionnaire, if the requirement was accepted, then I arranged the interview.

❖ Interview and take note

An interview often lasted for 40-60 minutes. During the interview, beside the information received from the responses of respondents in the questionnaire, I also noted information that they explained or provided that was not put in the interview schedule. Observation was also conducted during the interview to understand their attitude, behaviour about the operation and administration of public organisations, and their awareness about rights and available data and information in practice of the area.

The visit to fields like office of DoNRE, BoNRE, DoC, BoC and residential planning area where had public information about draft and approved urban planning, zoning planning, reports and maps on detailed land use planning, land use plan, administrative procedures for issuing LURC and property ownership, resettlement and compensation plan and decision.

3.3.2.2. Secondary data activities

The process of collecting secondary data consisted of assembling: laws, decrees, circulars, decision, administrative procedures, maps and reports. The selection of documents was based on a snowballing approach, i.e. which was references given during the interviews. I looked in particular documents that related to land, housing, publicity and access to information.

3.3.3. Field work limitations

The mismatch between HIs provided from the government and the users is a hot issue in recent years. Especially in a developing and transitioning countries, where still does not have good governance and low level of transparency, the corruption and bureaucracy are induced in many organisations and officials as well. From that fact, the exploration to this mismatch is really sensitive, thus the field work faced many limitations as followed:

- The respondents did not allow recording the interview even taking photo, especially those who working in the governmental organisations. They also could not provide rules or regulations mention about that prohibition or proper explanation.
- Time for preparing questionnaires was short because the questionnaire was changed due to the denial of recording. Finally, semi-structured questionnaire was built for the interview and it was categorized into three forms for three group of interviewee
- It was very difficult to require the interviewee, especially the governmental official to answer the open questions.
- The introduction letter from ITC was not recognised in the field. Then I used the introduction letter from Department of Internal Affairs of Can Tho city, but it also was not recognised in many cases.
- It took much time and effort to contact the official and make an appointment for the interview. To get the appointment with the interviewee, I needed to get the permission of their chief or director of those organisations. But in many cases, those people were busy or not at their office.
- Many internal documents (i.e. rules, regulations, procedures, etc.) were not allowed to access. Data to make sample also could not derive from those organisations in many cases.

- In case of the users, the choice of a respondent was limited, because large number of citizens did not have experience and knowledge about relevant information to answer the questionnaire.
- In case of real estate planners and real estate agents, it was difficult to ask them to spend time for the interview because they seem busy and not willing for the interview. This caused the small number of interviewees in this group.

3.4. Conclusions

In this chapter, a case study was conducted in Can Tho city, Vietnam to achieve 3 objectives from the data collection that I proposed in section 3.2.1 which are necessary to insightfully understand the mismatch between the supply side and demand side in term of HIs. And five principles including availability, accessibility, usability, accountability and legislation were used to look at information to be collected during the data collection. The result for each objective on data collections are follows:

- Objective on data collection 1: to give answer for this objective, I need to interpret results from the interview, which is presented in section 4.2. And the result is presented in section 4.6.
- Objective on data collection 2: the mismatch or gaps of HIs between the demanders and suppliers is the results of the interpretation of the interview and it is presented in section 4.2.3, which shows the needs and interaction between both sides.
- Objective on data collection 3: the primary data was mainly the results of structured interview with 28 interviewees in demand and supply sides which was categorized to 3 groups in table 3-1. Besides that, the none-participant observation conducted through the interview with respondents to observe their attitude and behaviour about current situation of HIs. In addition, I also visited the fields where had related HIs such as: billboards, notification about land and construction project, urban plan, land use plan, etc. The secondary data was collected from the interviewees during the field work, they were mainly legal documents related to land and natural resources, housing and access to information. The details of those documents are categorized in table 4-1.

In next chapter will deal with real situation and current activities of access to HIs to the users from demand and supply sides. Other aim of next chapter is to investigate the real mismatch or overlap in HIs system. Thus the data collected from the field study will be the input for the next chapter.

4. INTERPRETING RESULTS OF DATA COLLECTION

4.1. Introduction

This chapter provides the results of interview, observation and secondary data from the fieldwork, which regard to the gap of HIs between supplier and demanders in Can Tho, Vietnam. It aims to address research objectives 2 and 3 and their regarding research questions as follows:

- 2.1 Which agencies in Can Tho systematically retrieve, acquire and produce HIs?
- 2.2 What information that they have and in which format, using which laws?
- 2.3 How do they make their data accessible to other?
- 3.1 Who are the main users of HIs in CanTho?
- 3.2 Through which access mechanisms can they access and what type of HIs can they obtain?

Through the interpreting process, the needs and problems from the interaction between users and suppliers are determined, which are necessary for building models to bridge the gap in the next chapter. This chapter is built up in 5 sections as follows: section 4.2 presents the results from the interviews with supply and demand sides and the needs and problems from their interaction; section 4.3 describes the results of secondary data collected from the fieldwork; section 4.4 is the results of the observation; section 4.5 presents the current situation of the by using UML and section 4.6 is the concluding and remark of the chapter.

4.2. Results from interviews

In total 28 interviewees were conducted: 7 with construction professional, 5 with staff members of natural resources and environment (NRE) agencies and 16 with real estate planners, real estate agents and citizens who are users of HIs. On the supply side the interviews with construction professionals and the NRE staff member provide an overview of their activities and responsibilities. The demand side is represented by the interview with users from 3 groups including real estate planner, real estate agency and citizen. And based on 5 aspects availability, accessibility, usability, accountability and legislation, I categorize results of my data collection as in following sections.

4.2.1. Supply side

The interviews with construction professionals and natural resources and environment professionals provided the following responses:

❖ Availability aspect:

The information that construction agencies can provide to the users include information about planning requirements, architecture, number and type of housing, technical infrastructure, social information and other constructions within the scope of the project, project progress. However, not all of that information is made available for external users. It depends on each specific data, even for the use of internal agencies, because data has not been standardized in the acceptable standards. However, 6 of 7 construction professionals indicted that their information is updated frequently to make report to internal website of the ministry. And external users have to visit construction office to retrieve analogue copy of such data.

All construction professionals are working with maps, which is available in both analogue and digital form. However that map is only available at agencies of construction. These maps are not displayed on the website of the department of construction and therefore cannot be downloaded by users. Three of the seven construction professional indicated that they were not able to provide maps or data on land use conditions (such as allocated or leased land, time of lease, land for resettlement; land price of each area and the financial obligations that investors have to pay as prescribed). The four others indicated that it was possible to retrieve such data. However it would require combining some data on the website of DoC

some data available on hard copies and some data available on another agencies, namely NRE agencies. There were two construction professionals revealed that they also got difficulty to retrieve some types of data from NRE agencies and the standards of that data is not always able to be used directly because of different types of format (such as shp, dgn, dwg, etc.). And many old maps which used the different coordination system (Ha Noi 72) compared with the current coordination system is VN 2000.

On the other hand, most of NRE professionals indicated that their data include information in several subjects such as cadastral map, land record, topographic maps (hydrology, transport), thematic information (land use plan, land use planning, and land valuation). Besides that, they have legal documents, reports and statistic, administrative procedures. However, depends on each type of information that it can be available to users or not. And they almost agree that their information is updated very open.

All NRE professionals indicated that because of sharing mechanism and information infrastructure are the main reasons hinder their sharing on information about the report on detailed land use planning and detailed land use plan on their website so external users cannot derive that information at their website. As regard to the access to maps of location of current land use, five of five respondents indicated that they can provide at their offices only in both analogue and digital format if it is required. The similar responses also received in case of information about detailed map of land use planning in the case of detailed land use plan approved. Almost NRE professionals indicated that they cannot make available on website of that data because of the weakness of information infrastructure and sharing mechanism.

❖ Accessibility aspect

The process of access to HIs was complex. The majority of construction and NRE staffs indicated that users might need to retrieve their information or data from their websites, their offices or some other centres/agencies. And the HIs is available partly in digital format and partly analogue format also. The construction professionals indicated that users can retrieve the raster maps which display urban plan or area of development of commercial housing on their website but in low quality. And in case they need to collect the digital maps they should acquire from division of project management (this is an assistant agency of Can Tho people's committee). The construction professionals indicated that the decision to allocate land to the planners depends on the time that they require at Department of Planning and Investment (DoPI) and depends on their financial status. Thus the information about the conditions to attend the bid of choosing investors for housing projects is not available on website, but people have to come to office of DoC and department of Planning and Investigation to retrieve complete information.

Users needed much afford to retrieve HIs because they have to visit several offices. The majority of construction professionals indicated that they do not have direct access to information about the overall plan on compensation, site clearance and resettlement, but they can retrieve it from DoNRE or users may require from DoNRE. Similarly the information about operational management and exploitation of the project after construction which is completed is not directly accessible at DoC. Four of five NRE staffs said that they do not have information of draft plan for compensation, support and resettlement. And they pointed to land clearance and compensation centre or land development centre (are the assistant centres of district or ward people's committee) where the project is developed or people's committee of district or ward to retrieve that information. However, when the plan for compensation, support and resettlement is approved, NRE agencies might have and provide that information to external users.

❖ Usability aspect

The use of HIs varies depends on each group of user. According to the construction professionals, their main users group of information include housing planner, real estate agency and citizens. They all use this information primarily for housing development, transaction and validate information of legal status. According to all NRE staffs, their main users include housing planner, real estate agency and citizens. Besides that it also includes notaries, banks, organizations need information for mortgage and inspection,

police and court. They often use information for housing development, transaction and validation information. Moreover, information is used for solving land dispute, reissue LURC, etc.

❖ **Accountability aspect**

The accountability is one confusing issue, which is having several agencies are responsible for producing and providing HIs at the meantime. The staff members of DoC indicated that they are responsible for activities related to data about urban development plan, building licences, construction regulations, laws and regulations, etc. All NRE staffs indicated that they are not responsible for producing information of the draft urban planning. This information can be retrieved from DoC only. But four of five NRE professionals indicated that once the urban planning is approved, they would able to provide that information at their offices. Both departments of construction and NRE are responsible for providing maps or data on land use conditions, but this accountability is not really clarify because only three of seven DoC staffs could insist that they provide that information. But for information about financial obligation, the department of finance (DoF) is responsible to produce and provide that information, which was indicated by construction staffs. The construction staffs also indicated the accountability of two others centres (land clearance and compensation centre or land development centre) which are responsible for information about draft plan for compensation, support and resettlement.

❖ **Legislation aspect**

Although two construction professionals did not give their answer to question of issuing legal document at local area, four of seven staffs indicated that the people's committee of the city and district have promulgated legal documents such as decisions or directive to regulate the implementation Laws, Decrees and Circulars from higher authority. Most of construction professionals indicated that the current legal documents are enough to well sharing their HIs, although there is no circular to give the guidance for decree 71/2010 and the issuance of that document depends on the situation of each particular case, which has particular problem or dispute. For that kind of document, users can retrieve from both their offices and portal website of the city. On the other hand, the majority of NRE professionals indicated that the MoNRE also had not issued a circular to give guidance for decree 102/2008, and they indicated that the legal documents for guiding the implementation of sharing data from state government and higher authorities were currently enough for their sharing activities. However, there were still some specific cases the local government would decide to promulgate decisions to implement the land law, housing law or documents from higher authority. For instant, directive 16/2005/CT-UBND and directive 18/2005/CT-UBND of Can Tho people's committee to implement land law 2003 in Can Tho city and to execute the urban planning and manage the urban plan in Can Tho. And it is available on website of DoNRE.

The needs to improve access to HIs:

To improve the access to information of NRE agencies, three of five professionals proposed some ideas for example: 1) the government should quickly complete database for land information system in both digital and analogue format; 2) improve the capacity of staffs, their accountability and behaviour; 3) upgrade information infrastructure and proper software to improve the consistency of cadastral storing and disseminating system and standards in all three administrative levels of land. Simultaneously, land use change should be updated frequently to have up-to-dated information to provide users accurate data; 4) having clear policy or regulation on publicize and provide digital data on their website or offices such as maps of land use plan, land use planning and details, cadastral information.

In addition, there were two construction professionals suggest to improve the capacity of information infrastructure to build the national database of land, housing and e-government and have policies to provide more information online such as urban planning details and maps, zoning plans, map of location and boundary of land to develop commercial housing, planning requirements, conditions to attend the bid of choosing investors for housing projects and related legal documents. And one-stop shop for providing HIs should be interoperated through 3 levels (province, district and ward).

For broaden the access to information in construction agencies. The construction professionals suggest providing urban planning, land use planning, plan of compensation, administrative procedures, support and clearance process on their website. At their offices may provide data obtained from NRE agencies. The majority of construction staffs could not propose any sharing mechanism or policy to improve the access of external users.

4.2.2. Demand side

On the demand side, in total 16 users collected from 3 main groups (real estate planner, real estate agency and citizen) that open use HIs for dwelling purpose were interviewed. I categorize five aspects for demand side that are availability, accessibility, usability, accountability and legislation. The responses from the interviews provide following information:

❖ Availability aspect

The majority of respondents indicated that construction agencies were working in both digital and analogue data of HIs. The information that they could derive from DoC were information related to urban plan, residential or housing project, land compensation plan, support and allocation plan, administrative procedure, legal documents related to construction and regulations for building construction. Besides that, BoC is responsible for information related to housing and residential project at its local area, land compensation, support and allocation plan. With total 11 of 16 users indicated that construction agencies disseminated their data to external users partly in digital format and partly in analogue copy at either their website or their offices also. However, the department of construction only makes available raster map on their website in low quality and cannot be downloaded. Citizens might retrieve paper and digital copy at their offices with a particular fee for each type of information.

From the results of the interview shows that the availability situation of information on website of DoC is very limited and it depends on type of information. Most of respondents could not find information that they need on website of DoC such as: digital map of urban planning or residential construction project; map of location, boundary and area of land to develop commercial housing on the area; land use conditions; planning requirements, architecture, number and type of housing, technical infrastructure, social information and other constructions within the scope of the project, project progress; draft and approved overall plan on compensation, site clearance and resettlement; requirements for operational management and exploitation of the project after construction is completed.

However, not all that information is also available at the offices of construction agencies. There were 10 of 16 respondents indicated that information about land use conditions (allocated or leased, time of lease, land for resettlement, land price of each area and the financial obligations that investors have to pay) were available simultaneously in construction agencies, financial department, NRE agencies or even in people's committee of the area has the project. There were 10 of 16 respondent indicated that information about the overall plan on compensation, site clearance and resettlement were available at some places such as: constructions agencies, land development centre, site clearance centre, people's committee of the project, land division of project management or even at the investors of a particular project.

As regard the responses to information from NRE agencies, the availability situation of their information was also rather similar with the situation of construction agencies. Almost respondents indicated that NRE agencies are working with both digital and analogue data such as: cadastral map, topographic information, land record, thematic information (land use plan, land use planning, and land value), legal documents related to land and natural resources, and administrative procedures documents. They also displayed a part of their information on website. With 10 of 16 users indicated that they could only find on website of DoNRE information for their use such as: land use plan map, but in raster format and cannot be downloaded and it does not have details accordingly; land value; administrative procedure documents and legal documents. On the other hand, the majority of users indicated that they need to visit NRE agencies to retrieve information such as: details and map (digital or analogue copy) of land use plan and

land use planning, land cover map. In case of the available situation of information such as: compensation plan, support and allocation, 5 of 16 interviewees point to people's committee of the area has the project, while 3 others indicate to land development centre, 3 indicate that DoNRE is having and 5 others did not know where is that information is available.

❖ **Accessibility aspect**

Firstly, there is a fact that users are using both formal and informal method to collect HIs for their purposes. For the formal way, they can derive from public agencies for HIS. For the informal way, they can get derive HIs from other sources such as: from relationships with friends or family, mass media, internet, from investors or real estate agency. There were 12 of 16 interviewees answered that they needed to collect relevant HIs from two or several sources rather than retrieving from public sector only. Ten interviewees needed the relationship with friends or relatives to collect HIs. And 9 people mentioned to the source of brokers. Eleven responses indicated that they need to visit the relevant offices to retrieve information, while only 6 users said that they can download relevant information from websites for their purposes. Although the suppliers made available some HIs on their websites, 8 of 16 users indicated that they could not find a part of relevant HIs for their purposes from websites and 4 respondents did not care about the available websites.

Secondly, the accessibility of HIs also depends on the group of users. With 5 of 5 real estate planners indicated that if they could show the purpose of their use such as for planning a housing project and they have received the approval from relevant department such as: Department of Planning and Investigation (DoPI), Department of Construction. Then they can derive some data or information for their purposes such as: digital map of location of land cover, report on detailed land use planning and detailed land use plan, digital map of planning of urban construction and rural residence in ratio 1/2000. However, in case of many respondents from other user groups (private use of citizens and real estate agency), they cannot derive that information from the public sector bodies. There are 7 of 11 respondents indicate that they might derive analogue or raster maps with low quality related to the mentioned information for real estate planners.

As regard to issue of places to derive HIs, the need to combine information from two or many places happened in cases of the many type of HIs such as: overall plan on cases of compensation plan, site clearance and resettlement; requirements for operational management and exploitation of the project after construction is completed and also information for land use conditions, etc. Although construction and NRE agencies can provide a part of that information, people also need to collect from other places such as: land development centre, site clearance centre, people's committee of district or ward, land development centre, division of project management, or even the investors of a particular project. Especially in case of information about draft plan for compensation, support and resettlement, there were 5 choices were mentioned from the respondents: 6 people mentioned to people's committee, 3 mentioned land development centre, 3 pointed to DoNRE, and some others could not get this information. However, when the city has the decision for compensation, support and resettlement, the people's committee was the choice of a half of responses. Only 4 users mentioned to DoNRE to retrieve the information. Besides that, the respondents also pointed to land clearance centre, land development centre, compensation and clearance centre or investor to retrieve this information of compensation, support and resettlement.

Almost 3 quarters of respondents indicated that it was difficult to access to HIs from public sector, while only 1 agreed that it was easy to access, 1 said it was very difficult to access HIs, and the rest others had neutral opinion. The reasons that impeded the access to HIs were various and the biggest number of responses is because of HIs was located in several agencies and HIs was not made available on websites for the use of external users (10 of 14 responses). There was 7 users pointed out that the complex administrative procedures causes their access to HIs. The reasons such as they did not know proper agencies to require HIs or HIs put on websites was difficult to search or not able to download were

chosen by 6 of 14 responses. Besides that, there was 4 respondents mentioned to weakness of technology infrastructure of relevant websites or those websites were suspended or had errors very often so they could not access to relevant HIs when they needed. Although 9 of 16 respondents agreed that HIs from relevant website was updated but not frequent. There was 4 of 9 users stated that many legal documents from both higher authority and local government were updated much late compared with their promulgation. Only two said that they could derive enough HIs for their purposes from public sector.

❖ Usability aspect

The majority of HIs users from the interviews open retrieve relevant HIs for their main purposes such as: transaction, housing development, and validation information or investigation to real estate. The information that they open need are: LUP or LUPi and detailed information, urban planning, construction planning, residential project, land price, compensation, support and resettlement, legal status of land and property, map of location and boundary of area to develop commercial housing, check the tenure.

However, the quality of HIs from the suppliers did not meet the need from the demanders. There were 3 of 16 users indicated that the available HIs was inconsistent and not enough for their purposes, so they could not compile appropriate HIs set for their need. There were 4 of 16 indicated that they could not read and recognise details in the raster maps that they retrieved, and that maps cannot be downloaded. And the satisfaction of the users for the quality of HIs form suppliers just stand on neutral scale, 11 of 16 chose neutral, only 2 voted for “good” quality, and the rest others felt that quality of HIs was not good.

❖ Accountability aspect

The accountability was difficult to recognize in many cases of HIs. Beside the construction and NRE agencies, there are still several agencies that are responsible for producing and disseminating relevant HIs such as: land development centre, site clearance centre, people’s committee of district or ward, land development centre, division of project management, or even the investors of a particular project. Different results were received from the respondents to point out the place to collect HIs. Especially in cases of information about compensation plan, site clearance and resettlement, requirements for operational management and exploitation of the project after construction is completed and also information for land use conditions.

The accountability for HIs activities was not well defined and transparent. The result from the interview shows that users are confusing to choose the places to derive some HIs such as: information on urban planning approved; decision on compensation, support and resettlement; requirements for operational management and exploitation of the project after construction is completed; land use conditions, etc. There were half of interviewees answered that DoC did not display information about the conditions to attend the bid of choosing investors for housing projects, but users could retrieve that information at construction agencies. The rest of users indicated that they could not collect or they can collect that information from website or from the division of project management. Information on the draft urban planning or approved urban planning received various results for example: 5 said that DoC can provide the draft of urban planning, the same number pointed to DoNRE, 1 indicated that the information belonged to division of project management and 1 indicated to people’s committee and the rest people could not retrieve this information. But there was 12 people indicated that the DoNRE might provide the approved urban planning, 1 could not collect and the rest mentioned to DoC.

❖ Legislation aspect

Although 7 of 16 respondents skipped the question or could not give answer, the 9 others indicated that the current legal framework from higher authorities did not well regulate the data sharing activity and cannot fulfil their demand of HIs. And the local government needed to promulgate more legal documents to enforce the laws at city such as: land price yearly, decisions for regulations related to area, demarcate, road, site clearance, compensation, support and resettlement, land recovery, land allocation, and administrative procedures. However, 9 of 16 respondents indicated that those documents were not made

available enough on relevant websites. And 12 of 16 indicated that those legal documents could not cover all situations in practice, it depended on each situation.

There were 8 of 16 users indicated that the legal framework could not cover the practice situation. And the guidance documents for law (such as Decree, circular) were promulgated late compared with the law in term of sharing and disseminating HIs to users. For example, the land law was promulgated in 2003, but the Decree 181 in 2004 did not come up with the accessibility to land and natural information. Then the Decree 102 in 2008 provided the definition of accessibility for that information. And Decree 43 in 2011 to give regulations on the providing information and service online website and electronic portal of governmental agencies. However, there were no circular to execute the operation of decree 71/2010 and decree 102/2008. Accordingly, 3 users mentioned about the Draft of decisions to regulate the collection, management, and exploitation activities of natural resources and environment data in Can Tho city was not approved at the moment 2012.

The needs from users to bridge the gap of HIs:

The majority users expected that the public sector could disclose and publicize more relevant HIs on website such as: details and maps of urban plan, land use plan, details and time of the residential planning project, price of compensation and its plan, resettlement and support plan, resettlement, requirements for managing and exploiting of a project after completed, administrative procedures, and legal documents related to the enforcement of laws and higher authorities, etc. On the other hand, at offices should provide digital maps and details of urban plan and land use plan in scale 1/2000, land price and method to calculate tax. Urban plan and land use plan maps, site clearance, compensation, support and resettlement should be made available at people committee office of all levels.

Many users suggested the suppliers to update their HIs, upload newest HIs as soon as possible and maintain their website more frequent. The public organizations should have better coordination and cooperation to make data can be transfer between agencies easier. The suppliers should provide more options including charging or free data for demanders. The IT infrastructure should be improved and provided the access for notary to validate HIs from their offices instead of people must go to HIs offices to do that issue. Increase the percentage of electronic service and validation HIs. Besides that, the suppliers should standardize their HIs amongst organizations and also agencies.

Further, several respondents also suggested the government should have clear regulations about coordination and cooperation between public organizations. The detailed regulations about types of information are compulsory to provide to each particular group of users and make these regulations are made available on websites. The public organisations should have clear regulations about the publicity of their information on website; have the proper punishment to cases of bureaucracy or bad behaviour with customers of officials; provide feedback mechanism and help-desk at their offices and the manager should supervise and have proper actions to those mechanisms. Furthermore, some users said that they need micro level information such as kitchen type, garden type, toilet type, roof type, building construction type, interior design of the building, etc., must be added in building layer. And the land information system must be designed based on land, people, and relationship.

4.2.3. Interaction side

The following list summarizing the responses of future needs and wishes to improve the interaction of demand and supply:

- Standards of the digital data: the data accuracy, various data format, inconsistent among data in the sense of accuracy and format are the major issues for the data standard. Data should be accurate, complete, acceptable format. The data should be in digital database, compatible format with GIS software and standard data schema covering necessary attribute information such as

number of residents in a building, building construction type, kitchen and toilet type and garden type, etc.

- Improve IT infrastructure and skills of staff: because technology is a tool to stimulate the access to information. The improvement of IT is the backbone of the development in any information system, so this is applied for HIs system also. For the development of information infrastructure, it needs skilled human resources.
- Quality and quantity of data provided on website: the data from website provided in Vietnam is in low resolution, so it is difficult to get large scale map, plans through website. Therefore the quality and quantity of data must be improved in website.
- No Law about access to information yet: there is lack of Law for access to information. Some of the laws describe about the publicizing the legal documents which are not specific for HI or LI.
- There were no rules or regulation guiding the publicized or sharing data activities: external users were not able to know internal rules and regulations. So the solution maybe citizens chatter.
- Users need more access to digital data from websites and policy for electronic transaction: the digital data is more useful than analogue data. It can be real, applicable for any kind of analysis and re-producible, so citizens want more digital data from easy access point.
- No laws, regulations about copyright of digital data and disclose digital data: government wants to secure data to control misuse of the data. Therefore policy and data security are the vital issue of the government.
- Have access to digital maps and details of land use plan, land use planning, urban plan and planning, residential planning project, legislative documents of all authorities, legal status of parcel/building. The project needs of more information for the decision support system, so they want the housing and land information in easy way.
- Clear policy, rules, regulation about dissemination, sharing and publicizing data. This is necessary to establish the NSDI and the policy should be formulated in the international standard, thus good policy is the result for good HIs system.
- Clear rules and regulations on the cooperation and coordination between public agencies. The main development principle of 21st century is public partnership. So public private partnership is one of the key issues for HIs system.
- Users need to visit many agencies to collect enough HIs: the location should be fixed for service delivery, because users do not want to go to collect single information from various places. The service must be based on one-stop-shop.
- No feed-back mechanism to improve behaviour of staffs and reduce bureaucracy: it is necessary to control the quality of services from the organisation. So working principle must be based on quality control principle such as planning evaluation and monitoring.
- No help-desk mechanism to assist retrieving HIs of citizens: there is necessary to establish an assistant desk for solution of minor problem for accessing HIs in Vietnam. If major problem, helps-desk can refer to the responsible person for the particular task.
- No supervision division to inspect the enforcement of public agencies. There is no mechanism to control the monopoly of the public agency. Thus, supervision mechanism must be developed in Vietnam for HIs.
- No guidance for decree 102/2008 and decree 71/2010: in the context of Vietnam, the enforcement of the agencies at local level is guided by the legal documents from higher authorities and also from the local government as presented in figure 2-1 and 2-2. Hence, these two decrees need circulars and decisions to guide the administration at local level.
- Digitized database is not completed yet: according to Do (2011), the digitized of land information is about 30% in 2011. And the digitization task will be finished in 2020 to support for multi-purpose cadastral database.

- Process of accessing HIs complex and time-consuming: the procedure to require HIs takes much steps and users need to contact several places to require HIs. That makes users have to spend much time and effort to collect HIs.

4.3. Results from secondary data collection

As regard to secondary data, I collected the following types of documents: legal documents related to land, housing, the publicity and access to information, and legal document at local level. The data is categorized and presented as in table 4-1 below:

Table 4-1: List of secondary documents

Type of document	Name of document	Authority	Content
Land	Decree 181/2004/ND-CP	National Assembly	Detailing and guiding the implementation of the land law 2003
	Decree 84/2007/ND-CP	National Assembly	Additional provisions for the issuance of land use right certificates, land acquisition, the order and procedures for compensation, support, resettlement of land acquisition and resolve complaints on land
	Decree 102/2008/NĐ-CP	National Assembly	Regulating the collection, management, exploiting, accessibility and use of natural resources and environment
	Decree 69/2009/ND-CP	National Assembly	Additional provisions for land use planning, land price, land acquisition, compensation, resettlement and support
	Circular 09/2007/TT-BTNMT	MoNRE	Guiding the establishment, modification and management of cadastral record
	Circular 07/2009/TT-BTNMT	MoNRE	Detailing some articles of decree no. 102 in 2008 on the collection, management, exploiting and use of natural resources and environment
	Circular 17/2010/TT-BTNMT	MoNRE	Guiding about standards of cadastral data
	Decision 04/2005/QĐ - BTNMT	MoNRE	Issued planning and adjustment process, land use planning
Housing	Decree 02/2006/NĐ-CP	National Assembly	Promulgating the Regulation on new urban
	Decree 71/2010/NĐ-CP	National Assembly	Detailing and guiding the implementation of the housing law 2005

	Circular 16/2010/TT-BXD	MoC	Specific guidelines some contents of Decree No. 71 in 2010 of the Government in detailing and guiding the implementation of the Housing Law
Publicity and access to information	Decision 212/2003/QĐ-TTg	Prime Minister	Regulation about list of secret information in natural resources and environment
	Decision 919/2003/QĐ-BCA	Ministry of Police	Regulation about list of secret information in natural resources and environment
	Circular 03/2007/TT-BTNMT	MoNRE	Guiding on storage directions management, supply and exploitation information of survey and map data
	Circular 26/2009/TT-BTTTT	MoIC	Guiding on providing information and warranties the convenience for the access to website and electronic portal of state agencies
	Decree 43/2011/NĐ-CP	National Assembly	Regulations on the providing information and service online website and electronic portal of state agencies
Local documents	Decision 53/2005/QĐ-UBND	Can Tho People's Committee	Regulations on compensation, support and resettlement in Can Tho city
	Draft of Decision about Collection, management, exploitation and use of natural resources and environment in Can Tho city 2012	Can Tho People's Committee	Regulating on collection, management, exploitation and use of natural resources and environment data in Can Tho city
	Directive 16/2005/CT-UBND	Can Tho People's Committee	The implementation of the Land Law in 2003 in Can Tho city

Table 4-1 shows the list of legal documents ranging the year 2003 to 2011. The main point of every document can be summarized as follows:

First of all, decision No. 212/2003/QĐ-TTg on 21st October 2003 of prime minister and decision No. 919/2003/QĐ-BCA on 21 November 2003 provide generally the basic regulations about list of secret information related to survey and maps which is stated in Article 1.5. Although decree 181 in 2004 is the detailed guideline to implement the land law 2003, the decree 102 in 2008 is considered the legal document has more influence regulating the accessibility to relevant land information. This decree defines data of natural resources and environment including: land, water, minerals and geology, environments, survey and map, sea and island. It defines the responsibilities and mandates of organizations and

individuals in the collection, data management of natural resources and environment in chapter 2. And the most important is the exploitation and use of data about NRE data are defined in chapter 3. Some important points associated to the accessibility of land information were described including:

- Article 11.1 states the list of natural resources and environmental data is publicized in the mass media, on the website of the central and local agencies to serve the community and socio-economic development of the country.
- Provincial-level People's Committee will be responsible for the data they have published, and must comply with the provisions on the protection of state secrets in the field of natural resources and the environment. (article 11.3)
- Provincial-level People's Committee and MoNRE prescribed form for exploitation on the Internet and website (article 12.1)
- Users can exploit or use data through written requests or application form (article 12.1)
- Time for providing data is negotiated between supplier and user. In case of refusal to provide data, there must be a written reply clearly stating the reason (article 12.2)

As regard the standard of cadastral data, circular 09 in 2007 guides the establishment, modification, manage cadastral record, while circular 17 in 2010 from MoNRE provides regulations on the content and data structures; spatial reference system and time; metadata; quality data; presentation, exchange and distribution of data; build, update, management and utilization of cadastral data on a national scale. The exploitation of cadastral data is stated in article 15 as follows:

- The providing of information from the database is organised in both ways: searching online or based on the application form.
- Cadastral data can be provided in analogue or digital format
- Agencies are encouraged to provide land information on the Internet in accordance with regulations in this article including: a) extract of the land; b) extract the cadastral and land inventory books for each parcel of land or land use; c) aggregate information from cadastral data; d) cadastral map information online on the internet; e) exact cadastral database by region.

On the other hand, the implementation of the housing law 2005 is described in decree 71 in 2010(VNG, 2010). This Decree provides of guiding on house ownership, housing development, the management of the use of housing, housing transactions and state management of housing regulations in the Housing Law 2005. Some main points can be listed as follows:

- Article 7 which describes the scale of residential project can be approved from which level of the government by which individuals.
- Article 14 states that the provincial People's Committees mandate to DoC responsibility to publicize on electronic portal (website) of the provincial People's Committee information related to 8 types of information to stimulate the use of information from real estate planners and citizens.
- Another point is the managing and providing information on housing, which is regulated in article 76. The rights and obligations for managing of the government to the local housing are stated in article 81.

Moreover, in the issue of publicity information on website or internet, it is described in circular 26 in 2009 (MoIC, 2009) by ministry of communication of information, which regulates on providing information and warranties the convenience for the access to website and electronic portal of state agencies. This circular regulates the content of a website, maintaining and updating of information with some main points as follows:

- Information is updated at least 01 time in working day (article 12.1).
- Time for uploading legal document is maximum 02 working days after the promulgation of that document (article 12.2).
- The feedback must be responded not more than 10 working days (article 12.3).

- The website must be checked and maintained 24/7.

And the newest document on regulating the publicity of information online is Decree 43/2011 with the following main points:

- Strategic, direction, planning, development plans of each department. It must involve: construction planning, urban planning; planning and land use planning; plan and planning and exploitation of natural resources (chapter 2, article 10d).
- Information on the project, portfolio, auction, public procurement: list of preparing investment projects, on-going projects and projects completed; each project needed information include: project name, objectives, areas of specialization, type of project, duration, project cost, types of financing, name of investor, status projects (article 10h).

At local government, although the draft of Decision on regulating the implementation of Decree 102/2008 has been prepared, it has not been promulgated up to this time. So there is a delay in promulgating regulation to implement that Decree at local area. Moreover, the MoNRE also did not provide a circular to guide the implementation of decree 102/2008. Hence the activities related to collecting, managing, using and exploiting land data is not consistent between provinces since Decree 102/2008 has much influence on those activities. On the other hand, also haven't a circular to regulate the implementation of Decree 71/2010. This fact cause many difference in the management and administration of housing data.

4.4. Results from observations

During the interview sessions, I observed the following physical artefacts:

1. Billboard displaying maps or any type of information related to HIs.
2. Documents of administrative procedure which are displayed at the entrance of the offices of construction and NRE agencies.
3. Maps displaying residential planning information at the entrance of the office of DoC, BoC.
4. Map of construction planning in a ward displayed at commune people's committee.

The following pictures displayed examples of the four physical artefacts:



Figure 4-1: Example of billboard at a residential project



Figure 4-2: Example of administrative documents at DoNRE



Figure 4-3: Example of maps of residential planning project at BoC



Figure 4-4: Example a map of residential plan at a ward people's committee

Besides that, I also observed the field, websites, behaviour, attitude and activities of interviewees from both sides. The collected information as follows:

- Help-desk or receptionist could not find in state agencies. Thus customers can not receive any guidance to request information or help them in which division or where and how to request. Contact information with the leaders also was not publicized at their entrances. I tried to contact the director of BoNRE four times to get the permission to conduct the interview but got answer that she was not at office.
- All staffs from NRE agencies and some in construction agencies always expressed fears and dodge responsibility when they were asked for an interview. They always need the consent of their leaders to participate an interview. During the interview, they always avoided to answer the question related to the weakness or negative issues of their agencies or how to contribute to improve the access to their data from the citizens.
- It is easier if I have a relationship with a staff in state agencies to retrieve HIs. I tried to request data from NRE and construction agencies but they denied providing me even in analogue format. I then contacted some friends to request the data. Finally, I could retrieve data (even digital data) much quicker and easier. During the interview period, there are a number of respondents also said that data, especially digital data will not be provided if you do not have a referral from any organization for specific purpose, then you will not be able to require for spatial data.
- Name of some the divisions in DoNRE has different names through different period and work for both DoNRE and people's committee, so it is difficult for the citizens to contact proper division. Even the staffs of that agency are also using many different names to point to those divisions.
- Map of a housing project need to be hung at the planning area, but when I checked in a few planned residential projects, I could do not see that kinds of maps, but only the billboards made by the investors. The details of the project and a map of the project need to directly contact the investors to derive.
- People's Committee at district or ward levels have responsibility to publicize information about residential planning projects, urban planning in the area and listing decisions or plans of site

clearance, compensation, support and resettlement of the local area. However, after visiting some people's committees I could not find any information about that issue.

- Website of DoNRE and Doc did not provide enough information about land use plan, land use planning, land cover, urban planning, residential planning and their details. Maps found on those websites are in raster format and have very low quality. It is difficult to read the information on the map and cannot download the map also.
- Furthermore, the website always got error or suspending. The response of those websites is really slow. DoNRE website does not provide legal documents. Only 6 documents was found related to all fields that they are managing. I tried to read one report about land of the city, but I could not download and it is very difficult to read that document (I do not know in which format/method that they post on their website, it is very difficult to zoom in/out and span the display area as in figure 4-5).

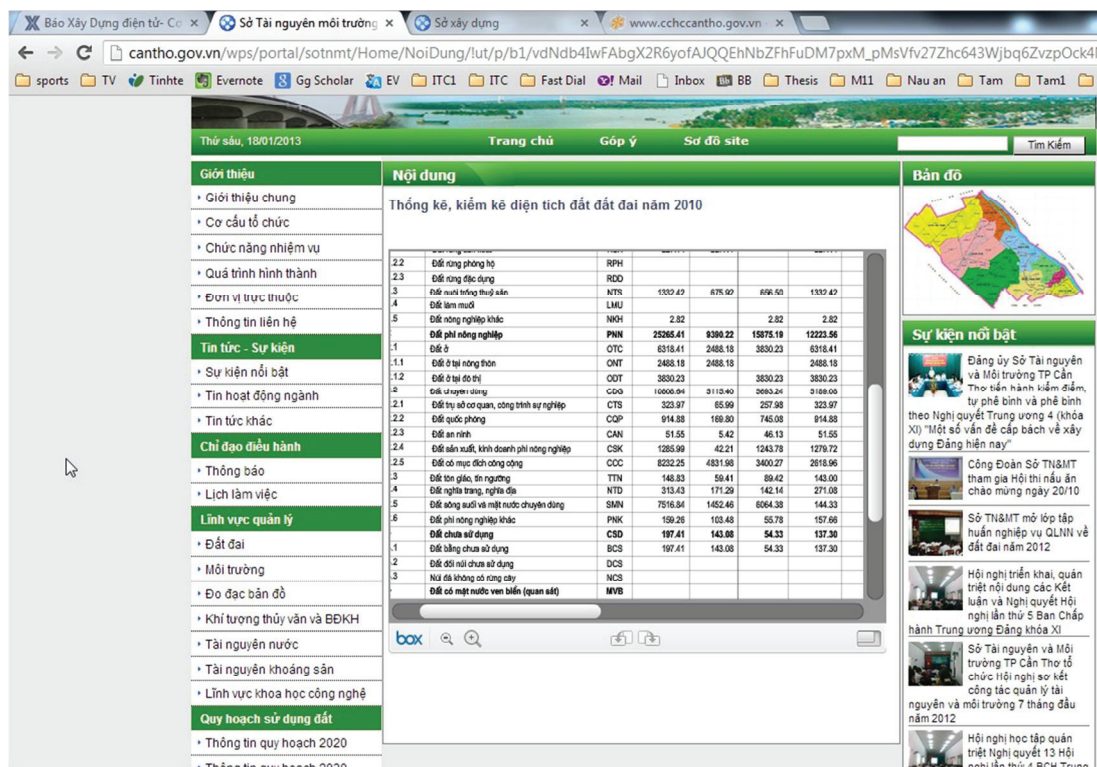


Figure 4-5: Example of report on website of DoNRE



Figure 4-6: Example of only 6 documents posted on DoNRE website

4.5. Use case and activities of current situation (As-Is)

Based on the interviews from the field, the responsible organisations for acquiring housing and land information from the citizens, real estate planner and real estate agency are properly not defined yet. However, DoNRE, BoNRE, DoC and BoC are responsible to collect housing and land data. It means that there is no particular place to collect data for users are not well defined. Users have to go various places to collect data information. The use case diagram show the places to collect the HIs and actors are involving different administrative hierarchy. The data distribution must be defined as per administrative hierarchy and a spatial scale of required data for every administrative level. The activity diagram also looks very confusing to the data collecting process and places for HI and LI in Can Tho. Figure 4-7 show the As-Is use case diagram and figure 4-8 shows the As-Is activities diagram.

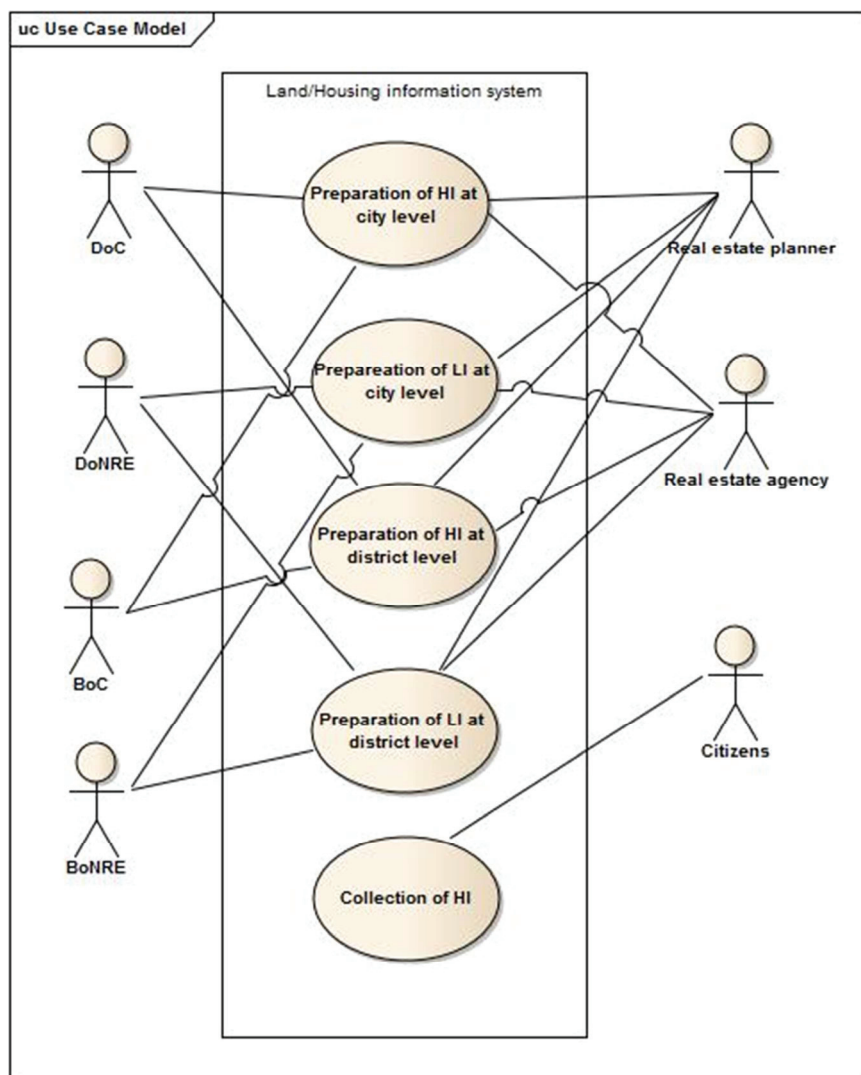


Figure 4-7: Use case diagram (As-Is)

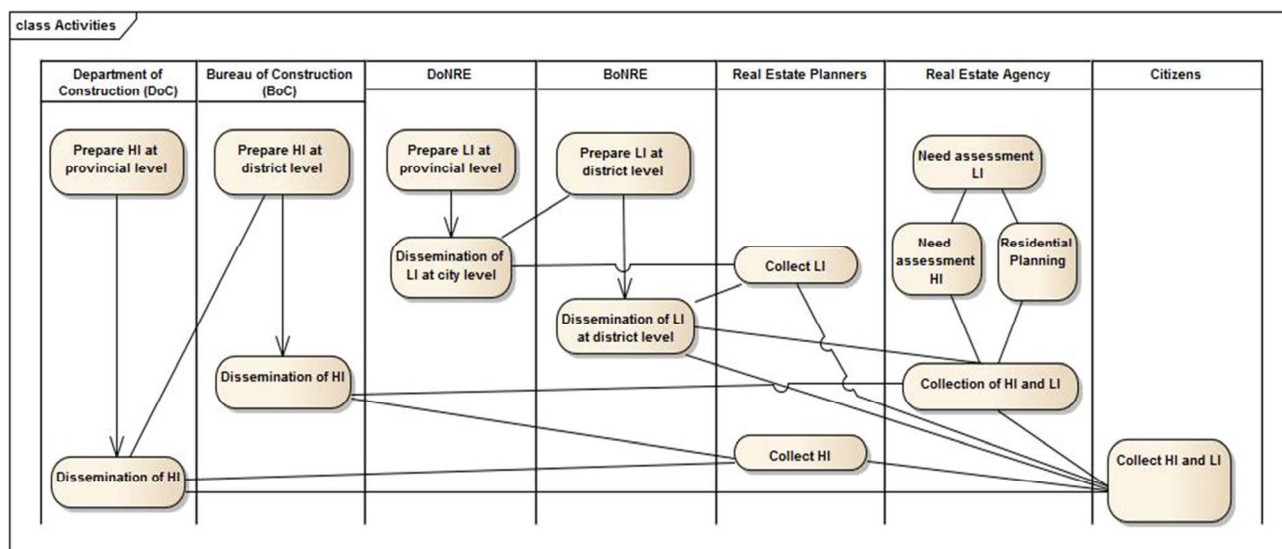


Figure 4-8: Activities diagram (As – Is)

4.6. Conclusions

This chapter has addressed answers for objective 2 and 3 with 5 research question as follows:

- 2.1 In Can Tho, the agencies are responsible for retrieving, acquiring and producing HIs mainly are: DoNRE, BoNRE, DoC and BoC.
- 2.2 The Land Law 2003, Housing Law 2005 and several Decrees, Circulars and Decisions from lower administrative levels are constraining the implementation of the 2 relevant laws. According to the land law, the DoNRE and BoNRE are responsible for retrieving, acquiring and producing information related to natural resources and environment including to land and cadastral information. Simultaneously, DoC and BoC are responsible for the activities related to information about housing such as: construction, residential planning, building, urban planning, etc. And they are working with both analogue and digital format because of the incompleteness of their digital database and also because of the lack of digital data dissemination law and law about access to information in Vietnam. However, there were still problems related to format of data and the common problem with the standard of digital data is the existing of 2 coordination systems are being used at the moment in the database of many agencies at local level (HaNoi 72 coordination system and VN2000 coordination system). Besides that is the issue of format of data is produced by several applications with different versions and stored in various format (such as shp, dgn, dwg, etc.)
- 2.3 The public agencies are providing and publicizing a part of their data through portal website with data including: some maps kinds of maps about residential planning, land use plan and planning, land cover but in raster format and low resolution and the users are not able to download; administrative procedure, legal documents and some kinds of form to require information. Besides that information, users need to visit the supply agencies to apply application form to require information that they need and pay fee.
- 3.1 The main users of HIs in Can Tho are: real estate planners, real estate agencies, citizens, notaries, banks, polices, organisations need HIs to validate information for their work. However, based on the responses of professionals from NRE and construction agencies, their major customer are real estate agencies, then citizens and real estate planners. The real estate agencies are the major customer to those agencies because they need as much as possible HIs to stimulate the business and to provide up to date and have enough HIs for their customers.
- 3.2 The users are currently using both formal and informal sources to derive HIs. For the group of real estate planner, they need accurate and genuine data, so they have to derive from public agencies and might also from private company or from their friends who are having or working with the HIs that they need (because there is no law about digital copy right yet). In case of real estate agencies, they might collect information from relevant websites, public agencies or also from the real estate planners. To the citizens, they can collect several sources such as: friends, mass media, internet and relevant websites.

Next chapter will deal with modelling process for the improvement base on interaction side of HIs system which I have derived in section 4.2.3.

5. DESIGN MODEL BASED ON SUPPLY AND DEMAND SIDES IN ASPECTS OF POLICIES AND TECHNICAL MECHANISM

5.1. Introduction

The practice of current mismatch of HIs in the technical and policy side was interpreted in section 4.2.3 of chapter 4, and according with the literature explored in chapter 2, this chapter addresses research objective 4 which is to design technical mechanisms and policy to improve mismatch of HIs between supply and demand sides

The chapter is structured as follows: section 5.2 provides the criteria for the design task; section 5.3 explains the process of modelling; section 5.4 presents the modelling evaluation; the process towards new use case is addressed in section 5.5; To-Be database structure, architecture diagram are presented in section 5.6 and 5.7 respectively; section 5.8 provides the As-Is and To-Be legal structure for Vietnam case and the last section is the conclusions.

5.2. Modelling criteria adapted from literature review

Based on the needs explored in section 4.2.3, the literature review in section 2.8 and observation results in section 4.4 I derive category interaction between demand and supply sides of HIs in Can Tho. I categorize in technical and policy aspects separately and demand and supply sides separately. The table 5-1 gives the categories of the points that I described in section 4.2.3 and 4.4. The table 5-1 gives the addressable points, possibilities to address technical and policy sides. These help to develop the design criteria for demand and supply improvement for HIs system in Can Tho:

Table 5-1: Needs for improving mismatch and possibility for improvement

Category	Needs	Possibilities for improvement
Technical from supply side	Standardize the digital data	There are no standard and well defined data specifications such as compatible data format, attribute information and acceptable data accuracy for housing and land data. From the coordination between the ministries of NRE and Construction can define national standard data specification which is valid for local and regional level data standard. (Standardized data schema such as LADM could be a solution)
	Improve IT infrastructure and skills of staffs.	Government should focus on technical human resources management to improve IT infrastructure and skilled human resources. Results of this can bridge demand and supply sides of HIs in Can Tho. (System architecture should be established in NSDI standard and human resources should be trained)
	Quality and quantity of data provided on website. And from observation, I found that websites of DoNRE and Doc did not provide enough information about land use plan, land use planning, land cover, urban planning, residential planning and their details. Maps found on those websites are in raster format and have very low quality. It is difficult to read the information on the map and cannot download the map also.	In case of Vietnam, the website from government could not fulfil users demand for housing and land information. Then data standard should be maintained in a standard data specification and norms. (The NSDI should be formulated and the payment of data should be e-transaction data)
	Digitized database not completed yet	To achieve the goal of cadastre vision to 2013, all of the HI and LI data should be digitized in a national standard. This helps to disseminate LI and HI data in easy and quick manner. (All of the data must be digitized in a standard accuracy and in a standard data schema template)

	Process of accessing HIs complex and time-consuming	There should be well defined LI and HI system. This helps to reduce complex and time consuming process as AS-IS condition. (The HIs dissemination should be in easy and efficient way, so it needs to design a web based system)
	Users need to visit many agencies to collect required information	The AS - IS situation of Vietnam shows that people have to visit many agencies to collect required information what they want. Thus, a supply portal should be well defined and that places must be fixed. This helps to release the confusion of information users where to access required information.
Technical from demand side	Users need more access to digital data from websites, therefore, policy for electronic transaction are necessary	People want to access data in easy and quick way. Therefore, data sharing mechanism with electronic banking system for payment should be developed for simplifying access to information via web portal for LI and HI in Vietnam.
	Have access to digital maps and details of land use plan, land use planning, urban plan and planning, residential planning project, legislative documents of all authorities, legal status of parcel/building.	People have right to acquire information and they want to know correctly their right, restriction and responsibility in their society. Thus government should provide that information to the public in efficient way. That information should be contributed effectively to the society such as: natural resources management and sustainable development.
Policy from supply side	No supervision division to inspect the enforcement of public agencies.	Although NRE and construction agencies may be punished by the higher authority or people's committee but there is no inspection division to inspect their disseminating activity. When users get trouble with in- transparent or bureaucratic situation, they could not claim to anyone. Thus an independent division which is responsible to this issue is necessary.
	No guidance for decree 102/2008 and decree 71/2010	There is gap between law, decree, circular and decision when implementing the access to information for LI and HI in Vietnam. So the need to formulate more adopted law, decree, circular and decision to fulfil the gap is crucial. This helps to lawfully supply the information from government side. (More description of mismatch and overlap are described in improvement in legal structure in section 5.8)

	<p>No feed-back mechanism to improve behaviour of staffs and reduce bureaucracy. And from the observation, I found that all staffs from NRE agencies and some in construction agencies always expressed fears and dodge responsibility when they were asked for an interview. They always need the consent of their leaders to participate an interview. During the interview, they always avoided to answer the question related to the weakness or negative issues of their agencies or how to contribute to improve the access to their data from the citizens.</p>	<p>There is no planning, monitoring, evaluating of human resources within LA and HI organisations. Thus a monitoring and evaluating mechanism should be developed or planning based on people feed-back. This helps to improve transparent of access HIs for LI and HI in Vietnam.</p>
Policy from both demand and supply sides	<p>Clear policy, rules, regulation about dissemination, sharing and publicizing data. I observed some billboards in the field for housing projects.</p>	<p>Based on standard SDI policy, the national SDI should be developed accordingly. Regional level information infrastructure may become their requirements standards. Hence local and regional level data sharing mechanism, data dissemination rule and regulation and mainly data publicizing must be well defined. This helps users, researchers, consultants, academia even single house owner and parcel owner.</p>
	<p>Clear rules and regulations on the cooperation and coordination between public agencies. And from the observation, I found People's Committee at district or ward have responsibility to publicize information about residential planning projects, urban planning in the area and listing decisions or plans of site clearance, compensation, support and resettlement of the local area. However, after visiting some people's committees I could not found any information about that issue.</p>	<p>The main focus of 21st century is that information infrastructure should be based on public private partnership (PPP approach). This helps the cooperation and coordination between public agencies and government. The policy should be formulated accordingly in Vietnam.</p>

	<p>No help-desk mechanism to assist retrieving HIs of citizens. From the observation, I found that help-desk or receptionist could not be found in state agencies. Thus customers can not receive any guidance to request information or help them in which division or where and how to request. Contact information with the leaders also was not publicized at their entrances. I tried to contact the director of BoNRE four times to get the permission to conduct the interview but got answer that she was not at office.</p>	<p>For none-computer users and other users, they need help to access to retrieve HI and LI in some special cases. There is no any help-desk mechanism to retrieve HIs introduced for citizens. Therefore the need to formulate help-desk mechanism is crucial.</p>
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The figure 2-2 explores As-Is organisational structure of housing and land information institution. Some of organisations provide very small scale and low resolution land use planning map. This information does not meet user requirements. Micro level information and specific requirements cannot fulfil due to none standard data and inconsistent data. Therefore, right, restriction and responsibility must be well defined with standard specification within organisations. Based on As-Is activities, the new design must be implemented as per user requirements. The following section explores about the design use case, class diagram, activity diagram, and policy and architecture diagrams to implement HIs effective and efficient ways.

5.3. Modelling process

The Unified Modelling Language (UML) is used as the modelling tool for developing a housing and land information system because “*modelling always starts with the capture of user requirements in the forms of descriptions and sketches of processes and data used, and ends with a formalized specifications of data and operations defining what has to be done in the organization, how it would be done, and by whom in normal and abnormal operating conditions and constraints*” (Azad et al., 1995). Therefore the expected results from conceptual designed system are easy to access to information via one portal. To eliminate the user’s confusion for collection of HIs, the system could be useful for designing use case, activities, policy and architecture. The following sections explore use case, activities, and policy improvement and information architecture separately. The system could be easy ways to access to information in Vietnam case.

UML has key features for system designing are given below:

- Object-Oriented modelling concept helps to model spatial data for housing and land data. Output result is UML **class diagram**.
- Use case formulation UML helps to formulate **use case** in an easy and efficient way as output UML use case diagram. Hence, it is proper tool to formulate overall activities in the case of housing and land information system.
- As UML helps to define **activities** step by step and it involves actors in the information system. Output is activity diagram.
- System **architecture** can be designed in UML platform. Output is architecture diagram.

5.4. Modelling result and evaluation

The figure 4-7 explores As-Is use case diagram. If users require housing and land information, there is not well defined location of organisation. They have to collect HIs from DoNRE, BoNRE, DoC, BoC, real estate planners and real estate agencies. The right to information is a kind of right for citizens in an easy, effective and efficient way. Therefore, To-Be use case and activity are designed to address those issues in Vietnam case. Besides that, the design modelling also adopts the benefit issues which were stated by Lance et al. (2009) that “*governments agencies are obliged to ‘join-up’ to establish common web portals (one stop shop) and common databases, making their information systems accessible, interoperable, and cost-affective*”. The figure 5-1 explores To-Be use-case for HIs in Vietnam. The local level organisations such as BoC, BoNRE are responsible to provide LI and HI for the real estate planners, real estate agents and citizens. The BoNRE and BoC can exchange data from DoNRE and DoC mutually.

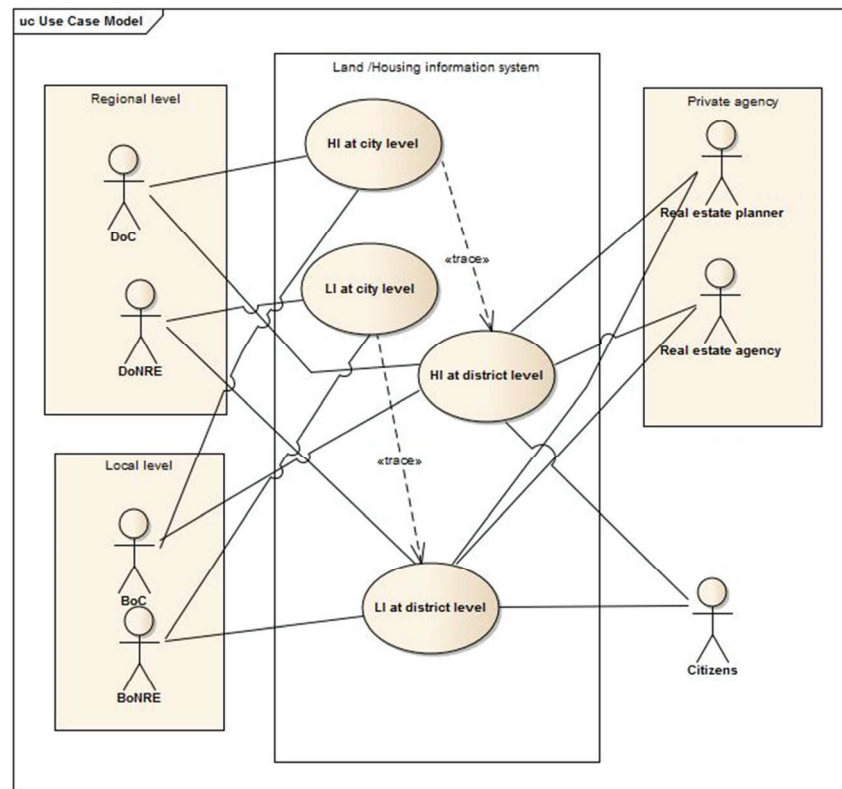


Figure 5-1: Use case diagram (To – Be)

As mentioned in section 4.5, the major users are real estate planners, real estate agents and citizens can collect data from DoNRE, DoC, BoNRE, and BoC. However, they can collect data related to land and natural resources from BoNRE and DoNRE. The small scale map can be collected via web portal. And HI can be collected from DoC and BoC. Some small scale urban plan can be collected from DoC website and large scale plan can be collected from BoC. Even though they have large scale urban plan they do not have micro level HI such as building construction type, kitchen type, roof type, toilet type, garden type and other facilities in the building because users need those types of information for their real estate business. Moreover, from the data collection, I collected the photograph of banners. The information in banner is not adequate for HIs system. From this reason, real estate planner and agent, they derive HIs themselves. To avoid the data information redundancy, data reliability and data authentication issues, it is necessary to design a new Use-Case and Activities for improving the access to HIs in Vietnam. The design focused on one-stop-shop principle with NSDI principle.

DoNRE and DoC are central governments and BoC and BoNRE are local governments. The data acquisition and data management are based on the spatial scale of the data, its coverage and administrative level. If users require small scale spatial information, they have to ask the data from central level and for large scale from local government. Small scale data are prepared by using data aggregation and generalisation process from the local level. Based on the one-stop-shop I choose single portal for data sharing mechanism because it is “*more accessible, effective and low cost concept*” (Lance et al., 2009). The central server management must be managed by central government. So DoC and DoNRE are responsible for management. So government has to define either DoC or DoNRE is responsible for data dissemination or overall control. There is still a need to coordinate amongst the central government.

As regards the current situation of access to HIs in Vietnam, the citizens can interact to real estate planners, real estate agency, BoC, BoNRE and DoC, DoNRE. In the meantime, real estate planner and real estate agent can interact with BoC, BoNRE and DoC, DoNRE. Thus, To-Be use case diagram has been derived to cope with unnecessary interaction and data duplication because real estate planner and real estate agent are also deriving micro level housing data. In To-Be use case, citizens, real estate planner and

agent can interact with BoC and BoNRE, local level organisations. And BoC interacts to DoC and BoNRE interact to DoNRE. DoC and DoNRE need to establish a relationship for data sharing to the users.

The figure 5-2 displays the To-Be activities diagram. In this case, central government is responsible for tracing the data from local level and manage in a central database. Local government are responsible for data acquisition in a local level at large scale mapping. The small scale map is the output from generalised and aggregated from of local level spatial unit. From the database, users can access by using their own authentication. These activities solve the problem regarding the information collection from various places. The fix user portal is the best place for information collection. Username and password are distributed according to their rights, responsibilities, restrictions and roles.

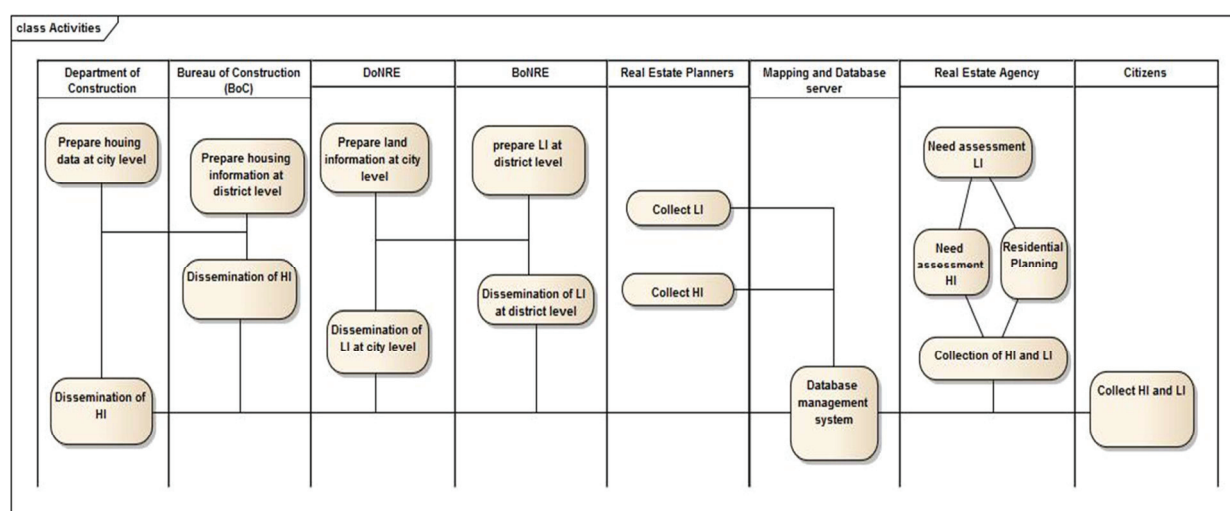


Figure 5-2: Activities diagram (To-Be)

5.5. Process towards new use case

DoC and DoNRE are responsible to prepare small scale of housing and land information for regional at central level. BoC and BoNRE are responsible to prepare larger scale plan for HI and LI at parcel level. They will establish a sharing mechanism between DoC and BoC and DoNRE and BoNRE respectively. They will prepare a common database server among them. Every citizen, planner and agency will get the data view privilege and if necessary data download privilege from the server. In accordance with activities diagram design in figure 5-2, the following section focus on class structure of LI and HI.

5.6. To-Be database structure

The simple class concept adopted from (Tuan, 2006). He described about the criteria for designing class diagram and he designed some classes such as: parcel, RRR, land use, owner, building, map sheet, etc. In his concept, general building information also included in one organisation, but BoC dealing with housing part in Vietnam case. Then I address some necessary feature classes and attributes based on the data owner for housing, land, natural resources and construction. And BoNRE, DoNRE, DoC and BoC are the data owners.

Tuan (2006) explored the static model as organisation structure and database structure. ISO standard of land administration domain model could be a suitable data model for housing and land information system. From the interaction side of demand and supply the As-Is “*cadastral class diagram has parcel key, rights, land value are already contained in the Vietnamese datasets*” (Linh, 2009). Besides that, all of cadastral data not digitized yet. There are some lacks related to building information and HI even though BoC has some housing information but not full coverage for the whole district. It is necessary to explore the possibilities

to integrate HI data, LI data, natural resources data and data related to construction. Thus I design the database based on core database structure of land administration system. The people, land, relationship, house, natural resources and utility are used in the design.

The figure 5-3 explore very simple concept class diagram that can integrate HI system and LI system in Vietnam case. The class diagram bases on core land administration concept. BoNRE is responsible for all activities related to data management of parcel, RRR and citizen information. BoC is responsible for HI in micro level. DoNRE is responsible for all activities related to natural resources information. And DoC is responsible for infrastructure development and construction data. After integrating the data from BoNRE, DoNRE, BoC, and DoC the users can get overall housing and land information. The parcel history keeps the record about every land and house transaction including parcel subdivision. Parcel key used as a primary key. Parcel feature class contents area of parcel, parcel value, parcel type and other parcel information. The RRR table contents various types of rights and the right is used as primary key. The natural person and none natural table links to the right table by using owner ID as a primary key. Building is also associated to the parcel by using parcel key. Other land use topographic and utility data are based on their geographical location. I added construction type, roof type, toilet type, garden type and parking places. The primary keys are developed for data integration purpose in the data schema class diagram. In the following section will deal with overall To-Be system architecture within DoNRE, BoNRE, DoC and BoC.

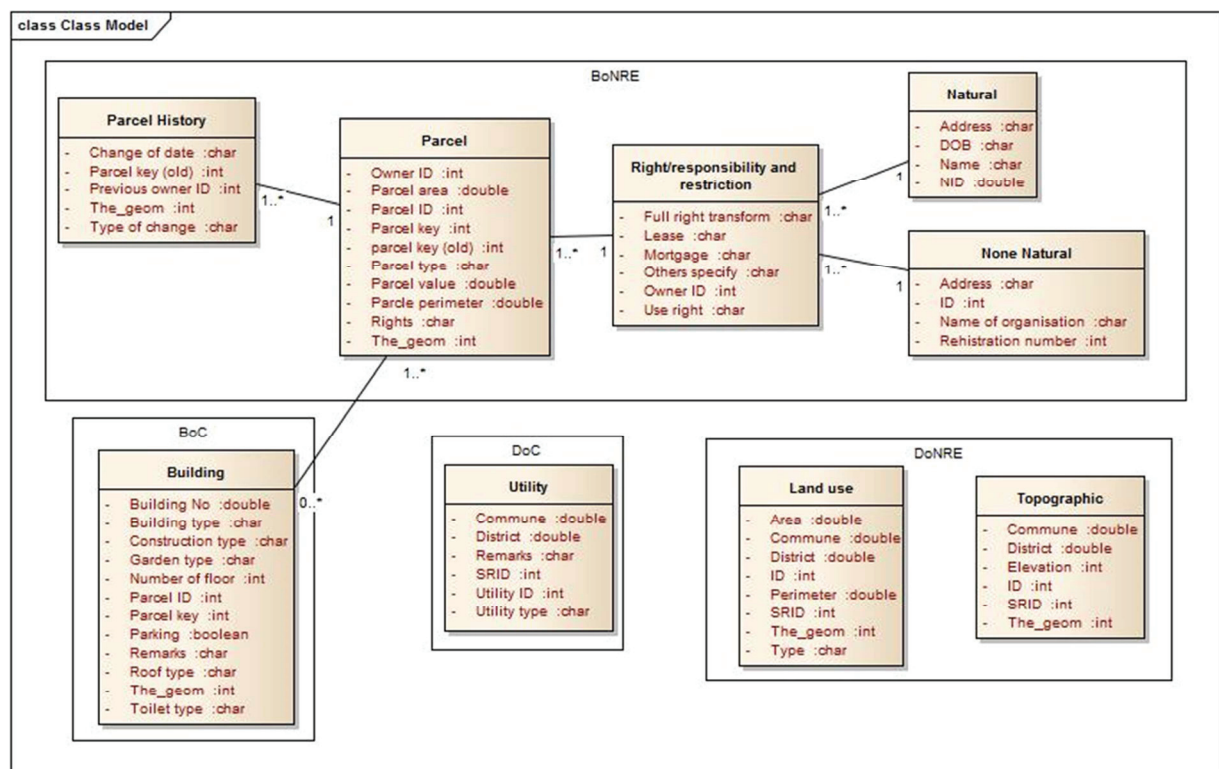


Figure 5-3: Class diagram, concept adopted from Tuan (2006)

5.7. To-Be information architecture diagram

Van Loenen (2009) argued that “information technology has increased the availability of and improved access to information. It allows us to access and share information in a relatively unfettered fashion across digital networks ignoring jurisdictional borders”. In addition, this section explores main data sharing mechanism to the clients and users via web portal. Young et al. (2010) argued that “the natural of the land administration project has moved towards the development of a spatial data infrastructure through the Strengthening Environmental Management and Land Administration (SEMLA) and the Vietnam Land Administration Program (VLAP) projects”. They further mentioned the projects which are also indicators to update current laws, regulations and policies towards

strengthening NSDI. There is essential need to formulate the information access rules and regulations, SDI policies, data publicizing rules and regulations for development of NSDI in legal aspect in Vietnam. The data standards should fit to NSDI standard and the technical arrangement also should fit to NSDI standard.

In addition, I observed that instead of the map of a housing projects are need to be hung at the planning area, but when I checked at some planned residential project fields, I could not see that kinds of maps, but only the billboards made by the investors. The details of the project and a map of the project need to directly contact the investors to derive. Besides that the websites of DoNRE and Doc did not provide enough information about land use plan, land use planning, land cover, urban planning, residential planning and their details. Maps found on those websites were in raster format and very low quality. It was difficult to read the information on the map and could not download those raster maps also. Therefore, to avoid those problems, the need to design a portal to make the access to HIs becomes easier. The purpose information architecture is described as follows.

Therefore, the database from DoNRE, BoNRE, DoC, and BoC should be integrated to central server. The central server is established by the cooperation and coordination of DoC and DoNRE. They are responsible for uploading, maintaining and providing the privilege to the users through central server (including Geo-server). Government has to decide either DoC or DoNRE is responsible for that. Azad et al. (1995) focused on institutional arrangement and institutional relationship plays vital role for information sharing. The recovery database should be kept in very secure location where will not be effected of fire, hackers and other natural disasters.

The database can be used ESRI geo-database format, Postgres database, oracle and other database format. PHP, Java script, HTML can be used for request and response to communicate with server users and database. Geo-server deals overall mapping part in the system. The mapping server, data server, application server and web server can be used to visualize, download and share HIs to the citizens and other users by using any kinds of internet browsers. Figure 5-4 explores overall web based information system for access to housing and land information in Vietnam. The following section explores policy design for access to HIs in Vietnam case.

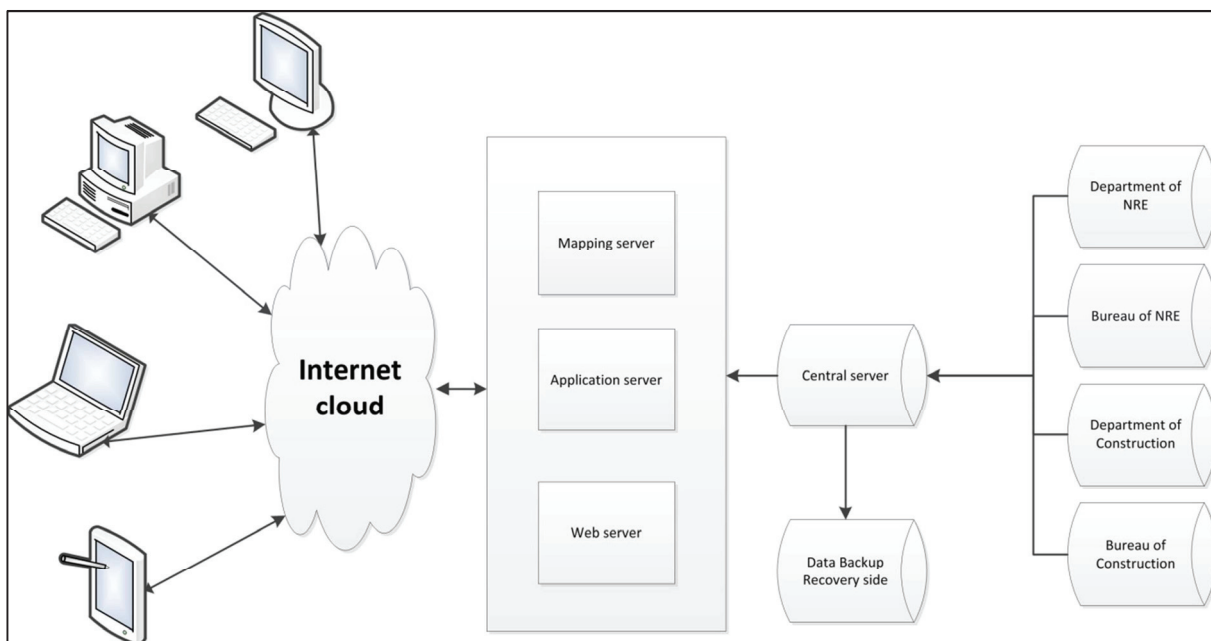


Figure 5-4: Information architecture diagram (To – Be)

5.8. As-Is and To-Be legal structure

This section explores To-Be legal improvements to avoid overlap, duplication, gap and redundancy amongst the laws, decrees, circulars and decisions when implementing land administration activities and access to HIs in Vietnam.

Welle Donker et al. (2010) argued that *“users require transparency of the information policies and require consistency in the access policies throughout government”*. (Linh, 2009) mentioned *“Civil Code 1996 (revised 2005 and implemented 2006) concentrated on article 181 which focuses on land and houses registration process”*. These articles did not mention about multiple owner or multiple rights such as common ownership in a parcel are multiple owner in an apartment. And *“Decree 181/2004/ND-CP enforced the guiding implementation of land law 2003”* (Linh, 2009). It means that the common rights in a property or multiple rights in common property not defined yet. This shows that there is still gap between law, decree, circulation and decision when implementing land administration. Hence, it must be reviewed the formulation of laws, decrees, circulars and decisions to avoid the overlap, redundancy, and duplication with dual meanings.

Phuong (2009) emphasised the policies and regulations and further described some points below:

- *“Enforcement of laws and policies might be the foundation of cooperation and sharing resources between organizations”*
- *“There is a lack of data availability awareness, trained staff, standardizations (even in one organization), and most importantly is the lack of coordination” and “it seem that one vital part of successful adoption of GIS and enhanced data sharing efforts is a coordination unit with appropriate legal framework”*
- *“Common goals should be developed to increase, rather than detract from information sharing and inter-organizational cooperation”*
- *“There is a need of a coordination unit for ICT adoption efforts in order to enhance communication and sharing ability between departments”*
- *“The enforcement of mandates from higher authority induces mutuality and reciprocity between departments”*
- *“Mutual supports can be found in many aspects, not only informal exchanges”*

The above mentioned points show the gaps in policy and law when implementing NSDI for housing and land information infrastructure development. The section explores the current situation of housing and land information in Vietnam. And also search the gap in the policy and design a policy framework in Vietnam case. The section 2.2.2 explained the law, rules and regulations formulation process in Vietnam case. There are still so many gaps, loopholes and weaknesses when implementing the land administration activities. One of the major issues is compensation for land value to the citizens is not really formulated well. When implementing the laws, decrees, circulars and decisions for different administrative levels, there are still loopholes, so policy must be well formulated when implementing land administration process. Still there are some gaps, overlaps and duplications so need to address those issues. One of the most important outcome from reviewing the law is *“to limit soliciting favours related disputes, conflicts between residents and investors or management unit condominium operation, the issuance of a condominium management regulations (NCC) is all essential. After many years and through many revisions, the City Building Department has completed the draft Regulation on management and use of NCC area city after receiving the comments of the Ministry of Construction and the Department of Justice Ho Chi Minh City. According to the draft, the NCC will service the residents and owners reach an agreement”* (Huy, 2013).

Regarding to the gaps and mismatch of legal/policy between demand and supply side, I propose the solution for each cases of gaps/mismatch as follows:

- Firstly is the way the state government proposes and enacts decrees to give guidance for each law. For example, land law in 2003 has the first guidance is decree 181 in 2004. However, many decrees were enacted after that to give additional provisions or to modify some article in decree 181/2004. This fact cause confusion from the people, because they might not know that how

many decrees have been enacted to support for the land law and which changes or additional provisions have been established. Therefore, annex for each decree is better than proposing an additional decree, because it can help people focus on that decree and understand the regulation easier.

- The example for the lack of explicit guidance is the case of guidance about compensation, site clearance, and support and allocation plan information. The guidance to publicize that information to citizens was not stated in decree 181/2004. Then Decree 84/2007 added article 57 to give guidance about publicizing information about the plan to citizens. However, article 57 stated that the organisation that has receive plan for compensation, site clearance, support and resettlement cooperates with people's committee of the ward, where has the residential project to inform to people in that are to know about details of that plan. However, this article does not clarify some points for example: 1) which particular organisation is responsible for receiving the plan, because at the moment, there are some divisions/centres has that function to do that type of work; 2) cooperate with people's committee to inform people in the area about the plan, but who is responsible for what particular task was not specified yet. This point should be stated clearer; 3) inform to people in the area in which method was not stated also (for example: by mail, mass media, phone call, etc.). And what if the citizens cannot receive the information; 4) and which punishment that the mentioned organisation or who in the ward people's committee may be received if they do not enforce the regulation; 5) there was no guidance about cases of dispute or feedback for the case that has dispute. Thus decree should be formulated more details about the 5 above points to make it be more explicit. Or at the lower authority levels such as MoNRE and city/provincial level should enact circular and decision to give detailed guidance about decree 84/2007 as well as article 57.
- Decree 71/2010: Article 14 states that the provincial People's Committees mandates to DoC the responsibility to publicize on electronic portal (website) of the provincial People's Committee information related to 8 types of information to stimulate the use of information from real estate planners and citizens. However, this decree did not specify details for 4 points for example: 1) the quality and format of each type of data or information on website; 2) what if construction agencies do not have one or any type of those 8 types of information; 3) which punishment they have to receive if they do not fulfil enforce the decree; 4) who or which organisation will check or report the enforcement and receive the feedback from the external users. Therefore, the decree should define details about compatible data format, standard data scheme, data accuracy and data quality in its content should be the solution for point 1. For the second and third points, there must be good institutional arrangement with defining role, right and responsibility for disseminating HIs. In case of the fourth point, there should be monitoring and evaluation mechanism should be developed when implementing the dissemination of data.
- In case of lack of guidance at local level for decree 102/2008 and decree 71/2010: the ministry of natural resources and environment (MoNRE) and ministry of construction should propose and enact circulars to give the guidance for that two decrees respectively. After that, the committee's people at local level (city/province) also needs to propose and enact decisions to give the guidance for DoNRE and DoC respectively at the local level in term of activities related to collecting, producing, storing, sharing and disseminating HIs.
- An example for the duplication of guidance is the promulgation of decision 212/2003/QĐ-TTg and decision 919/2003/QĐ-BCA which provide the regulations about the secure list of information about natural resources and environment. Those two documents give the same regulation about the secure list of information about NRE. Therefore, to avoid the confusion amongst the users, those documents should be merged for a single guideline to people.

- And the newest document on regulating the publicity of information online is Decree 43/2011 with the following main points: strategic, direction, planning, and development plans of each department. It must involve information such as: construction planning, urban planning; planning and land use planning; plan and planning and exploitation of natural resources (chapter 2, article 10d). However, the decree also did not give details such as: type of information, format of data, who is responsible for the inspection and receiving feedback, what if the relevant agencies do not have relevant data/information, etc. Thus decree should be formulated more details about the mentioned points to make it be more explicit. Or at the lower authority levels such as relevant ministries and city/provincial level should enact circular and decision to give detailed guidance for decree 43/2011 and more specific is chapter 2, article 10d.
- The lack of law about access to information and law about digital copyright are also need to be proposed and enacted in the near future by national assembly to give the guidance and evidence for the public sector related to their sharing, disseminating and publicizing their digital data. On the other hand, the users may have their rights to which particular type of data or information that they can derive from the public sector.

5.9. Conclusion

This chapter, I designed implementation criteria that I derived from technical and policy aspects of demand and supply sides. And demand and supply were categorized on the basic of five major governance principles including availability, accessibility, usability, accountability and legislation. Information architecture, class diagram, use case and activity diagram are implementable when institutional arrangement and institutional relation defined well, so the concept of Azad et al. (1995) works well in this case.

In this chapter I answer 5 research questions regarding to research objective 4 with the answers as follows:

- Regarding building information such as: construction type, roof type, toilet type, parking should be addressed in class diagram. The existing information cannot give that type of information and users need that information without any improvements suppliers cannot supply those information.
- Government should focus on building data, land related data, natural resources data and other utility and construction data. Accordingly, I design class diagram to address those information.
- The government should fuse data and information from the investor or real estate planners for residential project which regarding to information about the facilities, utility and information related to their housing product to be able to supply for the need of citizen.
- Proposed use case diagram, activity diagram, class diagram and information architecture should be suitable mechanisms to the access to information for the users.
- Government should develop good information infrastructure which contains more information for housing and real estate business. For this issue, government can address technical and policy improvement from this research. Informally, real estate planner and agent can contribute to acquire and share micro level housing data to the government and citizens in initial phase.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

This chapter provides the overall conclusions to the 4 research objectives, which were formulated in section 1.4. The conclusion to each research objective is addressed sequentially in section 6.2. And then the recommendations are proposed in section 6.3. This chapter also explores about the justification of design and relation between concept derived from literature review and design mechanism.

6.2. Conclusions

The conclusion for each research objectives is specified as in following section:

1. To define the concepts of HIs on the basis of supply and demand practice in Vietnam.

In Vietnam context, laws, decrees, circulars and decisions are designed for different administrative level when implementing the access to information for housing. Law is promulgated by National Assembly, Decree is promulgated by State Government, Circular is promulgated by relevant Ministry, Decision is promulgated by provincial people's committee. There are gaps existing when executing the law, decrees, circulars and decisions, so they cannot address well the whole legal framework. Besides that, HI and LI are mainly collected, produced, stored and disseminated by the public sector bodies which are associated to two ministries and their in line agencies. The government promulgates laws, decisions and regulations to give guidance to execute the operation of HIs and the utilisation of HIs. However, because of complex institutional system, the limited in the technical facilities, human awareness and the cooperation between organizations lead to the restriction of available information and lack of access to that information from the supply side.

The housing information in the context of this research contents overall land use plan when implementing the construction of houses in regional level. And HIs contents elementary information about the single house which is area of house, number of floor, construction type, price of building, and even roof type in general. In specific, people want to collect the information regarding kitchen type, toilet type, interior design of building, and even garden structure. The real estate agent providing these types of information to the people by paying services charge.

2. To identify the current existing process of retrieving, producing and sharing data for housing from the government agencies in CanTho (Supply side).

In Can Tho, the agencies are responsible for retrieving, acquiring and producing HIs are: DoNRE, BoNRE, DoC and BoC.

The Land Law 2003, Housing Law 2005 and several Decrees, Circulars and Decisions from lower administrative levels are constraining the implementation of the 2 relevant laws. According to the land law, the DoNRE and BoNRE are responsible for retrieving, acquiring and producing information related to natural resources and environment including to land and cadastral information. Simultaneously, DoC and BoC are responsible for the activities related to information about housing such as: construction, residential planning, building, urban planning, etc. And they are working with both analogue and digital format because of the incompleteness of their digital database and also because of the lack of digital data dissemination law and law about access to information in Vietnam.

The public agencies are providing and publicizing a part of their data through portal website with data including: some maps kinds of maps about residential planning, land use plan and planning, land cover but in raster format and low resolution and the users are not able to download; administrative procedure, legal

documents and some kinds of form to require information. Besides that information, users need to visit the supply agencies to apply application form to require information that they need and pay fee.

3. To identify the current situation of access to information for housing of users in CanTho (Demand side).

The main users of HIs in Can Tho are: real estate planners, real estate agencies, citizens, notaries, banks, polices, organisations need HIs to validate information for their work. However, based on the responses of professionals from NRE and construction agencies, their major customer are real estate agencies, then citizens and real estate planners. The real estate agencies are the major customer to those agencies because they need as much as possible HIs to stimulate the business and to provide up to date and have enough HIs for their customers.

The users are currently using both formal and informal sources to derive HIs. For the group of real estate planner, they need accurate and genuine data, so they have to derive from public agencies and might also from private company or from their friends who are having or working with the HIs that they need (because there is no law about digital copy right yet). In case of real estate agencies, they might collect information from relevant websites, public agencies or also from the real estate planners. To the citizens, they can collect several sources such as: friends, mass media, internet and relevant websites.

4. To design policy and technical mechanisms to gain the accessibility to HIs between supply and demand sides

The section 5.8 shows that there are still gaps, overlaps and dual meanings of laws in Vietnam. Therefore, policy, technical facility, interoperation and coordination, participatory of building HIs are the indicators for gaps and overlaps analysis. Policy is not formulated well yet and the mismatch between law, decrees, circulars and decisions show the gaps or overlaps when implementing the access to information. The data sharing mechanism is not developed in the sense of large scale data acquisition in the digital format. The organisational structure is well formulated but task description of organisation is not well defined. It means that the accountability problem is still present.

All of land and housing data must be acquired by governmental organisations in a digital form. Digital database must be developed containing all required spatial layers including attribute information. The building information, parcel information, owner information, RRR information, natural resources information, utility information, infrastructure information, and other citizens' information must be integrated in a system. This is the suitable way to supply HIs.

The demand on HIs such as: building construction type, kitchen type, garden type, toilet type, roof type, interior design of the building in the building spatial layer including all of information regarding parcel. Up to now, the government could not deliver that information. Accordingly, the database must be designed and implemented in a client server approach.

There are 4 suggestions to make a betterment of HIs system in Vietnam. First, digital data preparation as per scale and administrative level, include all require information in housing data mentioned above. Second, design a web based client server approached system and good policy formulation. As the result output is a balance between demand and supply sides, the data providers must be defined as per administrative level. Third, the coordination and cooperation should be established amongst the organisations for providing HI and LI in efficient and effective way. Fourth, the commune level data needs large scale spatial data and regional level needs more generic small scale spatial data. Thus, institutional arrangement must be arranged in that way. To control the misuse of data from the real estate planner and real estate agencies, there must be developed a code of conduct.

6.3. Recommendations

Some recommendations are based on the experiences gained during the thesis writing are proposed as follows:

For construction agencies: they prepare general small scale map of urban planning and develop the housing plans in land use aspect. Those generic data may not fulfil for micro level so data must be very detailed and may be aggregated in general for regional level land data management. Accordingly, technical arrangement and policy formulation should be developed.

In case of NRE agencies: DoNRE prepares the land and natural resources data. The data specification and standard are not consistent between agencies. Thus, data specification and standard should be international standard. Accordingly, policy should be well formulated.

Real estate planners: to control the misuse of data code of conduct should be developed. The service charge must be defined.

Recommendations for further researches:

- This is just only conceptual design research, so further research might be implementation, test and validation purpose. I just extracted the design and improvement issues for further development of access to HI and LI system in easy and effective way. Actually in the implementation level, my design not focus on real implementation level, thus this research is a design research.
- This research deals only for Can Tho case. For further research might be for other region because situation may be different for other city. What I mentioned in section 3.2.1 geography also major factor, thus this research is only sample case study. It may not represent the case of the whole country.
- The concept of integration is used in this research are HI and LI. The further research may be the integration of all data including natural resources, housing, utility, road, health, education in the system. To meet the multiple goals from HI and LI, it must be integrated to achieve more information about house and land. Hence, the integration is more suitable for the system.

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Appendixes

Appendix 1: List of interviewees

No	Organization	Name of interviewee	Position	Date	Time
1	DoC	Truong Cong My	Vice director	16/10/2012	14:00
2	DoC	Mai Nhu Toan	Vice director	12/10/1012	13:00
3	DoC	Tran Bao Trong	Technical engineer	13/10/2012	10:45
4	DoC	Tran Van Thanh	Expert	13/10/2012	14:00
5	DoC	Le Van Huong	Expert	13/10/2012	15:00
6	BoC	Nguyen Tung Nguyen	Director	20/10/2012	9:00
7	BoC	Le Duc Toan	Specialist of Technical engineer	22/10/2012	8:00
8	DoNRE	Duong Van Khang	Technical engineer	15/10/2012	9:00
9	DoNRE	Nguyen Thi Minh Tam	Registrar Faculty	16/10/2012	16:00
10	DoNRE	Nguyen Thi Hai Ly	Specialist of Data Storage faculty	23/10/2012	9:00
11	BoNRE	Ma Phung	Vice director	20/10/2012	10:30
12	BoNRE	Giang Phuc Dat	Vice director of registrar falculty	17/10/2012	9:00
13	CATACO Limited Co	Cao Thanh Cuong	Official	14/10/2012	9:30
14	Nam Long Investment Co	Le Minh Tham	Director	11/10/2012	14:00
15	Dai Nam construction Company	Pham Si Khoa	Vice director of Planning Faculty	17/10/2012	10:00
16	Tran Giang construction Limited Co	Tran Thanh Tong	Director	18/10/2012	16:00
17	Investment and Construction # 8 Co	Nguyen Thiet Tri	Official	19/10/2012	18:00
18	Hoang Kim consulting Ltd Co	Le Van Ba	Director	20/10/2012	14:00
19	Ngoc Phuong land company	Phan Thong Tai	Director	22/10/2012	14:00
20	Citizens	Dinh Quang Vinh		16/10/2012	18:00
21	Citizens	Bui Xuan Cuong		17/10/2012	10:00
22	Citizens	Pham Binh Hoa		17/10/2012	8:30
23	Citizens	Nguyen Van Nam		18/10/2012	10:00

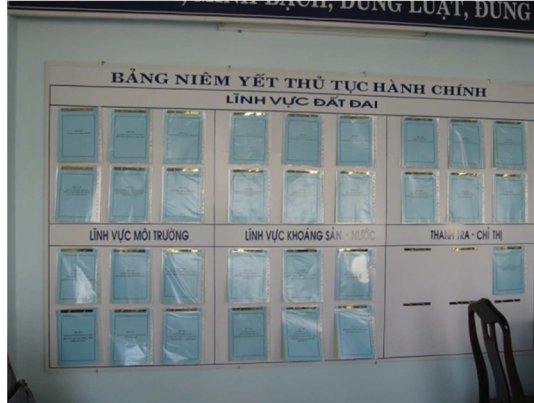
24	Citizens	Dang Huynh Khai		18/10/2012	8:00
25	Citizens	Duong Trong Nhuan		19/10/2012	8:00
26	Citizens	Mai Tien Truong		22/10/2012	11:00
27	Citizens	Lam Phat Loi		23/10/2012	15:00
28	Citizens	Bui Thai Thuong		21/10/2012	19:00

Appendix 2: Sample of maps, photos collected during the interviews and observation field, at offices of suppliers and websites

❖ At Department Of Natural and Resources Management (DoNRE)

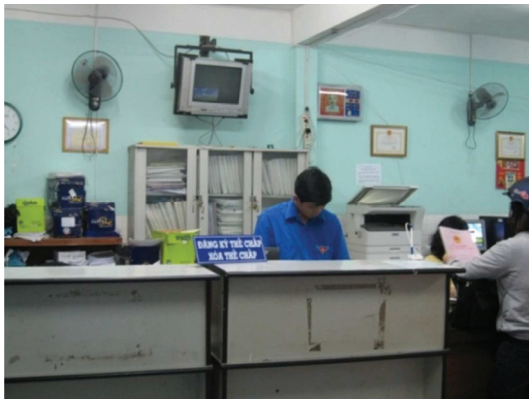
The one stop shop for land registration

White board that has some administrative procedures and legal documents



❖ At Bureau of Natural and Resources Management (BoNRE)

Registration for mortgage desk and white board that has some administrative procedures and some legal documents



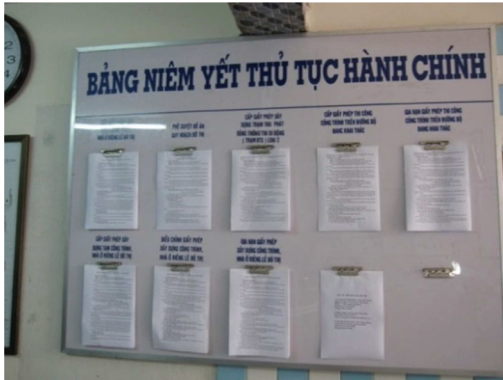
❖ At Department of Construction (DoC)

White board that has some administrative procedures and some legal documents



❖ At Bureau of Construction (BoC)

Maps or urban plan and white board that has some administrative procedures and some legal documents



❖ Interview the users



❖ Samples of panels and billboards about urban planning, residential planning



❖ Billboards of residential project at field

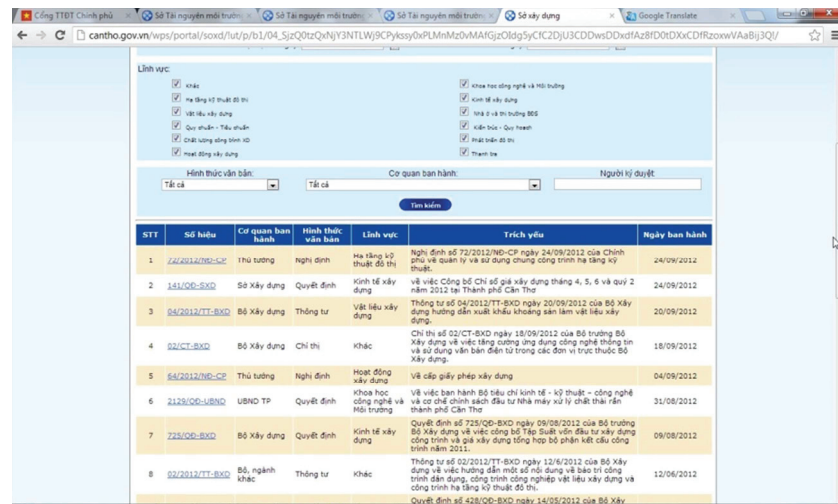


❖ Information publicized on website of DoC

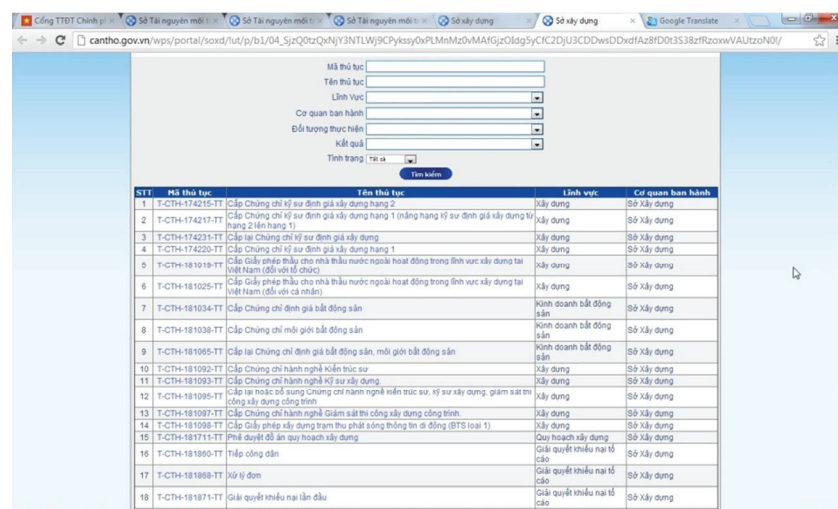
Maps are in raster format and low resolution. Details about the planning is in brief instead, not detailed



Administrative procedure documents

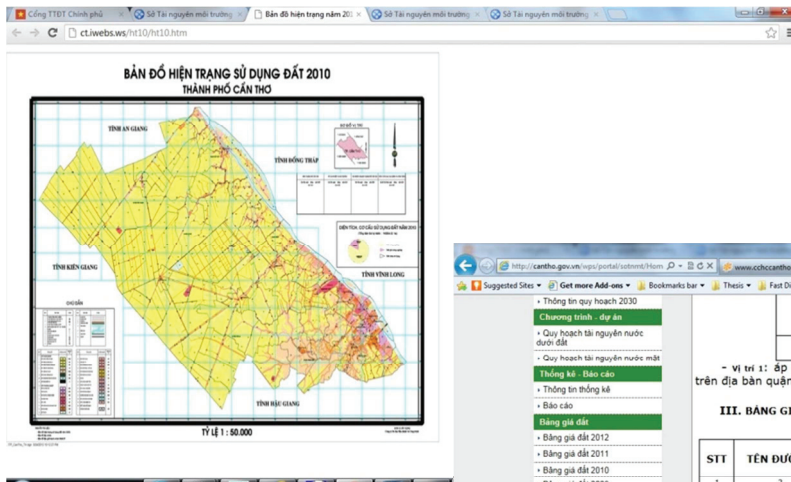


Legal documents

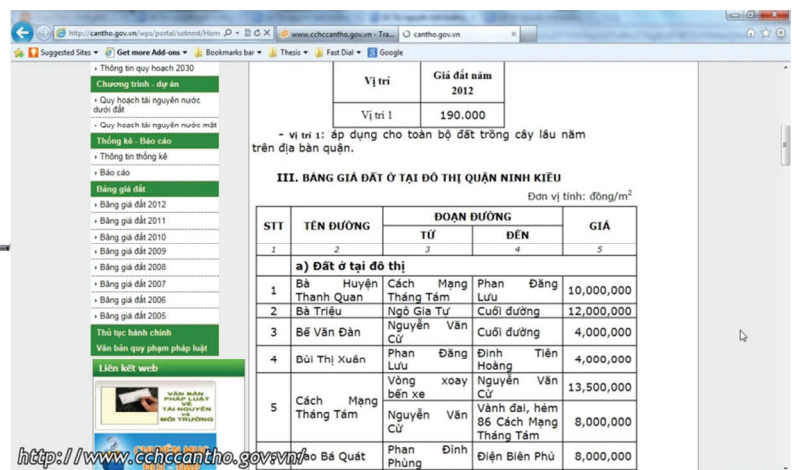


❖ Information publicized on website of DoNRE

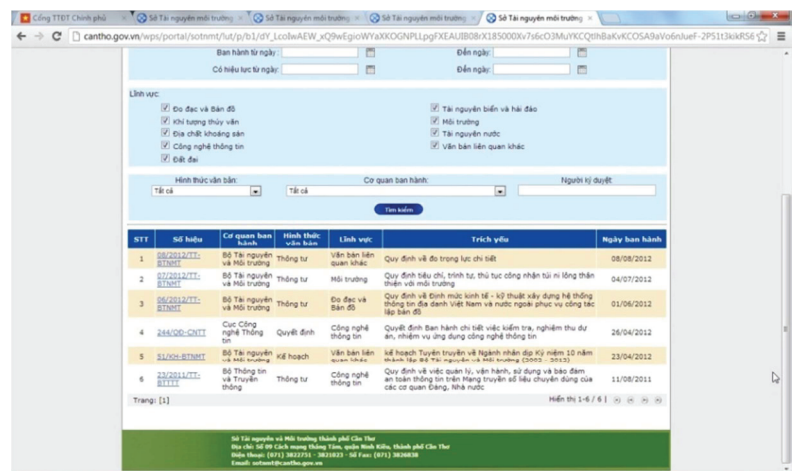
Map of land cover in raster format, can't download or print and in low resolution (for each 5 year)



Land price is updated each year

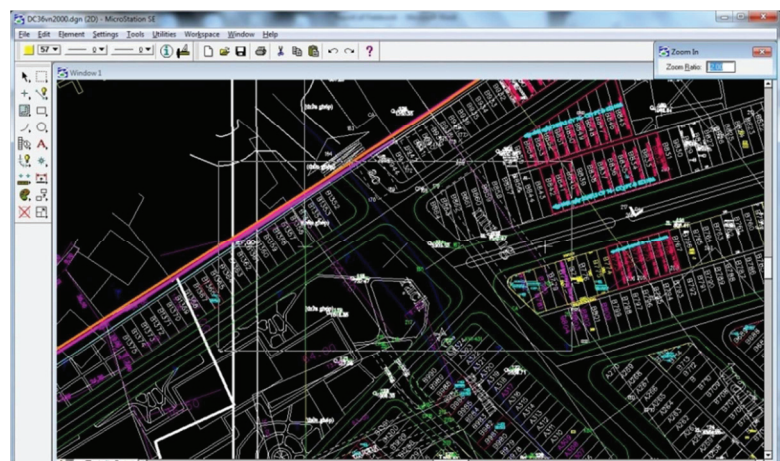


Legal documents, and
only 6 documents
found on this DoNRE
website

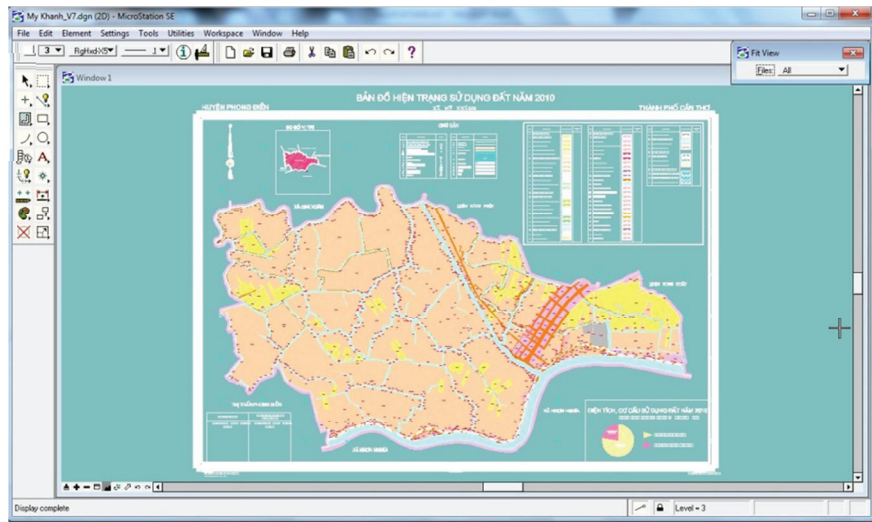


❖ **Digital maps collected from the interviewees**

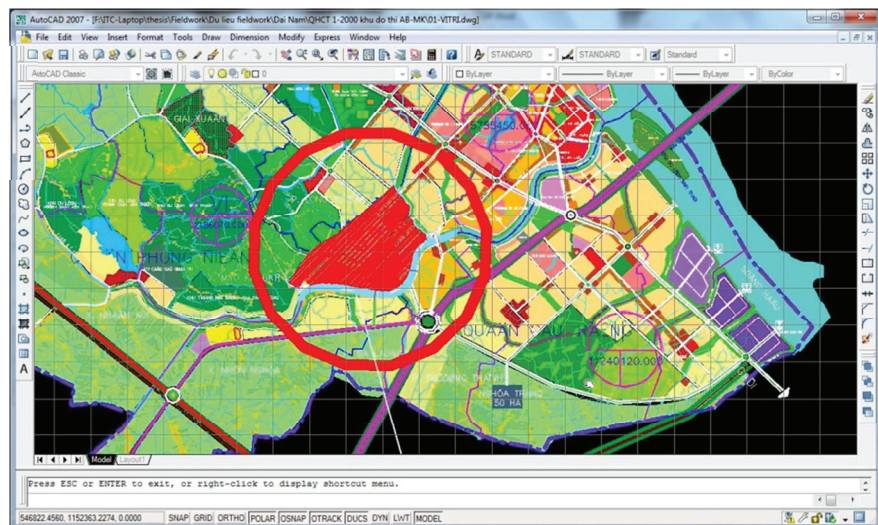
Digital cadastral map
(from BoNRE)



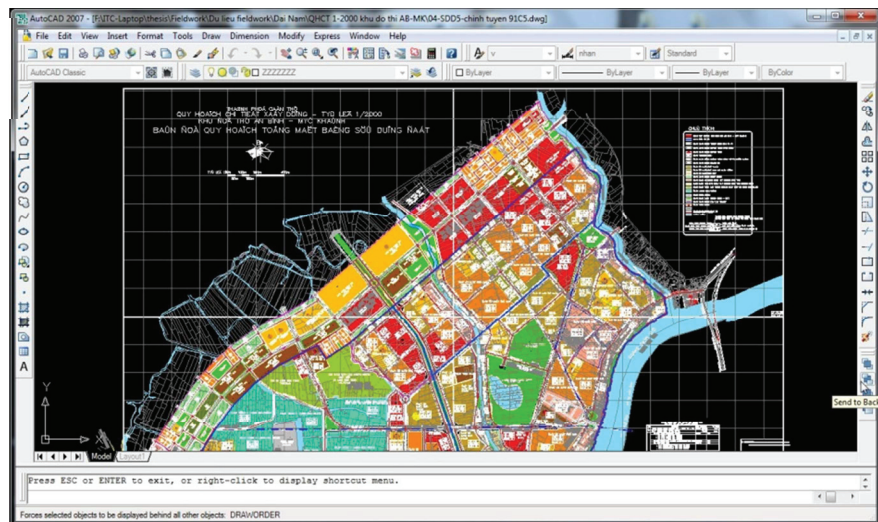
Digital land cover map
(from real estate planner)



Map of boundary, position and area of planning project (from real estate planner)



Digital detailed map of land use planning (from real estate planner)



Appendix 3: Questionnaire for housing data producer/policy makers

Organisation:

- ☐ Department of Natural Resources and Environment
☐ Bureau of Natural Resources and Environment

PART 1: INTERVIEWEE INFORMATION

Name of the interviewee: _____

Position: _____

Specialty: _____

Date: _____ Time: _____

Tel: _____ Email: _____

PART 2: CURRENT STATUS OF SOME RELEVANT HOUSING INFORMATION CAN BE PROVIDED TO THE USERS:

1. The report on detailed land use planning and detailed land use plan

- ☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason: bureaucratic

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

2. Map of location of land cover

- ☐ No ☐ Yes ☐ On website ☐ Others:

If Yes or On website, what type of provided map?

- ☐ Scanned ☐ Printed ☐ Digital map ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

3. Detailed map of land use planning in the case of detailed land use plan approved

- ☐ No ☐ Yes ☐ On website ☐ Others:

If Yes or On website, what type of provided map?

- ☐ Scanned ☐ Printed ☐ Digital map ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

4. Information on the draft urban planning

- ☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism

☐ Others:

5. Information on urban planning approved

☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason:

☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

6. Decision on compensation, support and resettlement

☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason:

☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

7. Draft plan for compensation and resettlement

☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason:

☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

PART 3: DISCUSS ON RELEVANT INFORMATION

1. Who are the main users of housing information?

☐ Housing developer / real estate planner
☐ Real estate agency
☐ People need to find information for housing
☐ Others:

2. Users can use the data for which purpose?

☐ Development, residential construction
☐ Transaction
☐ Validate information
☐ Others:

3. What type that housing information have in land/housing data in your organisation?

☐ The legal documents about land
☐ Information about land
☐ Information about land use planning
☐ Information about eviction, compensation and resettlement
☐ Land price
☐ Administrative procedures
☐ Statistics and reports
☐ Plan and project
☐ Others:

4. Can information in question 3 be extracted from land database?

☐ No ☐ Yes ☐ Depends on each kind of information

If no, please indicate reasons:

☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

5. Is information referred in question 3 be continuously updated?

☐ No ☐ Yes ☐ Depends on each kind of information

If not, please indicate reasons:

☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

6. Do you have any suggestion to provide other charged information or free information for users?

☐ No ☐ Yes

If Yes, what information would be provided? And provide in which way? (On website or at office)

- Provide on website:

- Provide office:

7. Do you suggest any technical mechanisms to improve the sharing to HIs for the users?

☐ No ☐ Yes

If yes, please specify:

8. Do you have any other suggestions to improve the access to HIs for the users?

☐ No ☐ Yes

If yes, please specify:

9. Besides the related legal documents such as decrees, decisions, circulars guiding the implementation of the Law in 2005, the 2003 Land Law. Does the People's Committee of Can Tho city issue any legal document while implementing 2 mentioned Law to improve the access to HIs?

☐ No ☐ Yes ☐ Depends on each case

If Yes, please specify documents:

10. Do you think the regulations and decisions made by People's Committee of Can Tho city are enough to implement the access to HIs?

☐ No ☐ Yes ☐ Depends on each case

If No, which documents should be produced to implement the access to HIs?

11. Is document mentioned in question 10 disclosures on the website or your office?

☐ No ☐ Yes ☐ Others:

If No, please indicate the reasons:

Appendix 4: Questionnaire for housing data producer/policy makers

Organisation:

- ☐ Department of Construction
☐ Bureau of Construction

PART 1: INTERVIEWEE INFORMATION

Name of the interviewee: _____
 Position: _____
 Specialty: _____
 Date: _____ Time: _____
 Tel: _____ Email: _____

PART 2: CURRENT STATUS OF SOME RELEVANT HOUSING INFORMATION CAN BE PROVIDED TO THE USERS:

1. The map of planning of urban construction and rural residence in ratio 1/2000

- ☐ No ☐ Yes ☐ On website ☐ Others:

If Yes or On website, what type of provided map?

- ☐ Scanned ☐ Printed ☐ Digital map ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

2. Map of location, boundary and area of land to develop commercial housing on the area

- ☐ No ☐ Yes ☐ On website ☐ Others:

If Yes or On website, what type of provided map?

- ☐ Scanned ☐ Printed ☐ Digital map ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

3. Land use conditions (allocated or leased, time of lease, land for resettlement; land price of each area and the financial obligations that investors have to pay as prescribed)

- ☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy ☐ Infrastructure and technical information
☐ Lack of technical staff ☐ Information sharing mechanism
☐ Others:

4. Planning requirements, architecture, number and type of housing, technical infrastructure, social information and other constructions within the scope of the project, project progress

- ☐ No ☐ Yes ☐ On website ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy
- ☐ Lack of technical staff
- ☐ Others:
- ☐ Infrastructure and technical information
- ☐ Information sharing mechanism

5. The overall plan on compensation, site clearance and resettlement (if any)

- ☐ No
- ☐ Yes
- ☐ On website
- ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy
- ☐ Lack of technical staff
- ☐ Others:
- ☐ Infrastructure and technical information
- ☐ Information sharing mechanism

6. Requirements for operational management and exploitation of the project after construction is completed

- ☐ No
- ☐ Yes
- ☐ On website
- ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy
- ☐ Lack of technical staff
- ☐ Others:
- ☐ Infrastructure and technical information
- ☐ Information sharing mechanism

7. The conditions to attend the bid of choosing investors for housing projects

- ☐ No
- ☐ Yes
- ☐ On website
- ☐ Others:

If you do not have on website, please indicate the reason:

- ☐ Policy
- ☐ Lack of technical staff
- ☐ Others:
- ☐ Infrastructure and technical information
- ☐ Information sharing mechanism

PART 3: DISCUSS ON RELEVANT INFORMATION

1. In your opinion, who are the main users of housing information?

- ☐ Housing developer/ real estate planner
- ☐ Real estate agency
- ☐ People need to find information for housing
- ☐ Others:

2. Users can use the mentioned information for which purpose?

- ☐ Development, residential construction
- ☐ Transaction
- ☐ Validate information
- ☐ Others:

3. Which layers that housing information have in the data of your organisation?

- ☐ Information about house
- ☐ Information about land
- ☐ Information urban planning
- ☐ Information about investment for construction
- ☐ Information about land use planning
- ☐ Information about eviction, compensation, resettlement
- ☐ Land price

- ☐ Procedures documents
- ☐ Legal documents
- ☐ Statistics, reports
- ☐ Projects and plans
- ☐ Others:

4. Can information in question 3 be extracted from your database?

- ☐ No ☐ Yes ☐ Depends on each kind of information

If no, please indicate reasons:

- ☐ Policy
- ☐ Lack of technical staff
- ☐ Others:
- ☐ Infrastructure and technical information
- ☐ Information sharing mechanism

5. Is information referred in question 3 be continuously updated?

- ☐ No ☐ Yes ☐ Depends on each kind of information

If not, please indicate reasons:

- ☐ Policy
- ☐ Lack of technical staff
- ☐ Others:
- ☐ Infrastructure and technical information
- ☐ Information sharing mechanism

6. Do you have any suggestion to provide other charged information or free information for users?

- ☐ No ☐ Yes

If Yes, what information would be provided? And provide in which way? (On website or at office)

- Provide on website:

- Provide agency:

7. Do you suggest any technical mechanisms to improve the access to HIs for the users?

- ☐ No ☐ Yes

If yes, please specify:

8. Do you have any other suggestions to improve the access to HIs for the users?

- ☐ No ☐ Yes

If yes, please specify:

9. Besides the related legal documents such as decrees, decisions, circulars guiding the implementation of the Law in 2005, the 2003 Land Law. Does the People's Committee of Can Tho city issue any legal document while implementing 2 mentioned Law to improve the access to HIs?

- ☐ No ☐ Yes ☐ Depends on each case

If Yes, please specify documents:

10. Do you think the regulations and decisions made by People's Committee of Can Tho city are enough to implement the access to HIs?

☐ No ☐ Yes ☐ Depends on each case

If No, which documents should be produced to implement 2 mentioned Law above?

11. Is document mentioned in question 10 disclosures on the website or your office?

☐ No ☐ Yes ☐ Others:

If No, please indicate the reasons:

Appendix 5: Questionnaire for housing data users

Interview groups:

- ☐ Housing Company/ real estate planner
☐ Real Estate Company
☐ Citizen

PART 1: INTERVIEWEE INFORMATION

Name of company: _____

Name of the interviewee: _____

Position: _____

Date: _____ Time: _____

Tel: _____ Email: _____

PART 2: CURRENT STATUS OF SOME RELEVANT HOUSING INFORMATION THAT YOU CAN REQUIRE FROM THE SUPPLIERS:

❖ Information collected from the Department of Construction(DoC):

1. The map of planning of urban construction and rural residence in ratio 1/2000

☐ No ☐ On website ☐ At DoC ☐ Other places:

If Yes , did you receive the digital map?

☐ No ☐ Yes ☐ Other ideas:

2. Map of location, boundary and area of land to develop commercial housing on the area

☐ No ☐ On website ☐ At DoC ☐ Other places:

If Yes , did you receive the digital map?

☐ No ☐ Yes ☐ Other ideas:

3. Land use conditions (allocated or leased, time of lease, land for resettlement; land price of each area and the financial obligations that investors have to pay as prescribed)

☐ No ☐ On website ☐ At DoC ☐ Other places:

4. Planning requirements, architecture, number and type of housing, technical infrastructure, social information and other constructions within the scope of the project, project progress

☐ No ☐ On website ☐ At DoC ☐ Other places:

5. The overall plan on compensation, site clearance and resettlement (if any)

☐ No ☐ On website ☐ At DoC ☐ Other places:

6. Requirements for operational management and exploitation of the project after construction is completed

☐ No ☐ On website ☐ At DoC ☐ Other places:

7. The conditions to attend the bid of choosing investors for housing projects

☐ No ☐ On website ☐ At DoC ☐ Other places:

❖ The information collected from the Department of Natural Resources and Environment(MoNRE)

8. The report on detailed land use planning and detailed land use plan

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

9. Map of location of current land use

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

If Yes, did you receive the digital map?

☐ No ☐ Yes ☐ Other ideas:

10. Detailed map of land use planning in the case of detailed land use plan approved

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

If Yes, did you receive the digital map?

☐ No ☐ Yes ☐ Other ideas:

11. Information on the draft urban planning

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

12. Information on urban planning approved

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

13. Draft plan for compensation and resettlement

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

14. Decision on compensation, support and resettlement

☐ No ☐ On website ☐ At MoNRE ☐ Other places:

PART 3: DISCUSS ON RELEVANT INFORMATION

1. You or your agency uses the information about the house / land in section 2 for what purposes?

- ☐ Housing developer/ real estate planner
- ☐ Real estate agency
- ☐ People need to find information for housing purpose
- ☐ Others:

2. Do you need to collect the information about the house/land from the government agencies?

☐ No ☐ Yes ☐ Other ideas:

If yes, what kind of information that you often need for your purpose? Please specify:

3. In which sources that you often collect relevant information?

- ☐ From website of relevant organisation
- ☐ From internet
- ☐ At office of relevant organisation
- ☐ From other companies
- ☐ From friends or relatives
- ☐ Others:

4. Can you download from the relevant agency's website the regulations and procedure documents of providing housing/land information?

☐ No ☐ Not enough ☐ Yes ☐ Do not care

5. Besides the related legal documents such as decrees, decisions, circulars guiding the implementation of the Law in 2005, the 2003 Land Law. Does the People's Committee of Can Tho city issue any legal document while implementing the dissemination of HIs at the local area?

☐ No ☐ Yes ☐ Depends on each case

If Yes, please specify documents:

6. In your opinion, are legal relevant documents available on both website and offices enough or not?

☐ No ☐ Not enough ☐ Yes ☐ Other ideas:

7. Do you think the current legal documents are enough to implement the dissemination of HIs at the local area?

☐ No ☐ Yes ☐ Depends on each case

If No, which documents should be proposed? Please specify:

8. In your opinion, what is the level of the access to information in Part 2 would be?

☐ Very difficult ☐ Difficult ☐ Normal ☐ Easy ☐ Very easy

If Difficult or Very difficult, what are reasons would be?

- ☐ Information is difficult to find on website
- ☐ Website is too slow and data is difficult to download
- ☐ Information is not disclosure on website enough
- ☐ The procedure to provide information is too complicated and duplicated
- ☐ Information located in many agencies
- ☐ Difficult to find appropriate agencies can provide appropriate information
- ☐ Other reasons, please specify (if any):

9. In which format of information that you are provided?

- ☐ Digital
- ☐ Printed
- ☐ Both
- ☐ Others:

10. Is information mentioned in Part 2 up-to-date?

☐ No ☐ Yes ☐ Other ideas:

11. In which quality level of information mentioned in Part 2 that you can collect up to now?

☐ Very bad ☐ Bad ☐ Acceptable ☐ Good ☐ Very good

12. Is the housing/land information that the government can provide enough for you or your purpose?

☐ No ☐ Yes ☐ Other ideas:

13. Do you suggest the government to disclosure other information or provide charged housing/land information? (On website or at office)

- On website are:

- At office are:

14. Do you propose any technical mechanism to improve the access to housing/land information for users?

☐ Yes

☐ No

If yes, please specify:

15. Do you propose any policy to improve the access to housing/land information for users?

☐ Yes

☐ No

If yes, please specify: