

STRENGTHENING WATER GOVERNANCE IN VIETNAM: A CASE STUDY OF
COMMUNITY RESPONSE TO WATER INSECURITY IN VINH QUANG WARD,
RACH GIA CITY, KIEN GIANG PROVINCE, VIETNAM

Miss Phuong Tran Lan Pham



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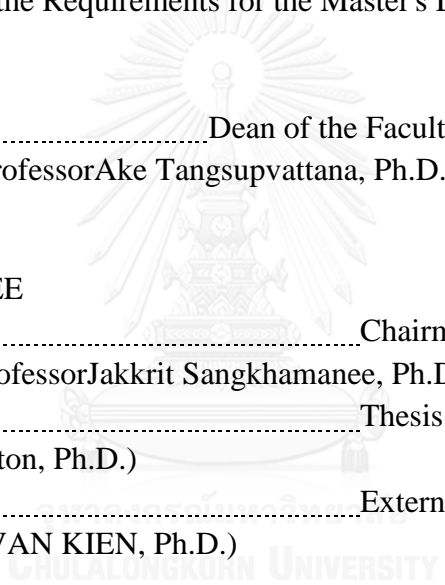
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ตำบลวินห์กวางซึ่งเป็นพื้นที่ชายฝั่งในเมืองราชเกียจังหวัดเกียนยาง ของประเทศเวียดนาม ตั้งอยู่ในพื้นที่ลุ่มแม่น้ำโขงของเวียดนาม คนท้องถิ่นที่กำลังรับมือกับปัญหาด้านการขาดแคลนน้ำสำหรับการอุปโภคบริโภคภายในครัวเรือนอันเป็นผลสืบเนื่องจากปัญหาน้ำเค็ม ปัญหาดังกล่าวนี้เกิดขึ้นล่าสุดช่วงเดือนเมษายน ปี 2016 ซึ่งส่งผลกระทบต่อความแห้งแล้งที่ทวีความรุนแรงขึ้นกว่าเมื่อสองปีที่แล้ว อันเป็นผลสืบเนื่องจาก ปัญหาความแห้งแล้งขั้นรุนแรง, สภาวะโลกร้อน, ระดับน้ำทะเลที่สูงขึ้น รวมถึงปัญหาความขัดแย้งระหว่างความต้องการใช้น้ำทางตอนบนและตอนล่าง มีการคาดการณ์ว่าปัญหาการรุกของน้ำเค็มจะทวีความรุนแรงขึ้นอีกในปีต่อๆไป

วิทยานิพนธ์ฉบับนี้ใช้แนวคิดหลัก 2 แนวคิดด้วยกัน ซึ่งประกอบไปด้วย แนวคิดความมั่นคงทางน้ำ (Water security) และแนวคิดการบริหารจัดการน้ำ (Water governance) สำหรับวิทยานิพนธ์ฉบับนี้ ผู้วิจัยได้สัมภาษณ์คนท้องถิ่นจำนวน 20 คนเกี่ยวกับปัญหาในช่วงสองปีที่ผ่านมา อีกทั้งผู้วิจัยได้มีโอกาสสัมภาษณ์กลุ่มเยาวชน, กลุ่มสตรี และสมาชิกอาสาสมัครในระดับตำบล เพื่อสอบถามในเรื่องการทำงานร่วมกับรัฐบาลท้องถิ่นในเรื่องการช่วยเหลือและบรรเทาความขาดแคลนน้ำให้กับคนท้องถิ่น

ในการลงวิจัยภาคสนาม ผู้วิจัยได้เรียนรู้ถึงประสบการณ์ในการขาดแคลนน้ำเป็นเวลาหลายวัน จากการสังเกตการณ์ ผู้วิจัยพบว่าคนในท้องถิ่นประสบกับความยากลำบากต่อการใช้น้ำในชีวิตประจำวัน ทั้งที่น้ำคือปัจจัยพื้นฐานของประชาชนทุกคน ในหน้าแล้งในตำบลวินห์ กวาง ท่อน้ำเพื่อจ่ายน้ำสำหรับคนในท้องถิ่นไม่เพียงพอ ทั้งนี้สำหรับคนยากจนและผู้ที่อยู่ไกลออกไปจากกลางใจเมือง ต้องพึ่งพาน้ำบาดาลเพื่อการอุปโภคบริโภคภายในครัวเรือนซึ่งไม่ถูกสุขลักษณะ

ในปีที่กำลังจะมาถึงนี้ ในตำบลวินห์ กวาง ปัญหาเรื่องการขาดแคลนน้ำซึ่งเป็นผลมาจากปัญหาน้ำเค็มจะยิ่งทวีความรุนแรงขึ้นอีก ดังนั้นประเด็นเรื่องความมั่นคงทางทรัพยากรน้ำ และการบริหารจัดการน้ำควรจะอยู่ในวาระของรัฐบาลและของชุมชน สิ่งสำคัญคือคนชายขอบควรจะได้รับสิทธิในการเข้าถึงน้ำมากขึ้น รวมไปถึงคนในท้องถิ่นควรจะได้ส่งเสียงถึงปัญหาที่เกี่ยวกับน้ำต่อรัฐบาลท้องถิ่นให้มากกว่านี้

วิทยานิพนธ์เรื่องนี้เสนอว่าในการแก้ไขการบริหารจัดการน้ำในเวียดนาม ชุมชนคนรากหญ้าและตัวแสดที่ไม่ใช่รัฐมีส่วนสำคัญในการเข้ามาบริหารจัดการน้ำในท้องถิ่น โดยที่การมีส่วนร่วมของกลุ่มคนเหล่านี้เป็นปัจจัยสำคัญต่อการเพิ่มประสิทธิภาพระบบการบริหารจัดการน้ำในชุมชน

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PHUONG TRAN LAN PHAM: STRENGTHENING WATER
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RESPONSE TO WATER INSECURITY IN VINH QUANG WARD,
RACH GIA CITY, KIEN GIANG PROVINCE, VIETNAM. ADVISOR:
CARL MIDDLETON, Ph.D., 104 pp.

Vinh Quang Ward is a coastal ward of Rach Gia City, Kien Giang Province which is located in Mekong Delta of Vietnam. Local people deal with water shortage for their domestic use because of salinity intrusion about one month of April 2016. The purpose of this thesis is to understand and improve water governance so as to strengthen water security in Vinh Quang Ward.

There were two major concepts for this thesis, namely water security and water governance. For this research, I interviewed twenty-five people in three different villages to have an overview about the issue throughout two years. I interviewed one academic from An Giang University and one from Southern Institute of Water Resources Research to learn about how severe salinity intrusion was.

During drought, the piped water distribution system is insufficient so local people struggled with water to reach their daily demand. I also figured out the impacts on local people's health, livelihood, and business, especially the poor and women. The poor and women who are located further far from centre of city relied on ground water for their domestic use which was not good at quality.

This study also revealed weak water governance in Vietnam. The argument of this thesis is that water governance must be strengthened. In other words, water insecurity is not a result of physical water scarcity alone, but also relates to how decisions are taken towards how to address this issue.

Field of Study: International Student's Signature

Development Studies Advisor's Signature

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ABBREVIATIONS

ADB	Asian Development Bank
CBOs	community-based organisations
CSOs	civil society organisations
DOC	Department of Construction
GMS	Greater Mekong Sub-region
MARD	Ministry of Agriculture and Rural Development
MOC	Ministry of Construction
MOF	Ministry of Finance
MOH	Ministry of Health
MONRE	Ministry of Natural Resources and Environment
NGOs	non-government organisations
NTP	National Target Program for Rural Water Supply and Sanitation
ODA	official development assistance
PPC	Provincial People's Committee
WHO	World Health Organisation
VFF	Vietnam Fatherland Front

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Chapter I: Introduction

Figure 1: Map of Kien Giang Province, Vietnam

Source: USAID Mekong ARCC Main Report, 2013



Rach Gia City is a coastal city in Vietnam, directly off the Gulf of Thailand. As one of the four major cities in the Mekong Delta (see Figure 1), Rach Gia plays an important role in the socio-economic development of Vietnam's Kien Giang Province in particular and the Mekong Delta in general, mainly through business, tourism and industry. . There are three major groups of peoples - Kinh, Chinese and Khmer – living in the city.

Local communities face water scarcity during the dry season because of salinity intrusion, especially in Vinh Quang Ward, an urban area located west of Rach Gia City center, near the coast.

For example, almost everyone in that ward unexpectedly encountered fresh water scarcity for two weeks in July 2015 when no fresh water was available from the taps ("Rach Gia City in Demand of Clean Water ", 15 July 2015). Salt water had intruded about 20km inland so the major water source provided by the water factory in Vinh Quang Ward turned salty. People in Vinh Quang Ward dealt with numerous negative impacts as a result of this salinity intrusion and lack of fresh water. Some families had enough water for cooking and drinking, as fresh water was provided by the local water factory. However, others were not able to get water for cooking and drinking so they bought bottled water at double the usual price ("Rach Gia City in Demand of Clean Water ", 15 July 2015). Those bottles of water were in short supply as well. Moreover, people had to use water from the old well and even salt water for washing, which is extremely unsafe. The women, elderly, and children were especially in need and vulnerable to water scarcity in terms of water-related health problem.

In Vinh Quang Ward, the State is responsible for water provision for people's domestic use but the water supply is reduced or even cut off regularly during the year, especially in the dry season. Water may be cut from 8-10 hours during the day although communities are given advance notice so they can store water. This situation in Vinh Quang Ward has become more frequent in recent years, negatively impacting people's daily lives and local socio-economic development.

Communities in Vinh Quang Ward are encountering water insecurity for a number of reasons - in particular, climate change in terms of sea level rise, variable rainfall, upstream development and population growth. Firstly, areas of the Mekong Delta such as Vinh Quang Ward are being seriously affected by sea level rise caused by climate change. The Mekong Delta is less than 5m above sea level, making it one of the three most vulnerable deltas in the world to sea level rise (Mackay & Russell, 2011). According to Mackay and Russell (2011), the changes in wet and dry season precipitation and inundation from sea level rise could be significant threats to the region's agricultural and fisheries productivity, as well as remaining natural coastal

systems. More importantly, large parts of the Mekong Delta are already below sea level – for example, the Gulf of Thailand is rising about 0.25cm per year (Fuchs, Conran, & Louis, 2011). It is believed that the impacts of sea level rise on the Mekong Delta also causes negative impacts on existing production systems further inland (Renaud & Kuenzer, 2012).

Agriculture is also a significant factor involved in water scarcity in the Mekong Delta. The increase in triple rice crop production in upstream provinces in Vietnam, such as An Giang and Dong Thap, and the upstream dams of Mekong River limit water for those downstream, according to a representative of the Kien Giang Department of Agriculture and Rural Development (Dan, 2015). Dr. Duong Van Ni of Can Tho University confirmed the phenomenon observed by farmers and fishermen, who said that “water in the Mekong River has shown signs of changes in water volume and water quality” (“Mekong residents voice their concerns,” 5 August 2013). Vinh Quang Ward is the lowest ward of the downstream area so every change upstream has an impact on this coastal ward, especially in the form of salinity intrusion and water insecurity.

Furthermore, rare rainfall is a major cause of the severe salinity intrusion in recent years. The dry season has been lasting longer than usual. This ward has had to deal with salinity intrusion in two weeks of July last year and one month of April 2016.

Broadly speaking, population growth in Vinh Quang Ward has also contributed to water scarcity for domestic use and the government has not been able to meet that demand in the long run. Vinh Quang – which has a population of 38,000 people (People's Committee, 2015) - is the most vulnerable ward in Kien Giang Province because of its high exposure to salinity intrusion. Also, the increase in people and households contribute to more vulnerable to climate change so it is difficult to adapt to climate change (ADB, 2013).

During the water shortage in Vinh Quang Ward in July 2015, the Director of the Kien Giang Department of Agriculture and Rural Development explained that the severity of salinity intrusion in the coming years will be unprecedented as well as when local people will not encounter such issue any more (“Rach Gia City in Demand of Water during Rainy Season,” 2015). He mentioned an existing plan to build three dykes to

block salt water from the Kien River, Nhanh Canal and Cut Canal which relies on national revenue, but it has not been implemented yet. The Director recommended that the Kien Giang People's Committee suggest to the government creating a reservoir with at least 300 hectares for both domestic use and agricultural farming in the long run. Lastly, he reported that a thousand people in Vinh Quang Ward must face water scarcity every year until the revenue is disbursed, because there is no cooperation between local people and local government to address such issue in the short term.

The Vietnamese Water Law passed in 2012 charged the Vietnam Fatherland Front¹ and its members to coordinate with state management agencies in charge of water resources to mobilize people to participate in water resource protection, conservation, exploitation and use of water. Also, it mentioned that "the Ministry of Natural Resources and Environment shall assume the prime responsibility for, and coordinate with ministries, ministerial-level agencies and provincial-level People's Committees in, elaborating water resource strategies for submission to the Prime Minister for approval" ("Vietnamese Water Law," 2012, p. 33). There remains a gap and top-down approach to handling water issues in Vietnam. Furthermore, the National Target Program for Rural Water Supply and Sanitation (NTP) requires coordination between the Ministry of Agriculture and Rural Development (MARD), the Ministry of Health (MOH) and the Ministry of Natural Resources and Environment (MONRE) as well as between central and provincial government (World Bank, 2012). However, there is no process or procedure for engaging local people or communities. There is poor coordination among the NTP agencies across provinces not to mention issues with understaffing, inadequate, and poor monitoring and evaluation (World Bank, 2012). Overall, cooperation is lacking between local government and civil society to address fresh water scarcity in Vinh Quang Ward. Ultimately, the local communities have to must suffer without any recourse.

The purpose of this thesis is to investigate the causes and impacts of water insecurity in Vinh Quang Ward as well as identify the different strategies of community, civil

¹ The Vietnam Fatherland Front's membership includes mass organisations such as the Youth Union, the Labour Union, the Women's Union and the Farmer's Association.

society, the state and the private sector to address such issues in order to strengthen water governance. Moreover, this research focuses on the extent to which water insecurity in Vinh Quang Ward impacts local people's daily lives, with respect to their livelihoods, daily domestic water demand and health. In addition, this thesis analyses the issue of water governance in Vinh Quang Ward, particularly the lack of community engagement in the water policy-making process, and how the ineffectiveness of top-down policy-making impacts water governance. This thesis hopes to contribute towards narrowing the evidence gap and building a better understanding of how an effective bottom-up approach to water insecurity can strengthen inclusive water governance. In order to reduce water insecurity in Vinh Quang, the argument of this thesis is that water governance must be strengthened. In other words, water insecurity is not a result of physical water scarcity alone, but also relates to how decisions are taken to address this issue – both pro-actively and reactively.

1.1. Research Questions

There are five main research questions for this thesis:

1.1.1. To what extent is there water insecurity in Vinh Quang Ward? What are the impacts on local people and business in Vinh Quang Ward? Are some people more vulnerable to water insecurity than others, including in terms of gender and economic status?

1.1.2. What are the main reasons for water insecurity in Vinh Quang Ward, Rach Gia City, Kien Giang Province?

1.1.3. What are the different strategies of community, civil society, state and business to strengthen water security?

1.1.4. What are the existing formal and informal water governance and mechanism in Vinh Quang Ward, Rach Gia City, Kien Giang Province?

1.1.5. Is water governance in Vinh Quang Ward inclusive of all water users?

1.2. Research Objectives

The research will focus on the following objectives:

1.2.1. To analyse the impacts of water insecurity toward local people and business in Vinh Quang Ward, Rach Gia City, Kien Giang Province.

1.2.2. To investigate the main causes of water insecurity, especially in last five years, in this ward.

1.2.3. To analyse the different strategies of community, civil society, state and business to strengthen water security.

1.2.4. To investigate the existing water governance and mechanism in Vinh Quang Ward.

1.2.5. To identify the extent to which water governance is inclusive of all water users.

1.3. Conceptual Frameworks

1.3.1. Water Security

There are many different dimensions to the concept of water security, including: availability of clean drinking water, reliable basic water services, the security of drinking water against potential terrorist attacks and environmental and national security as well.

Schäfer (2013) defines water security as “a sufficient supply of water in quantity and quality in order to conduct operations perceived to be essential for survival, daily life, or development”. During the dry season, water security shall be considered the supply of water in sufficient quantity and quality for agricultural use, industrial use and drinking water use (Schäfer, 2013). Schäfer’s definition however, does not mention people’s access to water in urban areas so as to guarantee the sufficient quantity and quality.

Contemporary framings of water security are diverse and vary with context and disciplinary perspective on water use. For example, water security has generally been associated with allocation rules that seek to secure entitlements to desired quantities of water from the legal perspective (Cook & Bakker, 2013).

Water security focuses on quantity and availability of water, which are linked to water security assessment tools. For individuals, water security can be captured in terms of access to sufficient safe and affordable water to meet individual needs for drinking, washing and livelihoods (Cook & Bakker, 2013). However, according to Witer & Whiteford (1999), water security includes sufficient quantity of water at a quality necessary, at an affordable price to meet both short- and long-term needs to protect the health, safety, welfare and productive capacity of position (for households, communities, neighbourhoods, or nation) (Cook & Bakker, 2013). Broadly speaking, Cook and Bakker (2013) stated that water security demands access to adequate quantities of acceptable quality of water for both humans and the environment.

To summarize, this thesis will focus on major factors concerning water security such as availability of water so that people have access to sufficient quantities of acceptable quality.

Table 1: Factors related to water security (Cook & Bakker, 2013)

Factors	Description
Availability	<ul style="list-style-type: none"> - how much blue water resource is withdrawn from rivers and aquifers - how many people share each unit of blue water resources - sufficiency of water supply for people
Access	<ul style="list-style-type: none"> - affordable price for people - safe access to water functions and services - fair distribution and outcomes
Quality	<ul style="list-style-type: none"> - to have a clean, healthy and productive life - can be used for drinking and cooking

1.3.2. Water Governance

The role of water governance in addressing the challenges of global water resources is now well recognized (Gleick, 2009; UNESCO, 2006; WEF, 2009). Governance entails negotiation between society and government for effective implementation as well as acceptable allocation and regulation by moderating behavior through values, social norms and laws (Rogers & Hall, 2003). Therefore, water governance includes

the laws, regulations, property rights, institutions, policies and actions, which control and negotiate water resources between international market forces, the private sector and civil society (UNDP, 1997). The particular system of governance varies from country to country, depending upon the political system. In Vietnam, government does not simply mean the national government but includes a variety of levels, such as national, provincial, district and commune. In terms of water governance, the local people, community, private sector and civil society are involved as well.

Water governance is necessary to control variability in water supply and delivery in terms of seasonality and local variety through the construction and management of regulating infrastructure but also through the rules (permits, ownership rights, laws, regulations) that administer valuable water resources (Hill, 2013). With the ongoing and projected impacts of climate change, such as unexpected sea level rise, and the variety of institutions in a given region, water governance should be flexible.

Nowadays the role of civil society in strengthening water governance is increasingly recognised. In Vietnam, some refer to civil society as ‘the third sector’. In terms of water governance in Vietnam, civil society includes voluntary organisations, non-profit organisations, non-government organisations (NGOs), people’s organisations, community-based organisations (CBOs), cooperatives and civil society organisations (CSOs) (Hasan, Lyons, & Onyx, 2008). Vietnamese government, however, defines civil society as the mass organisations which are under the umbrella of the Vietnam Fatherland Front (VFF) (Hasan et al., 2008). Membership of mass organisations includes Farmers’ Association, Women’s Union and Youth Union and can come through public sector employment.

The Grassroots Democracy Decree passed in 1998 was an important milestone for NGO–Government cooperation in Vietnam. It created space for more active civil society participation at the commune and village levels. In 2005, the decree was revised to give the right to rural populations to be informed and to carry out, discuss and monitor decisions of importance to their community (ADB, 2011a). However, civil society in Vietnam must be under the management of the State so they still face some challenges in implementing their activities. NGOs must register with the Ministry of Home Affairs as well.

Table 2: Actors and roles in Vietnam urban water governance

Actors	Roles
Government (Ministry of Construction, Ministry of Natural Resources and Environment)	<ul style="list-style-type: none"> - legislation about Vietnam Water Law - practice the law and manage state revenue to ensure water security - main actor to operate infrastructure for urban water supply system
Regulatory agency (National Water Resources Council)	<ul style="list-style-type: none"> - main agency to coordinate between the government and private sector - to guarantee practice of a certain water policy - to participate in water policy-making process or urban water supply planning project
Mass organisations (Youth Union, Women's Union, Farmer's Union, Labour Union)	<ul style="list-style-type: none"> - to bridge the gap between government and local people - to intentionally listen to local people and be a representative for local people to government
Private sector	<ul style="list-style-type: none"> - to provide water services so as to ensure water security for local people - to suggest any good water supply services to government in order to achieve the best outcome
Consumers of water	<ul style="list-style-type: none"> - to voice to government what they are encountering - to give suggestions to the government on how to deal with water issues in order to

	<p>meet community's need</p> <ul style="list-style-type: none"> - to give feedback about a certain water policy
Civil society (NGOs)	<ul style="list-style-type: none"> - to participate in the urban water policy-making process - to have a tie relationship with local people and narrow the gap between them and government - service provision

All in all, water governance to address rising insecurity caused by salinity intrusion caused by sea level rise, variable rainfall, lack of water from upstream areas and population growth in Vietnam requires more flexibility, adaptation, regulations, norms and actions on behalf of the various stakeholders, such as government from various levels, the third sector and local people. There must be a more bottom-up approach to address the problem rather than the top-down approach the Vietnamese government has applied throughout the years, which has failed to address water insecurity for local people in the short- and long-term. State failure to manage water resources fairly comes from failing to provide safe water, especially to the poor, and through allowing environmental degradation of water ecosystem in the pursuit of goals such as modernisation, industrialisation and urbanisation (Bakker, 2010). See Table 3 for different themes in water governance relevant to this thesis.

Table 3: Selected themes in urban water governance (OECD, 2015)

Themes	Scope
Information	<ul style="list-style-type: none"> - The Water Law - water policy for domestic use in urban areas to deal with water insecurity - the projects related to water service
Public involvement	<ul style="list-style-type: none"> - to provide suggestions or ideas regarding water policy, the Water Law, and water supply projects - to learn about the Water Law and water policy in

	practice
Policy	<ul style="list-style-type: none"> - to cover all issue related to water insecurity - to guarantee water security for all people - to clearly state the major actors involved in water supply issue
Accountability	<ul style="list-style-type: none"> - to have a main actor or an office responsible for water issue - to respond to local people's problems regarding water
Funding	<ul style="list-style-type: none"> - to have more transparency in funding process for urban water supply projects - to ensure that funding for urban water projects is disbursed
Capacity	<ul style="list-style-type: none"> - to enhance the administrative capacity of local government in terms of accountability - to improve public knowledge about the Water Law, urban water policy and issues related to urban water supply

According to OECD (2015), themes of water governance involve public involvement, policy, accountability, and funding and capacity. Those themes have been chosen for the purposes of this thesis because of the following reasons: First, public involvement in water governance is limited in Vietnam. The water policies – their formulation and implementation - remain top-down, reducing transparency in terms of accountability, funding and capacity, and thereby compromising the ability to attain strong water governance.

Moreover, strong water governance will lead to better water security with grassroots involvement. As the case study of Vinh Quang Ward demonstrates, the issue of water shortage is caused by not only climate- and weather-related events, such as salinity intrusion and drought, but also the top-down policy-making process from the central government to the local government. Local people in Vinh Quang Ward are unable to voice their concerns regarding the clean water shortage during April 2015 and April

2016. Effectively, it is weak water governance in Vinh Quang Ward that allowed a repeat of the water shortage two years in a row as well.

1.4. Research Methodology

1.4.1. Scope of Research

The scope of this research focuses on two locations for its analysis, namely the centre of the ward and the peri-urban area within Vinh Quang Ward. The research analyses water insecurity in different regions and varied economic status as well as how water insecurity impacts different groups of people. Additionally, this research analyses how people get involved in water governance in three villages such as one village in centre and two villages in peri-urban area in order to learn water insecurity impacts different in these three villages according to their distance from the water factory and their socio-economic status.

There are three villages concerned within the scope of this study - Dong Khoi Village, Vo Truong Toan Village and Nguyen Thai Binh Village (see Figure 2).

Figure 2: Maps of three villages in Vinh Quang Ward



Table 4: The identification of three villages

Name of villages	Geography	Identification
Dong Khoi	Close to centre of Rach Gia City	<ul style="list-style-type: none"> - Good quality of roads - Relatively high socioeconomic status - Main livelihood is business
Vo Truong Toan	Peri-urban area	<ul style="list-style-type: none"> - A convenient road is linked to centre - Relatively average socioeconomic status - Main livelihoods are small businesses and rice farming
Nguyen Thai Binh	Peri-urban area	<ul style="list-style-type: none"> - Poor transportation infrastructure - Low socioeconomic status - Main livelihoods are rice farming and working as hired labour

1.4.2. Data Collection

1.4.2.1. Secondary Data Collection

Secondary data was collected from existing studies and the media. Existing studies provided some information about water insecurity and water governance, and also illustrated how other researchers got involved in water insecurity in coastal provinces. Furthermore, both the studies and media provided official information which I was prohibited from gathering directly from local government. I did use some official quotes from media reports or newspapers to analyse the participation and effectiveness of local government policies to resolve water insecurity.

1.4.2.2. Primary Data Collection

Informants for collecting primary data were identified from a variety of stakeholders including local government, local people, NGOs, expert or former researchers. The fieldwork was carried out from 14 April 2016 to 11 June 2016 in order to interview and observe the negative effects of water shortage on local people's livelihood, health condition and daily activities. The key informants (see Table 5) were selected on the

basis of being actors involved in water governance. Besides that, key informants among the local people were identified across the three villages, to reflect views across different ages, genders as well as economic status.

In terms of state actors, I intended to interview the Department of Construction, the head of the Vinh Quang People's Committee and the head of water company. However, they declined to be interviewed. At the ward level, I conducted in-depth interviews with the heads of mass organisations such as the Women's Union, the Youth Union and the Vietnam Red Cross.

The interviews with state actors or mass organisations allowed me to identify the causes of water insecurity in recent years. The Women's Union works closely with local women and children so they were able to provide basic information about the impact of water scarcity on women's and children's health and economic status. Furthermore, they provided an overview of the strategies arranged from state to the local people in order to address water insecurity.

For non-state stakeholders, I conducted an in-depth interview with one lecturer from An Giang University who used to conduct research on water shortage in other coastal provinces in the Mekong Delta. Additionally, I interviewed a staff member from the Southern Institute of Water Resources Research to understand more about climate change and unexpected weather patterns in coming years. Moreover, I relied on Dr. Le Anh Tuan, Deputy Director, Research Institute for Climate Change, Can Tho University for secondary data (his research) and primary data about how salinity intrusion in 2016 is causing water insecurity in coastal provinces in the Mekong Delta.

Vinh Quang Ward was the community in which I conducted interviews with local people. This is a peri-urban ward, and the research was conducted in three villages. Dong Khoi Village is central, while Vo Truong Toan and Nguyen Thai Binh Villages are peri-urban. Most of poor people I interviewed were in Nguyen Thai Binh Village. The interviewees in these three villages were selected based on diversity in gender, age and economic status. I utilised semi-structured interviews to interview 25 informants from the three identified villages. Data collection was structured based on the three key themes of water security (availability, access and quality) and other key

themes of water governance such as public involvement, policy, accountability, funding and capacity as well.

Table 5: The Key Informants

Actors	Criteria for Selection	Justification for Selection
Local people	<ul style="list-style-type: none"> - From the three identified villages - Represent different genders, ages and economic status 	<ul style="list-style-type: none"> - They are directly affected by water insecurity. - They are one of the key actors involved in water governance.
NGOs	<ul style="list-style-type: none"> - They are working and conducting research about domestic water sector 	<ul style="list-style-type: none"> - NGOs play an important role to bridge the gap between government and local people on water governance.
Researchers	<ul style="list-style-type: none"> - They are conducting research concerned domestic water 	<ul style="list-style-type: none"> - To understand about water issues generally in Vietnam and coastal provinces in particular. - To understand how government and local people deal with water insecurity.
Women's Union	<ul style="list-style-type: none"> - at ward level 	<ul style="list-style-type: none"> - To learn how the Women's Union supports local people overcome water issue - To learn the negative effects of water insecurity on women and children
Youth Union	<ul style="list-style-type: none"> - at ward level 	<ul style="list-style-type: none"> - To learn how they support local people to address impacts of water insecurity
Red Cross	<ul style="list-style-type: none"> - at ward level 	<ul style="list-style-type: none"> - To learn how they work with and help local people to address impacts of water insecurity
Government	<ul style="list-style-type: none"> - Department of Construction - Water Supply Company - People's Committee at ward level 	<ul style="list-style-type: none"> - They play a key role to manage certain water supply systems in urban areas. - The main agency under the umbrella of the Provincial People's Committee runs a water business in Vinh Quang Ward. - To learn about their support to local people to deal with water scarcity.

1.4.3. Data Analysis

Data was coded based on the five research questions. First, information was collected from various actors from the communities, Women's Union, Youth Union, Red Cross, and experts experiencing and involving in water insecurity and water-related research. Information was clearly identified in order to answer five research questions which covered water security and water governance.

Firstly, information collected from the aforementioned actors was transcribed and thoroughly arranged in order to answer five research questions. Secondly, important quotes were translated into English to use for analysis. The information gathered from informant interviews was recorded by note-taking and audio recording. Photographs were taken to capture water insecurity in Vinh Quang Ward and how local people's livelihood was being affected.

1.5. Constraints and Limitations

A significant constraint in conducting this field research was political sensitivity. While conducting fieldwork in Vinh Quang Ward, local people were dealing with water insecurity, more serious than last year. When I introduced myself and the purpose of my research, local officials from the Department of Construction (DOC) declined the interview as it was deemed to be too politically sensitive. Later, after water insecurity in Vinh Quang Ward was no longer an issue, I returned to request an interview with the head of Vinh Quang Ward. She also declined to be interviewed, as the issue was solved already. Even my request for secondary data from the water supply company was denied. Given these obstacles, I did not have the opportunity to collect primary data from the local government. However, I used government officials' quotes from the official newspaper of the Kien Giang Provincial People's Committee to gather more information for my analysis.

1.6. Significance of Research

First, water shortage has been a burning issue in coastal provinces in the Mekong Delta in recent years and is forecasted to worsen in the future. Most of the existing studies focus on either water shortage in rural areas or on water management in urban areas. They cover a variety of water policies for both rural and urban regions. This

research aims to strengthen urban water governance which allows local people, community and other water-concerned stakeholders to be involved in the water policy-making process to achieve greater water security.

Second, the chosen case study is quite important for domestic water-related improvement. The Mekong Delta is being gradually impacted by climate change, including sea level rise and unpredictable weather patterns. Moreover, the rapid development in upstream provinces within Vietnam as well as upper Mekong River dramatically reduces the quantity and quality of domestic water available for downstream areas. These growing threats places pressure on local people, community and government and will continue to in coming years, raising concerns about how to enhance water governance.

Third, the case study of water shortage in Vinh Quang is typical for domestic water-related issues in the Mekong Delta and in coastal provinces especially. This coastal ward has dealt with water scarcity for at least two years, which has been worse than previous years. However, the local people have only been left further behind, with the water needs of poor people in peri-urban areas completely ignored by the government.

1.7 Thesis Structure

The thesis is structured as follows. Chapter 2 is a Literature Review which sets out the water policies, water institutions and 2012 Vietnam Water Law and analyses how those Laws and policies work in practice to address the issue of water insecurity in the region. The Review provides an overview of major causes of water insecurity such as climate change, sea level rise, complicated weather patterns like drought, upstream and downstream water conflict as well as population growth. The last part of this chapter analyses urban water governance in Vietnam so far. Chapter 3 discusses water insecurity in Vinh Quang Ward in the three defined villages. It looks at the issue from the perspective of different areas and different economic status. Chapter 4 covers water governance, mainly discussing the different stakeholders are involved in water governance, the variety of water governance mechanisms in Vinh Quang Ward and the ways in which water-related actors participate in water governance. Chapter 5 offers a conclusion, recommendations and suggestion for future research.

Chapter II: Literature Review

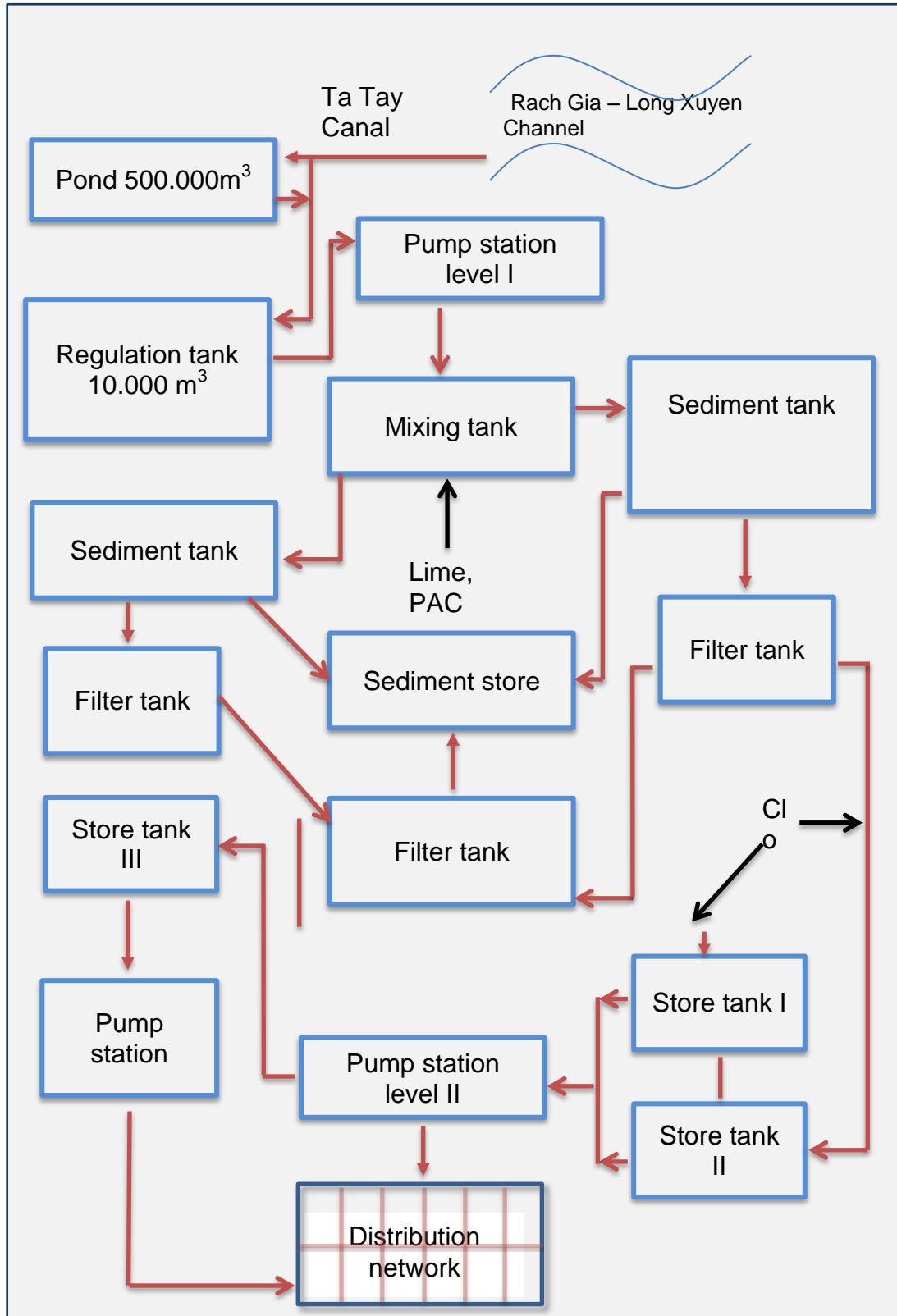
This chapter aims to identify the knowledge gap and review the major reasons related to water scarcity in the Mekong Delta within the past two years. Moreover, this literature review looks into specific water governance and water policies applied in Vietnam to deal with such issues. Section 2.1 provides an overview about the urban water supply system in the Mekong Delta. Section 2.2 reviews the water law, policies and institutions relevant to urban water governance in the Mekong Delta, including the extent to which these are inclusive of all actors through policy-making or problem resolution. Section 2.3 reviews the causes and impacts of water insecurity in the Mekong Delta. It covers the major causes of water shortage and how it affects local people's lives and livelihoods. Section 2.4 discusses how urban water governance in Vietnam has worked so far and whether it is effective. Section 2.5 provides some conclusions regarding the effectiveness of water law, policies, institution and water governance in Vietnam.

2.1. Water supply system in the Mekong Delta

The water supply system in the Mekong Delta in general and Rach Gia City in particular differs between urban and rural areas. In urban areas, the water supply system is complicated and comprises many steps before reaching customers. Furthermore, the water factory relies on surface water for urban customers.

In Rach Gia City, the water supply system mainly draws raw water from Rach Gia – Long Xuyen Channel which is about 68km in length and attains water capacity of $300\text{m}^3/\text{s}$ in the flooding season, to store up to $500,000\text{m}^3$. Then, the water is pumped into a regulation tank with a capacity of $10,000\text{m}^3$. From this pond (see Figure 3), there are two processes to transfer raw water to customers. One process is using lime to filter water and remove sediment before reaching the distribution network. The second process uses chlorine to filter water (Hien, 2015).

Figure 3: Urban water supply system in Rach Gia City, Kien Giang Province, Vietnam (Hien, 2015)



Furthermore, there is a tank to store sediment. These two processes together have the capacity to generate 50,000m³ per day, providing water for the entire Vinh Quang Ward (Hien, 2015).

Although there are two primary sources of water in Kien Giang Province - namely surface water and groundwater - a majority of the urban water supply system uses surface water in order to guarantee the needed water quality for customers. Nevertheless, urban dwellers in Rach Gia City also depend on groundwater for washing in the dry season and rainwater for cooking and drinking in the rainy season and store it using traditional methodology for domestic purposes. Surprisingly, people in urban areas still utilise rain water as they maintain an ancestral belief that it is good for their health.

Generally speaking, in recent years, people in Rach Gia City primarily rely on tap water rather than groundwater or rainwater, while they have to use bottled water for drinking as well. Local people have not learned about the relevance of the quality of rainwater and bottled water to their health.

2.2. Water law, policy and institutions for urban water governance

2.2.1. Water Law in Vietnam

In Vietnam, water was treated as a free common good during the 1960s (Biltonen, Phan, Luc, & Radosavich, n.d.). However, after Doi Moi ("reformation") in 1986, Vietnam turned from a centrally planned economy into a market-oriented economy with a socialist orientation (Biltonen et al., n.d.). As such, the Vietnamese government paid more attention toward managing natural resources in order to achieve sustainable and successful economic development, including with respect to water. The Water Law in Vietnam has been developed several times, with the latest Water Law passed in 2012.

In the 2012 Water Law, the Vietnamese government clearly states the Law's objectives: "Satisfaction of demand for water for daily life and production activities, socio-economic sustainable development, and defense and security; protection of water resources and effective prevention of and combat of harmful effects caused by water; and economical and effective exploitation and use of water resources"

("Vietnamese Water Law," 2012, p. 32). It seems that the purpose of the 2012 Water Law is for irrigation and prevention of damage caused by water rather than assuring the supply of water for urban areas, although urbanization in Vietnam and the Mekong Delta is rapidly increasing. Water supply system in rural areas in Vietnam has considerably increased from 73 percent in 2001 to 94 percent in 2013 (World Bank, 2015). That said, the reality is there is a high level of failure in water supply system at the regional level - for example, in 2013, more than 26 percent of the existing water supply system was either not functional or providing very poor quality service and in Mekong Delta with only 54 percent of water supply system in operation (World Bank, 2015). Also, in urban areas 58 percent of households reported having access to the water supply in 2011, with a different service quality between big cities and smaller urban centres (World Bank, 2014). More importantly, the issue of water insecurity due to salinity intrusion is not addressed by the 2012 Water Law. As the case of water insecurity in Vinh Quang Ward illustrates, the 2012 Water Law is not sufficient to address the matter of satisfying daily demand for water and socio-economic development.

Furthermore, the 2012 Water Law mentions that ministries, ministerial-level agencies and the People's Committee at all levels, mass media and the Vietnam Fatherland Front must cooperate to involve local people through education and training on water resources using as well as in the protection and conservation of water resources. These entities should also engage the participation of the community, organisations, and individuals about the exploitation and use of water resources. However, in practice, the extent of cooperation between these entities is not clear and reflects a top-down approach to the water policy-making process. The Vietnamese government emphasizes the role of the Ministry of Construction in development planning, policy formulation, regulation, training and technology transfer and also stresses the responsibilities of various government agencies involved in water supply and sanitation (ADB, 2010). Moreover, as decentralisation is under process in Vietnam, the lower levels of government have not fully prepared to take on their decentralised responsibilities (ADB, 2010). Local people and communities are rarely asked about water insecurity and their future plans in order to better manage water resources. At the provincial level, the People's Committee is a major power determining local

policy, particularly water policy. It is difficult for local people to learn about that policy because it is not available for the community.

In the 2012 Water Law, the Vietnamese government does not address the gap between urban and rural water supply. Traditionally, they have paid more attention to irrigation as well as water-related disasters such as flooding rather than water insecurity due to salinity intrusion. As water demand is increasing due to population growth, manufacturing development, and irrigation demand, there is growing pressure on an already insufficient water supply system (Neumann, Nguyen, Moglia, Cook, & Lipkin, 2011). In particular, local people suffer from water scarcity and are unable to participate in the water-policy making process in order to express their needs. The role of the Vietnam Fatherland Front does not entirely meet grassroots' support in terms of top-down politics of government.

2.2.2. Policy of urban water supply

While the law on urban water supply is weak, there are some relevant policies. According to the World Health Organisation (WHO) (2012), the Vietnamese government has already recognized that water and sanitation plays an important role in the socio-economic development of Vietnam. The Communist Party, the Government and the Vietnamese people have tried to improve the water supply infrastructure to enhance people's living standards. They still face many challenges such as salinity intrusion, flooding and climate change.

The Ministry of Construction (MOC) is responsible for urban water policy which, under the "Orientation for Urban Water Supply Development" of March 1998, considers water as an economic and social good (WHO, 2012). The document put forth a policy to decentralize authority to provincial level government with overall instruction from MoC with the goal of providing 100 percent of the urban population with access to safe water by 2020 (WHO, 2012). Additionally, Decision No 38/QĐ-TTg dated March 20, 2007 states that the State run enterprises in urban water supply and waste water treatment (WHO, 2012). According to the Asian Development Bank (ADB, 2010), cited by WHO (2012), the local government and related agencies delay enacting their decentralized responsibilities because they think that it does not encourage higher operational effectiveness, the expansion of distribution networks to

surrounding areas, and incentives to increase water tariff from the People's Committee if the water supply in urban areas is run privately.

Nevertheless, in line with the rapidly growing economy in Vietnam, urbanization is putting greater strains on infrastructure so that there is much less investment in rural areas and many communities are still in need of piped water supply (PPIAF, 2010). The private sector is beginning to emerge with a significant role in national economic development although Vietnam has been a strongly centralized economy. In 2002, for example, the Public-Private Infrastructure Advisory Facility (PPIAF) implemented two projects financed by the Swiss Agency for Development and Cooperation and Finland's Ministry of Foreign Affairs, which gave two urban communities a role in determining how water is delivered and at what cost. In the water sector, the private sector can be a politically acceptable solution (PPIAF, 2010). However, it comes with a numbers of questions whether it is applicable for the rest of Vietnam, particularly given the political hierarchy in Vietnam that depends on the provincial and district governments. There is no water supply regulator between public and private so government policies can still affect and regulate the private sector even though they both rely each other. The question is whether the private sector can strictly manage capital and corruption when dealing with infrastructure development. These questions have been raised in Vietnam as the State still gets involved in the market, even following Doi Moi.

Water policy in Vietnam has not been sufficient to ensure water security because it does not fully address the challenges of more extreme weather and salinity intrusion, especially in coastal cities. More importantly, the water supply system in terms of public-private system is not still widespread and efficient yet in the whole country. Also, this model remains controlled by the State as a result of the political paradigm of a market with socialist orientation. The Water Policy in Vietnam is in need of revision in order to fully meet all people's demand of water, in particular for communities in coastal cities that are facing more extreme weather patterns and salinity intrusion.

2.2.3. Institutions for urban water supply

Several ministries are involved in the management of urban water supply. Particularly, MOC is responsible for development planning, introducing technologies, issuing regulation and construction standards. In line with MOC, the urban water supply and sanitation are also managed by the Ministry of Health (MOH) and the Ministry of Natural Resources and Environment (MONRE). Particularly, MONRE is responsible for water resources protection, while water quality and standards for drinking water and domestic use are the responsibility of MOH. Additionally, water supply and sanitation are also being addressed with support from international donors and organisations, the local community or the private sector. However, decisions on the water tariff is made by the Provincial People Committee (PPC), after receiving approval from the Provincial People's Council based on the guidance of MOC and the Ministry of Finance (MOF).

Vietnam's 2012 Water Law clearly mentions that MONRE holds the prime responsibility to coordinate with ministries, ministerial-level agencies and the provincial People's Committee in generating water resources strategies to submit to the Prime Minister for approval. Also, at the local level, the provincial People's Committee can make decisions regarding the management of the water supply, and develop plans to submit to the Prime Minister for approval.

Overall, urban water supply is controlled by a number of government agencies from central to local government. More importantly, it is not obvious which ministry or level of government is mainly accountable for the urban water supply. In cases when local people face water insecurity, who is ultimately responsibility to listen and respond to local people's needs remains unclear.

2.3. The causes and impacts of water insecurity in the Mekong Delta

2.3.1. The causes of water insecurity in the Mekong Delta

In the Mekong Delta, there are various reasons for water insecurity, including salinity intrusion due to climate change and sea level rise, conflict between upstream and downstream water needs, population growth and increasing water demand. Nevertheless, extreme weather patterns and sea level rise are major causes of saltwater intrusion and water insecurity in recent years.

2.3.1.1. Saltwater intrusion and climate change

In the Mekong Delta, approximately 1 million ha are affected by tidal flooding and 1.7 million ha (about 45% of the delta area) by saltwater incursion (Tuan, Hoanh, Miller, & Sinh, 2007) from both the East Sea² and the Gulf of Thailand at some point during the year, with much land exposed to saltwater intrusion over six months (Tuan et al., 2007). It seems that saltwater intrusion is quite complicated in the Mekong Delta, much more than flooding. During the dry season in April, the flow rates in the Mekong River are at their lowest so that saltwater intrudes into the delta causing saline conditions in vast areas of cultivated land (Tuan et al., 2007). All coastal provinces in the Mekong Delta are vulnerable to salinity. In the Mekong Delta, with the 600-kilometre coastline, saline intrusion in the river branches is very complex (Tuan et al., 2007). It is undeniable that salinity intrusion physically occurs when the low-lying estuaries allow saltwater to flow inland. Numerous canals and the local drainage system allow the intrusion of seawater into many parts of the delta (Tuan et al., 2007) as there are many canals, channels and estuaries in the Mekong Delta. More importantly, those branches of the Mekong and canals allow salinity to penetrate inland over 20-65km from the shore (Tuan et al., 2007).

In these zones, water exchange is very low, limiting economic and human uses of water, as well as causing many environmental problems. Seawater also affects soil quality (Tuan et al., 2007). Salinity intrusion is also a major threat to areas of intensive agriculture due to potential damage to crops and domestic water supply (Tuan et al., 2007).

Besides that, climate change and sea level rise threaten the delta as well. Vietnam has a 3,260km-long coastline and two vast low-lying deltas, making it one of the most vulnerable countries to coastal disasters and one of the most sensitive in the world to climate change (Takagi et al., 2015). For example, Can Tho City, one of the biggest cities in the Mekong Delta, will likely be impacted by future sea-level rise even though the city is located 80km inland from the river mouth (Takagi et al., 2015).

² The East Sea is also known as the South China Sea.

2.3.1.2. Water competition between upstream and downstream

One of the reasons contributing to salinity intrusion, and therefore water insecurity, is upstream and downstream water competition along the Mekong River. Intensive rice farming in upstream and mid-stream provinces of the Vietnam Delta requires significant amounts of water for irrigation, about 0.8 and 1.2 kg rice m³ water input for the winter-spring and the summer-autumn crops respectively (Nhan, Be, & Trung, 2007). Therefore, triple-cropping rice cultivation patterns consume more water than double-cropping. Intensive agriculture in the upstream areas and coastal aquaculture such as shrimp farming also rely upon the provision of reliable and sufficient dry season water flows, making the delta exponentially vulnerable to reduced dry season water flows and salinity intrusion as well (Nhan et al., 2007).

Broadly speaking, it is undeniable that dams built upstream along the Mekong River decreases the amount of water for downstream areas, particularly the Mekong Delta. The Mekong Delta has been negatively influenced by the development of hydropower dams in the upper Mekong River. On 17 March 2016, the upstream water levels of the Mekong River were reportedly very low (water level in Tien River in Tan Chau was 0.31 metre; water level on Hau River in Chau Doc was 0.54 metre) which decreased further by the end of June (UN, 2016). Vietnam's Prime Minister stressed the need for water for irrigation and to prevent salinity intrusion in the Mekong Delta at the second Greater Mekong Sub-region (GMS) summit in Kunming in 2005.

2.3.1.3. Population growth

In April 2009, the population of the Mekong Delta reached 17.2 million people, representing 424 persons per km² and accounting for 20 percent of Vietnam's population (Tuyet & Patrick, 2014). The emerging industrial sector and the growing urban population in the delta increase demand for water (Kuenzer et al., 2012). The total population of Kien Giang Province was about 1.6 million people in 2013 (ADB, 2013). By 2050, Rach Gia City and Chau Thanh District in Kien Giang Province are projected to experience high population growth and limited land (ADB, 2013). Therefore, it is necessary for the government to plan water infrastructure with this future vision in mind.

2.3.2. The impacts of water insecurity in Mekong Delta

Globally, the Mekong Delta is considered to be one of the key climate change “hotspots” due to its exposure to floods, salinisation and sea level rise (Renaud & Kuenzer, 2012). Indeed, the communities in the Mekong Delta heavily rely on water for their livelihoods and socio-economic development. However, these communities increasingly encounter water insecurity due to saltwater intrusion, which negatively impacts their livelihoods and socio-economic development.

First of all, saltwater intrusion in 2005 caused economic losses estimated at USD45 million or 1.5 percent of annual rice production in the Mekong Delta (Birkmann, Garschagen, Tuan, & Binh, 2012). Furthermore, salinity intrusion is also damaging the ecological system and local people’s health by degrading the water quality, damaging the aquatic ecosystem and threatening bio-diversity in coastal areas (Birkmann et al., 2012). As a result, the livelihoods of downstream communities are extremely affected, particularly for poor people who rely mainly on natural resources (Birkmann et al., 2012). Particularly, water resources bring considerable income for local people in terms of fisheries and aquaculture. In 2011, fisheries GDP amounted to about VND5,391 billion (about 0.2% of national GDP) and aquaculture value added VND10,647 billion (almost 0.4% of national GDP) (GGGI, 2014).

In addition, water insecurity has affected people’s domestic water use in coastal provinces, requiring local people to use saltwater for washing and buy bottled water at inflated prices. Saltwater intrusion and flooding limit the availability of usable water (GGGI, 2014). Moreover, water-related economic sector involved in the provision of water supply services provides employment for local people in the Mekong Delta. Particularly, water distribution services contributed about VND1,590 billion to GDP in 2012, compared to VND1,216 billion in 2011 (GGGI, 2014).

Water plays a key role for socio-economic development in the Mekong Delta. However, given the present scenario, the Mekong Delta has to deal with water insecurity due to climate change, the increasing demand of a growing population and expanding urbanization and industrialization. In turn, water supply for regional development and domestic needs is at risk.

2.4. Urban water governance in Vietnam

Vietnam is rapidly urbanizing, with cities and towns playing an increasingly important role in the Republic's overall economic and social development. Since the introduction of Doi Moi in 1986, urbanization in Vietnam has experienced substantial growth (Birkmann, Garschagen, Kraas, & Quang, 2010). In 1985, less than 20 percent of the country's population lived in urban areas, but rose to almost 30 percent in 2009 (Birkmann et al., 2010). The United Nations estimates that the urban population will double by 2035, and contribute 57 percent to Vietnam's total population by 2050 (Birkmann et al., 2010). However, water insecurity issues remain a major challenge for the central cities in general and the coastal cities in particular.

Vietnam fails to resolve its water insecurity issues because there is weak governance as well. The ADB reported that if some Asian countries encounter water insecurity in the future, it will not be caused by physical scarcity of water, but because of inadequate or inappropriate water governance as well (including management practices, institutional arrangements, and socio-political conditions) (Rola, Pulhin, Tabios, Lizada, & Dayo, 2015). In Vietnam, the formal government planning agencies still play the most powerful role when it comes to urban planning and management (Birkmann et al., 2010). The 2012 Water Law clearly mandates the consultation of communities and related organizations and individuals about the exploitation and use of water resources and discharge of wastewater into water sources (Article 6). Representatives of local communities, related organizations and individuals who are affected by plans on the exploitation and use of water resources are allowed to give their opinion on those projects and information about the project must be made public. In practice, however, there is still an assumption that local communities, organizations and individuals do not need to participate in project processes, particularly those dealing with water provision. More importantly, local government at different levels also intervenes in projects involving water transfer. It is still quite top-down in practice. It seems that MONRE and the People's Committee have a master plan on water resources and submit for Prime Minister for approval and then those master plans will trickle down through the provincial level under the Provincial People's Committee management instead of a bottom-up approach.

Another factor in achieving good water governance is the involvement of NGOs. After Doi Moi, the Vietnamese government has gradually accepting a role for NGOs. NGOs must register with the Ministry of Home Affairs so that the NGOs and States do not closely cooperate together (Larsen, Larsen, & Mortensen, 2015). There were about 99 international NGOs operating in the Mekong Delta, including in Ho Chi Minh City and Can Tho City, from 2004 to 2008 (Fabres, 2011). Both international and local NGOs help improve transparency and communication about their programs as well as increase accountability and effectiveness (Fabres, 2011). That said, NGOs are not able to play an important role in water governance because they are not allowed to freely participate in policy-making process under the Vietnamese government. They still face limitations on their freedom of speech and are regulated by the government as well.

In Vietnam, the private sector is primarily small companies selling bottled water. The private sector is not involved, however, in supplying domestic tap water. The State takes the responsibility for providing tap water.

Good governance is widely understood to constitute the rule of law, effective state institutions, transparency and accountability in the management of public affairs, respect for human rights, and the participation of all the citizens (Hirsch, 2006). Good water governance enhances the grassroots participation as well as democracy in the decision-making process. However, in Vietnam, water governance is quite top-down, as demonstrated in this case study of a coastal city dealing with water insecurity due to saltwater incursion. In the sector of water and sanitation in Vietnam, there is a lack of mechanisms for sector assessments as well as other inter-sectoral assessment. Furthermore, there is limited cooperation and information exchange among stakeholders in water supply, sanitation and environmental protection, pollution control in rural and urban areas (ADB, 2011b).

2.5. Knowledge gaps

In conclusion, the literature review above helps in beginning to answer the primary research questions. It also reveals the existing knowledge gaps around water governance in urban areas of the Mekong Delta. First of all, the 2012 Water Law and

policies have not been able to effectively address the issue of water insecurity in urban areas. Secondly, it is unclear how local people experience water insecurity and its impacts, particularly in terms of health and socio-economic development in urban areas. More importantly, the extent to which local people and the community are involved in urban water supply policy-making or projects is largely undocumented.



Chapter III: Water Security in Vinh Quang Ward

The purpose of this chapter is to provide an overview of water security in Vinh Quang Ward, especially the obstacles faced by people in three different villages within Vinh Quang Ward when they encounter water shortage. The three villages were chosen for this study as they provided a comparative perspective between central and peri-urban areas regarding water insecurity. Essentially this chapter seeks to answer the two first research questions. Also, this chapter analyses the extent of water insecurity in the three villages within Vinh Quang Ward in terms of availability, access and quality. Furthermore, it highlights different impacts of water insecurity on local people's livelihoods and daily activities, and how people's vulnerability to the negative impacts of water insecurity are shaped by differing socio-economic conditions, such as economic status and gender. Lastly, the chapter presents the main factors causing water insecurity in Vinh Quang Ward.

This chapter comprises six major parts. Section 3.1 introduces Vinh Quang Ward. Sections 3.2., 3.3, and 3.4 respectively analyse water insecurity and its impacts to central people, wealthy people in peri-urban region, and poor people in peri-urban area within Vinh Quang Ward. Section 3.5 reflects on the major reasons causing water insecurity in Vinh Quang Ward. Section 3.6 summarizes the chapter.

3.1. Introduction of Vinh Quang Ward

3.1.1. Overview of the ward

Figure 4: Vinh Quang Ward map



Vinh Quang Ward is located in the coastal western part of Rach Gia City, Kien Giang Province, Vietnam (see Figure 4). This ward includes three villages - Dong Khoi Village, Vo Trung Toan Village and Nguyen Thai Binh Village (see Figure 4). The transport infrastructure in Vinh Quang Ward is developed and connects to other wards in the city. However, some peri-urban villages such as Nguyen Thai Binh Village within the ward have small roads and unstable bridges.

As of 2015, Vinh Quang Ward's population is about 38,000 people (People's Committee, 2015)³ which comprised about 90.1 percent Kinh, 6 percent Khmer and 3.1 percent Chinese ethnicities (Em, 27 December 2014). Economic activity comprises major business, namely services, industry-construction and agriculture-sea fishing (People's Committee, 2015). Most men in Vinh Quang work in the sea-fishing sector, while women and the elderly may run small businesses home. Most of the poor in Vinh Quang Ward have little education and lack stable jobs - their main source of income is through working as hired labour.

Vinh Quang Ward significantly contributes to the economic development of Rach Gia City in particular and Kien Giang Province in general because the main central market and bus station are located in Vinh Quang Ward. The market and station connects

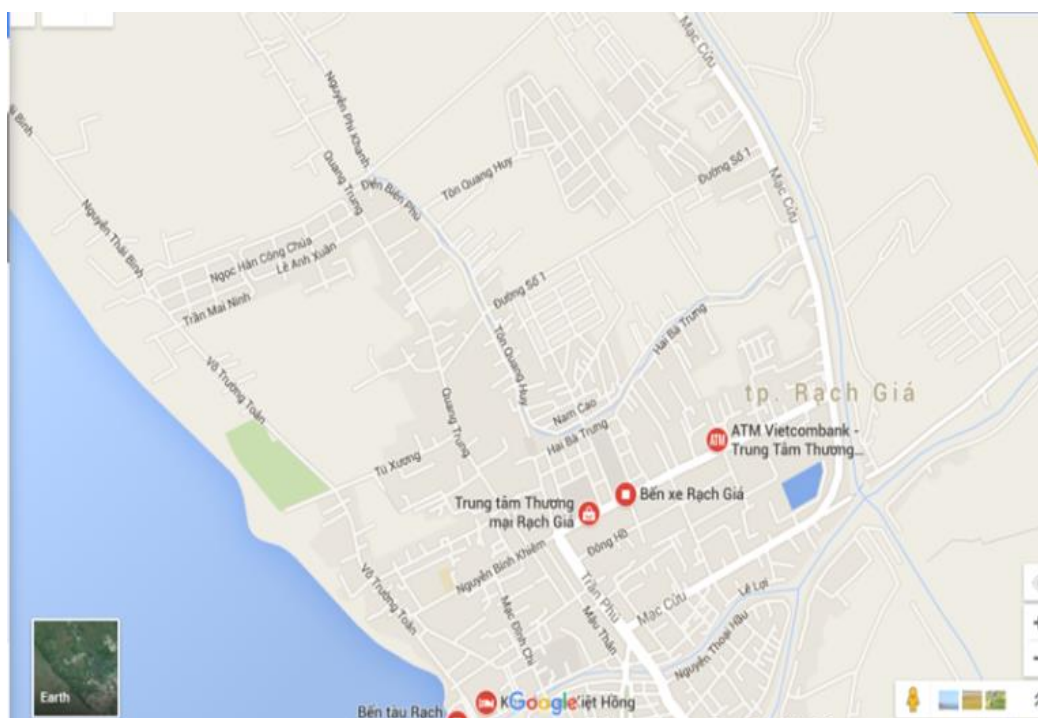
³ The official document from Vinh Quang People's Committee

Rach Gia City and other districts within Kien Giang Province as well as to other provinces in the region.

Vinh Quang Ward plays a role in the socio-economic development of the city. However, the geographic discrimination is quite different between people in centre and people in remote areas within the ward with respect to access to clean water.

3.1.2. Lives in centre in Dong Khoi village

Figure 5: Central market and bus station in Vinh Quang Ward



Dong Khoi Village is located on Nguyen Binh Khiem Street which closely connects with other main streets in Rach Gia City. This centre village comprises two major businesses and services in Rach Gia City – the central market and bus station (see Figure 5). The central market is the main location for economic activity, such as buying and selling, especially of sea food. Moreover, the bus station also plays a major role, connecting Kien Giang to other provinces in the region. Both the market and the station benefit the socio-economic development of this central village of Vinh Quang Ward as well as the development of the greater Rach Gia City.

It is easy to recognise that most people living in this central village own businesses and have stable professional jobs. Although most business in the central village is not big, it brings greater prosperity to local people. Also, local people do not struggle with their daily livelihoods. Most of their houses are medium and big, which is a typical village for a central area (see Figure 6).

All in all, both the infrastructure and local people's livelihood are convenient for people to achieve a comfortable life. Moreover, it is close to the central city so it is more developed than rural areas.



Figure 6: A part of Dong Khoi Village

Photo taken by Le Huu Phuoc on 17 July 2016



Figure 7: Dong Khoi Village

Photo taken by Le Huu Phuoc on 17 July 2016

3.1.3. Lives in peri-urban area in Vo Truong Toan village

Vinh Quang is a peri-urban area, with some villages located in remote areas. One of those villages, Vo Truong Toan Village, is coastal. This village is also developed in terms of local people's life and infrastructure compared with the central village.

Although this village is a bit remote, it is closely connected with the central village by Quang Trung Street. The infrastructure, such as bridges and roads, are in good condition and available for local people's use and socio-economic development (see Figure 7).

Local people mainly rely on small business and agriculture for their livelihoods. However, agriculture cannot provide local people a consistent income. Due to drought each year, local people struggle to harvest the yield. Most women manage small businesses which can meet their basic income for daily needs. Men are the main breadwinner in the families, but they often do sea-fishing and stay away from families

about one or two months at a time. In terms of education levels, few people in this village finish secondary school.

Vo Truong Toan Village is about 2-3km from the city centre, but it is less developed than the central village. Local people struggle to earn living and meet their daily income. Less education and unstable livelihoods are mainly responsible for the lower level of development in this area.



Figure 8: A part of Vo Truong Toan Village
Photo taken by Le Huu Phuoc on 17 July 2016



Figure 9: Vo Truong Toan Village

Photo taken by Le Huu Phuoc on 17 July 2016

3.1.4. Lives in peri-urban away road in Nguyen Thai Binh village

Nguyen Thai Binh Village in Vinh Quang Ward is much more vulnerable. Local people are in demand of not only better infrastructure but also basic needs and better livelihoods.

Nguyen Thai Binh Village is separated from Vo Truong Toan Village by a small canal and unstable bridge about 300 meters long (see Figure 8). The pathway is small and uncomfortable to commute to work, and dangerous during the rainy season. Although it is not that far from the centre, this village seems less developed and marginalised.

Furthermore, most local people in this village are illiterate. The men mainly do sea-fishing. Women are available for hired labour. Some families rent land to farm. The

livelihoods in this village make it more challenging to pursue a better and convenient life.

The low levels of education and development in this area are responsible for marginalisation in this area. Local people are more vulnerable and struggle to earn daily living.



Figure 10: A bridge connecting between Vo Truong Toan and Nguyen Thai Binh Village. The water tanker is not able to cross this bridge to Nguyen Thai Binh Village.

Photo taken by Le Huu Phuoc on 17 July 2016



Figure 11: A part of Nguyen Thai Binh Village

Photo taken by Le Huu Phuoc on 17 July 2016



Figure 12: Nguyen Thai Binh Village

Photo taken by Le Huu Phuoc on 17 July 2016



Figure 13: Nguyen Thai Binh Village

Photo taken by Le Huu Phuoc on 17 July 2016



Figure 14: Nguyen Thai Binh Village

Photo taken by Le Huu Phuoc on 17 July 2016



Figure 15: Nguyen Thai Binh Village

Photo taken by Le Huu Phuoc on 17 July 2016

3.1.5. Overview of water insecurity in Vinh Quang Ward

People in this ward have encountered problems with water during the dry season in last two years. In April 2015, residents faced a two-week water shortage for their domestic use. This issue burdened local people to meet their basic needs, while the issue remained unaddressed. In April 2016, residents again dealt with prolonged drought and salinity intrusion, resulting in a month of water shortage. During that period, central residents had groundwater and fresh water freely provided by both the governmental and individual tanker as well. However, it was not sufficient to meet local demand, especially for those people in remote areas of Vinh Quang Ward. More importantly, the poor in remote area were especially ill equipped to meet their own basic need.

Residents get drinking water from two sources - tap water and bottled water. The local government is mainly responsible for providing tap water with 100 percent

revenue from government investment. A water factory built in 1963 now constitutes two ponds with $500,000\text{m}^3$ (see Figure 9) and $10,000\text{m}^3$ respectively, so as to provide water for 77,550 customers of the whole Rach Gia City. The water stored in the ponds is primarily from the Rach Gia – Long Xuyen channel. In the dry season, water shortage from upstream usage and saline water intrusion further inland means that no raw water is stored in the two ponds. Additionally, local people rely on bottled water for individual drinking.



Figure 16: The $500,000\text{m}^3$ pond was out of water in April 2016

Photo taken on 30 April 2016

The issue of salinity intrusion is forecasted to get worse in coming decades in Vietnam, particularly in the Mekong Delta (National Hydro-Meteorological Forecasting, 2016, p. 11). In terms of climate change, the Mekong Delta is the most vulnerable to saltwater intrusion and widespread flooding downstream of the Mekong River. Saltwater intrusion has bitterly negative impacts on ecology, vegetation as well as biological diversity, severely threatening local people's livelihoods, particularly the

poor in Ca Mau and Kien Giang Province (National Hydro-Meteorological Forecasting, 2016, p. 11) As Vinh Quang Ward is the lowest coastal area downstream of the Mekong River, local people experience saline intrusion, and thus water insecurity, every year.

In 2010, the population of Vinh Quang was 32,000 people but dramatically increased to 38,000 people by 2015 due to rising birth rates. Vinh Quang Ward is one of the three most vulnerable wards in Rach Gia City to water insecurity during the dry season. Vietnam is in short water resources and some river basins do not have enough water during the dry season so that access to water from surface and groundwater has been a gradually growing conflict (McIntosh, 2014). A male farmer said:

“Every year, local people have to deal with water shortage during the dry season. However, two years ago, the issue became more serious, especially by April 2016. Last year, water problem prolonged about 15 days in comparison with one-month water shortage this year” (Interview 16, 30 April 2016).

To him, the issue of water shortage has been experienced differently throughout the years. However, two years ago, water scarcity was more severe than previous years.

Generally speaking, people in Vinh Quang did not expect such severe water shortage in the last two years. It is projected to worsen in the coming years, impacting further on people’s ability to meet daily needs, livelihoods and health.

3.2. Water insecurity and its impacts in Dong Khoi Village

3.2.1. Water insecurity in Dong Khoi Village

Local people in central Vinh Quang also deal with water insecurity. People in the central area still faced trouble meeting daily domestic water needs for their families in April 2016, although the water insecurity in terms of availability, access and quality is less serious in centre than peri-urban areas.

Water availability is insufficient and is cut for half the day during the dry season in April. Particularly, in April 2015 and 2016, local people cannot get reliable amounts of water from the tap. Besides that, the water distribution company only ran tap water from 5am to 12pm in April. They announced this in advance so people who can afford to buy equipment can store water at home. Nevertheless, although the equipment is

affordable, there is not enough space in their house to store. They have to get water daily for their family. Moreover, with weak water on tap, it cannot meet the daily needs for a big family. A female villager said:

“The issue of water shortage happens every year, but it is not as serious as this year. Water on taps is weak, while I can store it to use later” (Interview 19, 20 May 2016).

She said that her families did not face much trouble with water shortage this year. Her house is located centrally so that some tap water could reach her house. But the flow was not as strong as usual. More importantly, this has happened for at least two years.

Some families could not access their daily needs with such little water on tap, so men or women had to collect water. They commuted about 200 meters to either the water provision company or local well to get water. Those days, it was common to see people traveling on the street with cans filled with water. It may cause danger to get water in case travelling on the street as well. A local woman stated:

“Water shortage has happened for two years. In my family, women are responsible for getting water because my husband has to work” (Interview 20, 20 May 2016).

Indeed, water could not reach to her house so she must get water from their neighbour's well.

If local people can store tap water, there is no discussion about water quality. Actually, groundwater is used in emergency cases solely because it is not good enough quality for cooking and drinking. Nevertheless, some families must rely on such groundwater for their daily use such as washing. A middle-age man said:

“My family has to use groundwater at home, but it must be processed before using. Women and children are in need of water for washing” (Interview 2, 26 April 2016).

In fact, his family can afford to process groundwater before using it. It raises a question about other families who cannot afford to process unsafe groundwater before daily use. This shortage lasted one month so how does this issue affect local people's

health, especially women and children. Two people out of eight relied on groundwater for their daily needs in Dong Khoi Village.

In short, water supply in central Vinh Quang Ward is still insufficient for local people's daily needs in terms of its availability, access and quality. They struggle with meeting daily water needs. It will definitely cause some unexpected issues, including burdening women to collect water as well as negative impacts on women's and children's health.

3.2.2. Impacts on people's life in Dong Khoi Village

People in central areas in Vinh Quang Ward still get small amounts of tap water during times of water shortage. However, there are still impacts on their lives as they struggle to get enough water for their families.

Firstly, local people must save water. It is really uncomfortable for people who do hard labor as they need more water for personal washing. They must reduce their water use for other purposes such as their children's needs or cooking and drinking. It is undeniable that if there is not enough water for the personal washing, it will definitely affect the health of both men and women. It will be more serious for women than men instead. A local woman shared:

"Women is in need of more water for their own washing and personal demand" (Interview 6, 26 April 2016)

A majority of women are in much more demand of water for both their personal use and family supply because they are mainly responsible for cooking and washing, which is heavily reliant on water. Women suffer from water shortage more than men do even when they are located in central areas. Generally speaking, there are some negative effects for local people in Dong Khoi Village, Vinh Quang Ward. These effects are mainly experienced by women who are primarily responsible for the whole family's water demand as well as their health issues, such as allergies and personal hygiene.

3.3. Water insecurity and its impacts to people in peri-urban in Vo Truong Toan Village

3.3.1. Water insecurity in Vo Truong Toan Village

Although many people within Vinh Quang Ward encountered water problems, people from central and remote areas experienced the issue differently. People living in peri-urban areas of Vinh Quang Ward experienced such issue differently due to economic status as well. The people in peri-urban Vo Truong Toan Village also suffer from lower water availability, access and quality.

The availability of clean water cannot meet daily needs of peri-urban people. The measurement of good water supply is that people have access to water 24 hours per day at home (McIntosh, 2014). However, people in Vinh Quang struggled to meet their own daily water needs. Moreover, Vo Truong Toan Village of Vinh Quang Ward is about 3km away from the water factory, so there was no tap water available in April. Some families' water pipeline was lower than the water supply company so they were able to get a weak flow of water on tap. However, such water is not enough for their family's requirement. A local woman shared:

“There was no water on taps about one week. We must rely on bottled water for drinking but it was not available as well. We struggled to buy bottled water”. (Interview 25, 20 May 2016).

Moreover, a male farmer stated:

“Some families can afford to buy a machine to draw water from the taps”. (Interview 21, 20 May 2016).

The water issue is more severe than those in central areas, while local people cannot even get weak flow of water from the taps. Moreover, it was revealed that there is no equal share between people in the same region, but the government does not manage this issue.

Furthermore, even though the water supply company provides water for local people by tanker, local people cannot access the same amount of water and must compete to get water because there was no fixed timetable for the water tanker. It raises the issue that the water supply company did consider people living away from main street and

ensuring equality between people. They just managed to provide water for those waiting for them on the street and if they missed other people, they did not return. A female villager said:

“Water tanker just provides for some people along the street and leave so they do not wait for others. We also rely on groundwater but it causes allergy”.
(Interview 26, 20 May 2016).

Actually, most wealthy people in peri-urban village in Vinh Quang Ward could afford groundwater so they shared water with their neighbours. Nevertheless, some people must travel about 1-2km to get groundwater from the public well (see Figure 10). Those public wells are about a hundred years old which are not from present government. Local people must use untreated water from the wells while it is lower quality. Indeed, eight people out of ten interviewed mainly relied on groundwater during the dry season.

In short, wealthy people in peri-urban area are still in demand of water, but they can afford to have a well as well as water from tanker. Although they do not really struggle to have sufficient water for their daily demand, they are still in need of good quality water. Those wealthy people in peri-urban Vinh Quang Ward are not marginalised because they can meet their own demand. The issue of water's availability, access and quality must be taken into account of resolving the problem.



Figure 17: People waiting to get water at a public well.
Photo taken on 28 April 2016

3.3.2. Impacts on people's lives in peri-urban Vo Truong Toan Village

Most people's daily activities depend on water. It is undeniable that there are impacts to local people related to water stress. More importantly, water shortage in peri-urban Vo Truong Toan Village particularly impacted women and people's livelihoods.

In a community, especially in Vietnam, women are primarily responsible for water for domestic use. The issue of water shortage in Vo Truong Toan Village burdened women as they had to commute about 100m – 2 km to collect water. They must struggle with water shortage instead of their husbands, who earn a living for the entire family. A female villager said:

"Women have to get water because their husbands or men spent time working." (Interview 20, 20 May 2016)

More importantly, women need water for their personal needs. Neither lacking of water nor unhygienic water can meet demand of women. Women are vulnerable to health conditions due to unhygienic water.

The Women's Union stated that many children and women suffered allergies and vaginitis even though the Women's Union supported them by freely providing some medicine for three-year children and instructed them how to use some traditional medicine to cover such kind of disease. (20 May 2016)

Furthermore, children are particularly sensitive to unclean water, especially their skin. They face these issues even though children up to age 3 are freely supported with traditional medicine and care by the local government.

Women and children, particularly in poor families, are very much in need of clean water. They are left behind by water shortage. The government must work on this issue so that those people will be less marginalised and able to meet their basic needs in terms of clean water, health and living condition.

Water shortage does not only create a social burden but also affects economic growth in the region. Peri-urban areas account for 185.5ha for farming (People's Committee, 2015). Additionally, the sea fishing industry, services and construction also play a role for the local area's economic growth. However, drought dramatically destroyed farming areas because of the lack of fresh water for irrigation. For instance, a male farmer said:

"There was no water for agriculture so they had to decrease from two crops to one crop per year. Moreover, the government should apply technology in agriculture to save water for irrigation" (Interview 1, 30 April 2016)

Moreover, one street vendor shared:

"There was no water for growing vegetables. For example, in my house, I could not grow pumpkins" (Interview 14, 30 April 2016)

The 185.5ha rice field turned wild in the dry season. It raises a question of how owners of such land deal with such issues and impact on their livelihood, and how

local government and locals can attain sustainable development in the short and long run as well.

Health and agriculture are the most negatively affected aspects of people's daily lives caused by water shortage. Water shortage will become a more severe issue if there is no effective response.

3.4. Water insecurity and its impacts to people in peri-urban Nguyen Thai Binh Village

3.4.1. Water insecurity in Nguyen Thai Binh Village

The poorer people⁴ in peri-urban Nguyen Thai Binh Village are severely in need of water. Water shortage leaves the poor behind and marginalised. They have become the most vulnerable group of people in terms of domestic water needs, in terms of its availability, access and quality.

Poor households do not have enough space to store water. They just collect water everyday to meet their daily demand. The poor who live further away from central city are the most vulnerable, struggling with their own livelihoods as well as meeting basic needs, including water. They need support from governmental organisations which can bridge the gap between the poor and the rich as well as the central and rural. A male farmer said:

“My house is located is about 2km away from the central city, but I did not have water on taps about one month. In the morning, I saved time to get water at my relative's house and then I got back home with two bottles full of water. There is no enough space for sleeping instead of space to store water at home. I cannot purchase bottled water with double price although bottled waters were still available” (Interview 21, 20 May 2016)

With insufficient provision and availability from the water factory due to saline intrusion, local people are in demand of clean water. The government has remained passive in resolving the issue, even though it is happened twice over the past two years. Even for people who normally buy bottled water, they cannot purchase because

⁴ Most of people in Nguyen Thai Binh Village are poorer.

the price was inflated to double the normal price. Additionally, the vendor did not sell it although there was bottled water available.

The poor people in Nguyen Thai Binh Village were left behind though they are only 100m away from the road. People further away from the city centre could not get the same amount of water on taps compared with central people. The local government freely provided water for those people by tanker, but locals from this village did not know the timetable of the tanker's route. They mainly relied on groundwater as well as individual support from their neighbours. They suffered one -month without water on tap. Moreover, they struggled with water supply every day because they cannot afford to buy storing equipment. Accessing water was particularly a challenge for local women. A local woman shared:

“There was no water on taps about one month. I had to ask either my neighbours or individual provision for water. Local government also provided water on tanker, but I missed the chance due to unfixed schedule. Also, I could not afford to buy equipment to store water, although this issue was announced one month ahead. I have to get water every day at my neighbour's house and I feel sick then” (Interview 22, 20 May 2016)

A female farmer said:

“Last year, there was no water about one week. My husband went sea-fishing so that I, a pregnant woman, had to get water for family every day”. (Interview 27, 11 June 2016)

The poor women and elderly must deal with the issue themselves, as there is no support from the government and mass organisations. Even the above woman who was pregnant had to address the water needs for her whole family. What and how their rights are raised to encounter water-related troubles such as negatively health-affected status.

They mainly rely on groundwater from their neighbours. Ten local people interviewed must use groundwater during the dry season. Moreover, groundwater is not as pure as water on tap, but is contaminated by saltwater. People get allergies. The primary benefit to increase safe water, sanitation and hygienic behaviour is to mitigate water-

related diseases such as diarrheal, trachoma, and hookworm infections (Danida, 2006).

In Nguyen Thai Binh Village, people who have no water, health issues and are marginalised are mostly the poor. They are totally left behind. Moreover, government does not consider their needs compared to those in the central city. In terms of water security, the peri-urban poor have not been ensured water availability, access and quality.

3.4.2. Impacts on people's lives in peri-urban Nguyen Thai Binh Village

The peri-urban poor are marginalised in meeting water needs in Nguyen Thai Binh Village, and water stress has left them further behind. They can reach neither for a better life nor even meet their basic needs in terms of water supply. Their daily life became more burdensome without access to water. While they are quite tough generally, water shortage makes everything more difficult than it already is. The effective participation of children, women and men in planning, implementation and management of services must be taken into account as well as the issue of inequalities within different social groups during program design (Danida, 2006).

Furthermore, poor daily meals due to water shortage worsen nutrition intake for the peri-urban poor. The poor in Nguyen Thai Binh Village are especially vulnerable and marginalised by water stress, unable to access water for a variety of reasons. They cannot afford to buy equipment to store water at home and there is no available space in their house to store water anyway. They must seek water daily and even they could not cook meals. One poor female resident said:

“Everyone must suffer such experience, despite its burden for our life. Some people cannot cook the meals, they will mainly rely on groundwater and instant noodles. Water is prioritised for their children”. (Interview 7, 26 April 2016)

“Women Union said that it was not even enough water for cooking”. (20 May 2016)

Water insecurity in this village causes daily nutrition concerns as well as health problems. A female farmer said:

“People are really in need of water, so I feel uncomfortable and get allergies with insufficient water provision” (Interview 7, 26 April 2016)

Furthermore, people have to stop not only cooking but also working. Men from some families have to spend time getting water instead of earning a living for the family. A local man shared:

“I found out that I had to stop working to get water, even it took me a half of day to have sufficient water for one-day demand” (Interview 16, 30 April 2016)

In this way, water plays an important role in people’s daily lives beyond income. The drought lasts one month of April so the poor must struggle with both income and water shortage. Water and sanitation also greatly contributes to tackling poverty, improving living conditions and economic growth, as well as enhancing the participation, inclusion and empowerment (Danida, 2006).

More importantly, local people’s agricultural livelihoods are under pressure. They are impoverished so they have to rent land for rice farming. The rice farming is destroyed by the drought and local people cannot overcome the issue. They must be poorer and poorer. Questions arise: Why does the government not deal with the water shortage issue? Why don’t they provide support? A female farmer stated:

“I cannot afford to store water. There is no water for doing agriculture in six months, but the government does not care about that” (Interview 26, 11 June 2016)

Generally speaking, water shortage negatively affects many aspects of people’s daily activities. Even earning a living is not as important as looking for water. During that period of dry season, this community becomes disordered because they must find water sources for their family’s daily demand from their neighbour’s groundwater.

Table 6: water insecurity in three villages within Vinh Quang Ward during drought period in April 2016

Water security factors	Dong Khoi Village	Vo Truong Toan Village	Nguyen Thai Binh Village
Availability	<ul style="list-style-type: none"> - A weak flow of tap water is provided from 5am to 12pm by the government. - There is not enough groundwater to meet people's needs because there are not many wells. 	<ul style="list-style-type: none"> - Some families have access to clean tap water for half of day, while others do not have access to clean tap water at all. - Some people located further away from the main street cannot get free clean water provided by local government due to no fixed timetable of tanker's route. - Groundwater is limited due to overuse so local people had to wait 2-3 hours for wells to fill. 	<ul style="list-style-type: none"> - People do not have access to clean tap water for the entire month of April 2016. - They cannot get water from the water tanker that was organized by the local government.
Access	<ul style="list-style-type: none"> - Local people must commute about 200m to get water from the 	<ul style="list-style-type: none"> - Local people commuted about 1-2 km to access 	<ul style="list-style-type: none"> - People have to commute to 2-3km to their

	water company's storage pond.	groundwater from local public wells or neighbours' wells.	neighbours' wells or public wells to get water, but the street is inconvenient for travel.
Quality	- Groundwater became the main source of domestic water in the dry season though it is caused allergies for local people.	- Groundwater caused allergies and other health issues for local women and children.	- Groundwater caused allergies and other health issues for local women and children.

3.5. Reasons for water insecurity in Vinh Quang Ward

Within the past two years, Vinh Quang Ward has gradually become more vulnerable to fresh water scarcity. There are two major reasons causing this water shortage - drought and saline intrusion. Furthermore, the local government has not been able to adequately resolve the issue over the past two years. Additionally, Vo Truong Toan Village is further away from water supply company, therefore also contributing toward water shortage in this area. Moreover, the pipeline is small and the water company reduces the water pressure during times of shortage. For these reasons, water cannot be sufficiently pumped to the peri-urban region. In Nguyen Thai Binh Village, Vinh Quang Ward, the already under-resourced community is far from the major road and unable to get water from the tanker. This situation results from the design process which had limited involvement from the community, meaning they continue to experience water shortage. As this research has shown, the tankers organized by local government are not sufficient to meet the water needs for the number of people in this area, and the water supply company cannot provide for everyone either. This research also suggests that the government has not sufficiently

nor proactively planned for the severity of the water shortage, raising the question of how future clean water shortage will be addressed in coming years.

Firstly, the Mekong Delta in general and Vinh Quang Ward in particular, are the most vulnerable areas to climate change and sea level rise. The average land elevation in the Mekong Delta is quite low compared to sea level. The western coastline, comprising seven coastal districts - Ha Tien, Kien Luong, Hon Dat, Chau Thanh, An Minh, An Bien and Rach Gia - is more vulnerable and less adaptive to sea level rise due to its limited sediment (Nguyen & Woodroffe, 2015). Evidence shows that in recent years, residents in Vinh Quang Ward, Rach Gia City have progressively experienced saline intrusion. However, climate change in terms of lower amounts of rainfall also contributes to salinity intrusion by limiting the amount of water upstream and allowing saltwater to intrude further inland through many estuaries in Rach Gia City. Indeed, these flows are the primary raw water source for the water factory, which stores and processes it before providing to customers. The water factory has been quite passive in addressing saltwater intrusion into the mainstream, resulting in water insecurity for the entire community of Vinh Quang Ward.

Most people located in central areas consider drought and climate change to be the major causes of clean water scarcity. A male villager said:

“Water shortage was caused by drought and climate change” (Interview 3, 26 April 2016)

In addition, large amount of water is used for irrigation as agriculture is the major livelihood for people in the Mekong Delta. Also, the Vietnamese government has not paid close attention to the issue of water for domestic use. It is estimated that irrigation costs about 90 percent of total water use in some river basins (McIntosh, 2014). Moreover, the pipeline system does not meet urban residents' needs either, for instance, according to the Urban Water Supply and Sanitation, even though about 83 percent of urban residents had piped water supply, only 59 percent had a connection in 2009 (McIntosh, 2014). A male farmer shared:

“There is insufficient water from the upstream so it causes clean water shortage for downstream” (Interview 2, 26 April 2016)

Moreover, poor infrastructure and passive response from the local government worsen water shortage. Although central residents did not specifically mention the government's ineffectiveness in terms of water management, the problem was repeated at least two years. In April 2016, the government passively dealt with the issue so that local residents suffered month-long water shortage.

Most local people define the cause of water shortage in terms of drought and salinity intrusion. Besides that, some people identify other major reasons causing such water-related issue such as climate change, sea level rise and upstream-downstream water conflict. The Government's attitude and their passive response definitely made the issue more severe and longer lasting. Those reasons are mainly responsible for clean water scarcity in Dong Khoi Village, Vinh Quang Ward.

In addition, the inequality between people in the area causes water insecurity because other people draw water from taps. The rest do not have tap water, causing more issues for them in case they cannot reach clean water, even a small amount of tap water. Furthermore, their houses are located about 2-3km away from the main road so the piped water flow is not strong enough to reach their house. It does become a matter, while they do not get water on taps. Also, the government does not support the people to meet their daily needs with the water tanker either, as the people are not provided a timetable of the water tanker route. A female villager said:

“The government did not pay close attention to water insecurity in terms of infrastructure developed issue so that the problem was repeated” (Interview 9, 26 April 2016)

Also, the government does not fully invest in infrastructure for those living away from the centre to meet the increased demand of water. They have to pay a very high price to buy a pipeline. Moreover, although the government does not ask them, they cannot bear water shortage. It is undeniable that the top-down policies applied from the central government to the provincial government are not helpful in resolving water insecurity in Vinh Quang Ward (see Chapter 4). The 2012 Vietnam Water Law clearly mentions that various agencies involved in water security, such as the Ministry of Construction, the Ministry of Natural Resources and Environment, and the Provincial People's Committee. Grassroots and civil society entities are not paid

much consideration in terms of water issues. Moreover, the lack in transparency of government funding and capacity is another barrier to dealing with water insecurity as local people do not raise their concerns related to water issues. In sum, the lack of investment, transparency and public participation, as well as the top-down policy-making process, allowed water shortage to occur twice in Vinh Quang Ward over the past two years.

All in all, the poor and peri-urban are left behind during times of water shortage and the government does not pay much attention to them. The government is short of funding to provide basic infrastructure for everyone or they do not learn about the issue from local government. Water shortage in peri-urban Vo Truong Toan Village is serious. The major causes of water shortage fall under the control of local government, but water shortage still seriously impacts these people. In Vinh Quang Ward, although water shortage occurred twice over the past two years, local people did not raise their concerns with local government. Local government did not consult local people in resolving water insecurity either. Weak water governance in Vinh Quang Ward is contributing towards more severe water insecurity over the past two years.

3.6. Chapter summary

In the past couple of years, residents of Vinh Quang Ward have suffered water shortage. Serious water shortage happened again at least two years ago. However, water insecurity in 2016 lasted longer and was more severe due to the lack of tap water for the month of April.

In terms of lacking fresh water, local people not only face negative impacts on their daily activities but also their livelihood became more challenging. Particularly, rice farming of local people in Vinh Quang Ward was destroyed by lack of fresh water. Some families could not run their food court business. Moreover, it took local people more time to collect water for their families' daily needs instead of earning a living.

Women in Vinh Quang Ward are primarily responsible for handling their families' water needs. In terms of water stress, it could be added burden for women to travel to

get water. Also, the low quality of groundwater affects local women's and children's health, such as allergy and personal hygiene.

The main causes for water shortage in Vinh Quang Ward are not only from natural disasters such as drought, climate change, the upstream-downstream water competition but also from poor infrastructure and lack of governmental support at multiple levels. The issue of water shortage has happened for at least two years. However, the government has been quite passive to resolve the issue because local people were also in short water supply last year. They do not have any emergency plan to reduce vulnerability to water shortage. To resolve water insecurity in Vinh Quang Ward, there must be water governance, which will be discussed in Chapter 4.



Chapter IV: Water Governance

This chapter presents the various local strategies of actors such as communities, civil society, business and state to deal with clean water scarcity. The stakeholders such as the Red Cross, the Women's Union and Youth Union are considered to be representative of civil society in Vietnam. In effect, however, the Women's Union and Youth Union are part of the state rather than purely civil society. The Red Cross is less dependent on local government, so it could be considered a civil society organization, but politically it is still close to the government. Furthermore, it highlights and analyses both formal and informal water governance and mechanisms in Vinh Quang Ward. Ultimately, this chapter answers the three last research questions: What are the different strategies of community, civil society, state and business to strengthen water security? What are the existing formal and informal water governance and mechanisms in Vinh Quang Ward? Is water governance in Vinh Quang Ward inclusive of all water users?

This chapter includes five major parts. Section 4.1. discusses different strategies of community, civil society, state and business to strengthen water security. Section 4.2. covers the existing formal and informal water governance and mechanisms in Vinh Quang Ward. Section 4.3. analyses water governance and water customer involvement in the context of water scarcity in Vinh Quang Ward. Section 4.4. connects weak water governance with water insecurity in Vinh Quang Ward. Section 4.5 summarizes the chapter.

4.1. Strategies of community, civil society, state and business to strengthen water security

4.1.1. Community involvement

The lives of the peri-urban poor became more burdensome as they had to seek alternative ways to meet their daily needs for water. Most local people, especially those living away from the centre, struggled to get water for their family's daily use. They came to rely on groundwater instead of tap water. Additionally, people also shared water with each other out of compassion.

Groundwater was the first choice for local dwellers in case of water shortage. However, there were not many wells in Vinh Quang Ward. Also, its quality must be taken into account as well. Some wells are contaminated by saltwater so locals cannot use it for their daily activities. The old wells, which are primarily responsible for water supply in the dry season, are about 90 years old (see Figure 11). They were out of water and residents must wait for several hours to get water. A female villager said:

“In the rainy season, people could store rainwater to use. Sometimes, wells did not work due to salinity intrusion. People might rely on the old wells for water during the dry season and recover water shortage as well” (Interview 6, 26 April 2016)

Moreover, local people received water from their neighbours. Some families own groundwater or can get a small flow of tap water, and were willing to share with others. During that period of time, local people must save water for their daily activities. A local woman stated:

“I had to store freshwater for cooking and drinking, while groundwater was used for washing and bathing. Or, I got a drop of water on tap to store for cooking because groundwater’s bad smell was not very good for drinking and cooking” (Interview 20, 20 May 2016)

Local people have many choices for their daily water supply such as rainwater, groundwater, water on taps and bottled water as well. Tap water is the most reliable source for local people in order to ensure people’s health, but this kind of water has been least in supply in the dry season over the last two years. Before that, such water shortage was not as severe.



Figure 18: The ninety-year-old well is a source of water for peri-urban people during salinity intrusion and water scarcity.

Photo taken on 19 May 2016



Figure 19: Local people received free water from the water supply company (10,000m³ pond)

Photo taken on 28 April 2016

4.1.2. Civil society in action and involvement

During times of water shortage caused by saltwater intrusion, civil society gets involved by providing fresh water for those in need as well as raising funds for vulnerable people. To what extent are they involved in helping local people deal with water shortage? How do they bridge the gap between the government and grassroots?

The Vietnam Red Cross at the ward level has been considered as an independent organisation by the government. During times of water shortage, they supported local people with groundwater which was collected from public wells and a Red Cross member's well. However, they could not afford to process groundwater into freshwater. They also delivered water to those in need such as the poor and ethnic minorities. They also raised awareness about the issue of water shortage with the Vinh Quang People's Committee. A chairwoman of the Red Cross said:

“Red Cross members delivered water to the poor and people in need from public well and Red Cross members' well. Red Cross also presented ideas about the water scarcity issue to the Vinh Quang People's Committee”. (20 May 2016)

It seems that the civil society plays a role as a donor for local people in the short term. They have not yet been a representative for local people's rights so local people cannot meet their basic needs in the long run. Their activities are to support local people in the form of charity and assistance rather than representing local people to local government. Also, the Red Cross is not powerful enough to raise the issue with the local government, an important aspect to consider for water governance in Vinh Quang Ward.

4.1.3. State in coping with water insecurity in Vinh Quang Ward

While the local government took action to meet basic needs of the local people, they were passive to put forward long-term solutions to the issue. They provided water for local people by tanker which was collected from groundwater. By late April 2016, the government used a barge carrier to source raw water 20km further inland of the Rach Gia – Long Xuyen Channel (Bich, 2016). It was highly appreciated by local people, but they did not perceive the government's attitude and their willingness to resolve such problem so far.

Actually, throughout the water shortage periods over the last two years, the government did have a tanker supply water to local people to meet daily drinking and cooking water needs. However, implementation left a big gap for the poor living away from the city centre because they did not know the timetable for the tanker and always missed their opportunity. Some families could not reach the tanker due to the distance. They had to travel quite far to receive groundwater or from their neighbours, particularly burdening the urban poor women who are primarily responsible for water collection in their family. A local woman shared:

“Local government supplied water for local people by tanker, but it did not have particular schedule and water limitation for each household in order to make sure that everyone can access to fresh water equally” (Interview 1, 26 April 2016)

Moreover, the water shortage situation became more serious this year, lasting one entire month. The local government had to deploy a barge carrier to bring raw water from 20km further upstream of the Rach Gia – Long Xuyen Channel, which charged a fuel fee by an individual business. Although it brought a sense of relief in the short term, their action was perceived to be too late. It was already almost the end of the drought when the local government mobilised the barge carrier and refilled water at the 500,000m³ pond.

A forty-four-year-old woman in Vo Truong Toan Village shared:

“I do not know which agency is mainly responsible for water supply system as well as do not raise issue of water shortage to local government. The government will also ignore any ideas from local people” (Interview 9, 26 April 2016)

Although the government was late in responding to the clean water shortage issue, local people must silently suffer it. They were afraid of getting in troubles if they said anything about the government. The government is a very powerful agency that appears to take action without any grassroots participation.

A big concern is the government’s approach to water management and whether it can meet everyone’s needs. The government cannot manage water shortage during the dry

season, which causes unequal water distribution within the community. Moreover, the poor have been left further behind in terms of meeting their basic needs. It raises the question of what local government has been doing to meet their commitment to provide 100 percent fresh water supply for all people in Vinh Quang Ward. Water insecurity unexpectedly affects local people's livelihoods and health, especially for women and children. Furthermore, the issue has happened two years in a row and weather in coming years is unpredictable so that local government must have a specific planning and strategies to deal with such in both short term and long run as well.

In Vinh Quang Ward, Rach Gia City, Kien Giang Province, water factory is funded by local government, Provincial People's Committee who is a major owner of this business. This water factory has been inaugurated in 1963 until now. Although the capacity is developed to meet population growth's demand, the storing ponds have not yet been rebuilt so as to adapt to climate change and changing in upstream Mekong River in the long run. A female farmer shared that

“Population is rapidly growing but water is insufficient for the demand during the dry season. However, local government has not yet developed water factory to address such issue” (Interview 9, 26 April 2016)

This region is a coastal area so residents primarily depend on groundwater, rainwater and tap water for their daily demand. In recent years, the drought has lasted longer and water flow more limited from upstream so that local people only use groundwater from some old wells. Tap water is the most reliable quality for people. That said, the government cannot ensure water security for local residents for the past two years.

The Women's Union and Youth Union are dependent on local government for support and funding, so they also took part in governmental activities to provide water for local people. However, such support could not meet peri-urban poor's demand, as they were marginalised and left to find water sources by themselves. According to the Chairwoman of the Women's Union:

“Vinh Quang People's Committee, Police Officers and Women's Union, Youth Union provided water for local people as well as supported water storage for

the poor. Also, they helped them to prevent water-related diseases and provided free medicine for children under three years old.”

Youth Union also asserted:

“There was a hotline so local people could call for water in need.”

In practice, local poor people did not know about or receive any support from the Women’s Union and Youth Union, such as medicine and water through the hotline service. Particularly, the peri-urban poor at Nguyen Thai Binh Village, especially the elderly and women suffered water scarcity without any support.

A female farmer in Nguyen Thai Binh Village stated:

“There was no water on taps about one month so it was a burden for my family’s activities. I cannot afford to buy water storing equipment. My nephew had to take a bath in the river so he got allergies. The rice farming was totally destroyed by no fresh water. There was no support from government in terms of free health care or any government’s attention toward such issue”
(Interview 26, 11 June 2016)

The government could not meet people’s needs because they did not go out to learn about the issue and local people’s difficulties directly from them. Particularly for those people living away from the centre of Vinh Quang Ward, the government left them behind without any support.

While the government has tried to address water shortage, local people still experience troubles meeting their daily needs. It reveals the poor water management of local government. They declined to be interviewed for this research.

“Such issue is quite sensitive so that they cannot answer any questions related to water shortage and salinity incursion” said by a representative from the Department of Construction

Troubles related to water stress has been seriously repeated at least two years ago. Because water shortage must be covered by the governmental action plan in the previous years rather than a natural disaster so they declined any interviews concerned the issue. Also, the government plays a powerful role in promoting water security.

Nevertheless, the role of the National Water Resources Council in dealing with water shortage is not very obvious because its members include the Deputy Minister of Agriculture and Rural Development, the Deputy Minister of Industry and Trade, the Deputy Minister of Construction, the Deputy Minister of Transport, and the Deputy Minister of Science and Technology (Dung, 13 November 2014). These are also key stakeholders involved in resolving water scarcity in the Mekong Delta as well.

4.1.4. Business involvement

Relief from the water shortage also received support from individual businesses' charity. Furthermore, the bottled water business also got involved in supplying water for local people in Vinh Quang Ward, but this motivation came with negative impacts such as unexpected bottled price increase. Although the government allows participation from all stakeholders, it does not always bring the most effective responses.

During the month-long water shortage, the Anh Dao Cosmetic Company in Rach Gia City tried to provide free water for local people (see Figure 13). The company's owner tried to help local people as much as possible. The Director of Anh Dao Cosmetic Limited Company said:

“She provided about 5,000 liters per day for local people” (28 April 2016)

Local people highly appreciate what individual business provides for local people, especially the poor in remote areas. It goes hand in hand with local government to address water scarcity. However, it raises the issue of why businesses are so actively supporting local people and why the government has not adequately addressed the issue over the past two years. The local government did not have any short-term response to ensure water security for local people.

“I used groundwater and then processed with high technology about 1,200 liters per hour. I think that if government would like to resolve the issue, there was no problem of water shortage anymore”, said the Director of Anh Dao Cosmetic Limited Company.

Furthermore, during the dry season, the bottled water company also contributed water to this area. However, there are many potential issues concerned bottled water. Some

companies managed to produce bottled water but they unexpectedly doubled the usual price. Both bottled water companies and vendors raised the price of bottled water. Although bottled water was still available, the vendors did not sell them to local people. Local people did not understand why they stopped selling bottled water. A male farmer said:

“I did not know why last time I could exchange four bottled waters with double the price compared with usual. The day after, I returned to exchange bottled water. They did not allow although bottled water was still available”

(Interview 22, 20 May 2016)

While the local government monitors the individual bottled water businesses, it cannot manage price inflation as well as hoarding bottled water instead of selling for local people.





Figure 20: Local people in the city centre were provided free water by a cosmetic company in central city

Photo taken on 28 April 2016

4.2. Existing formal and informal water governance and mechanisms in Vinh Quang Ward

This part discusses formal and informal water governance and mechanisms in Vinh Quang Ward, particularly concerning the themes of water governance discussed in the conceptual framework such as water policy, accountability, funding and capacity.

4.2.1. Formal water governance and mechanism

4.2.1.1. Policy

Water policy is an official document regarding the water supply system and directly affects local people's water needs. However, local people in Vinh Quang Ward cannot access this policy because it is not publicly available.

Kien Giang Province in general and Rach Gia City in particular are vulnerable to climate change and sea level rise. The local government has a specific plan for implementing a sustainable water supply system to guarantee water security for people in Rach Gia City and Vinh Quang Ward. Both national and local government has had many short-term or five-year plans. A researcher stated:

“To me, government has paid close attention toward issue of water supply in both urban and rural area. Particularly, there is variety of decision on it such as its purpose of reaching 100 percent access by rural people to fresh water by 2020, and 2006-2010 plan to get 85 percent of rural people fresh water as well as many policies related to water provision have been progressed”.

(Interview 30, 7 June 2016)

In practice, the percentage of people who are able to access water is quite low compared to the plan. Even some families in urban-poor areas still do not have tap water supply.

In 2014, the Provincial People's Committee of Kien Giang Province approved a Decision for the water supply system by 2025. They paid close attention to the urban water supply system because it is forecasted about 50 percent - 53 percent of inhabitants will live in urban areas in coming years (Decision 2487, 2014). It clearly stated that the water supply will be enhanced to 120 – 165 liters per day per person (Decision 2487, 2014). The Decision also mentioned that the government will receive

financial support from official development assistance (ODA), national revenue, individual investment from both internal and external investment.

Nevertheless, the Decision did not state the funds expected to meet the project's requirements in terms of quality and infrastructure. Also, it did not provide an opportunity for public or community engagement in this policy. The decision appears to be quite top-down and has not been publicized among the community. Moreover, the Decision must include the specific plan for the public water supply system so that the local people and community may learn about the plan and its reliability and efficiency. In particular, the Decision did not include a land plan which will absolutely relate to the water supply plan, local people's livelihoods and their land. In addition, in urban areas, land has become an issue due to people's increased demand. If such concern has not been included and reflected local people's involvement, the question becomes whether the project will be effective or not.

Generally speaking, water supply policies in Kien Giang Province are quite top-down rather than bottom-up, failing to get grassroots involvement in policy-making. The low efficiency of water policies continues and continues to affect local people.

4.2.1.2. Accountability

Accountability plays an important role in achieving good water governance. However, accountability remains an issue in many policies in Vietnam and particularly water policies in Kien Giang Province. Although this coastal province is highly vulnerable to water shortage due to salinity intrusion, local people do not know which agencies are responsible for water supply and water-related issues.

According to the 2012 Vietnam Water Law, the Ministry of Construction (MOC) and Department of Construction are primarily responsible for the water supply system in urban areas. Additionally, "Provincial-level People's Committees shall publicise water resource master plans of their provinces and centrally run cities" ("Vietnamese Water Law," 2012, p. 38). The Provincial People's Committee is an umbrella to manage the water supply system rather. It comes along with agreements of the Provincial People's Committee and water supply company as well. However, during times of drought and saline penetration in Kien Giang Province, local people do not

know which agency is responsible for water supply if they want to raise concerns of water shortage and water-related problems.

A forty-two-year-old woman in Dong Khoi Village said:

“I did not raise the issue of water shortage to local government because I did not know which agency is mainly responsible for public water supply”
(Interview 4, 26 April 2016)

Clearly, local people, especially the peri-urban poor, are left behind by the political system as well as by water supply system. As they are not involved in policy-making, they do not learn and know about who is responsible for the public water supply. One hundred percent of people interviewed in the three villages did not raise the issue of water shortage to their local government nor did they know about any water policy.

All in all, the People’s Committee is primarily accountable for water-related issues, including how to achieve better water supply in order to meet everyone’s basic needs. However, it does not enhance public and community participation in water provision in practice. Hence, local people have not experienced the water issue both central and peri-urban areas within a ward.

4.2.1.3. Funding and Capacity

Government projects in Vinh Quang Ward rely on a variety of sources such as ODA, individual and national revenue (Decision 2487, 2014). Transparency is important for funding from ODA and the national revenue. Both funding and capacity must be considered and publicised by the government to allow local people and communities to review and evaluate a certain project, for example a water supply system. Nevertheless, the government has not always publicised funding information or any policies concerning water which allows corruption or the failure of a certain project (ADB, 2010, p. 5). Also, the quality of a project relies on the review and evaluation of community rather than government alone.

In Vietnam in general and in Vinh Quang Ward in particular, local people and communities are left further behind by water supply projects and policies. This results in inadequate compensation for local people, poor quality of the final result, and corruption.

4.2.2. Informal water governance and mechanism

In Vinh Quang Ward, local people can get water from public wells, their neighbours' wells and water support from local business and individuals as well. The informal water mechanism also includes public wells and generous neighbours. The public wells are a hundred years old and its water is available for everyone, from the wealthy to the poor. Also, in the peri-urban poor area, local people shared water with each other from their own pump wells. Some local businesses provided free water for local people in Vinh Quang Ward, using water they processed from their own wells before delivering to residents. A female farmer in Nguyen Thai Binh Village said:

“Peri-urban poor village did not get tap water for one month, so I must get water from my neighbours” (Interview 7, 26 April 2016)

A male farmer in Nguyen Thai Binh said:

“I utilised a tanker in order to bring water from upstream of Rach Gia-Long Xuyen Channel for neighbours” (Interview 25, 11 June 2016)

In addition, local people in the peri-urban area relied on water support from the local pagoda. They could get water from the pagoda's wells for their daily use during the dry season. A woman in Nguyen Thai Binh Village shared:

“I used to get water from the pagoda's well and even take a bath in this pagoda” (Interview 7, 26 April 2016)

In terms of informal water governance and mechanism, the water support from neighbours, businesses and pagoda play an important role in helping meet daily water needs for most peri-urban areas and Vinh Quang Ward in general.

4.3. Is water governance inclusive?

4.3.1. Public involvement

In terms of the public water supply system, customers or local people play a very important role in ensuring it meets their own needs. However, local people are left behind those needs of their own rights to water. It raises the question of whether local people have become indifferent toward governmental policies or if the government does not allow them access to political involvement.

Firstly, accountability for local government is lacking in the public water supply sector. Most local people do not know who is primarily responsible for water issues. A female farmer stated:

“I want to raise ideas about the water issue, but I have no knowledge about who is responsible. It is better the government sets up a meeting concerning water issues. I do not know any policies related to the water supply system and water issues either.” (Interview 9, 26 April 2016)

In this sense, the government has not yet bridged the gap with local people. More importantly, those policies are applied top-down, while grassroots level has no access to policy-making although it directly affects local people. Also, at the grassroots level, people cannot evaluate the success of a policy if they do not know about water policies.

Furthermore, most local people agreed with an interviewee who said:

“I am still struggling with earning a living rather than raising ideas about the water shortage issue with local government.” (Interview 22, 20 May 2016)

They are also afraid of sharing ideas or complaints about government because they do not want to get into trouble. The government’s power and the big gap between government and the local people have made people indifferent toward any governmental policies as well. Gradually, this indifference has become common. For instance, although water is a basic need for their daily needs and definitely affects people’s health, local people think that the government will figure out a solution for water stress due to salinity intrusion.

“Most of local people refused to be interviewed or have their voices recorded while answering water-related questions because they are afraid of getting into trouble with local government” (Interview 23, 20 May 2016)

Good water governance consists of strong policy; legal and regulatory frameworks; more effective implementing organisations; a civic determination; as well as appropriate investments (World Bank, 2006). Nevertheless, in Vinh Quang Ward, the water supply system does not include local people’s participation in policy-making and is still unable to deal with water scarcity during dry season. Good water

governance is a key solution for water issues rather than solely technical solutions. The government, public, donors and development agencies have often neglected water governance, while “a range of technical solutions for water problems could work if governance arrangements are good and could fail if they are poor” (World Bank, 2006).

Generally, water governance in Vinh Quang Ward is unable to meet residents’ fundamental needs. Moreover, there remains a big gap between government and the local people so they cannot express their needs and silently receive any top-down water policies. However, they have misconceptions that local government has a specific short-term solution to water stress in Vinh Quang Ward.

4.3.2. Policy

Water policies directly affect people’s health, basic needs and livelihoods. The policy must be available to the community so they may learn and monitor the implementation of a certain policy. Local people in Vinh Quang Ward do not know anything about the water policy or water supply project. They are left under the control of the government. All twenty-five people interviewed said they did not know about policies or projects regarding their water supply – nor were they involved in their formulation. Moreover, some people uncertainly thought the water provision company was responsible for water supply, while others did not know.

Firstly, local government does not consider the important role of local people or community as a stakeholder in terms of water governance and water supply effectiveness. Residents have not been involved in any water policy-making process. Everyone interviewed said that they did not participate in any water issue-related meeting. A female farmer in Vo Truong Toan Village said:

“Local government has not organized any meetings concerned water shortage so I cannot raise my concern about the issue” (Interview 9, 26 April 2016)

This reveals the weak transparency regarding public water policy in Vinh Quang Ward. Local people have no power although water is a fundamental need. It is necessary for local people to learn about water policy to enhance their participation in

the political system and have their voices heard regarding water. In contrast, the local government maintains power over any policy and issue.

Secondly, local people find it controversial to be involved in political system - they do not want to participate as they are afraid of the government's power, or they do not expect to see much change from government.

All twenty-five people interviewed said that they were too consumed with their daily struggles earning a living to raise the water shortage issue with local government. They were afraid of dealing with local government, and were still in need of earning a living. A local woman said:

“It does not make sense to talk with or raise concern with local government because they also ignore it later” (Interview 9, 26 April 2016)

Furthermore, the government does not pay much attention to local people's ideas and their interests are ignored by government. Government has to stay local people's benefit and equity. They still leave a gap between central and peri-urban people in terms of having access to water.

The government has left local people behind rather than maintaining equity between them and within the community. Citizens have no power or voice in the policy-making process even though water is a basic need of local people. The government must guarantee available water for all people as well as involve them in the development of its projects and policies.

4.3.3. Accountability

The major part of good water governance is accountability. However, local people in Vietnam do not learn about this. They do not even know which agency is responsible for the water supply system, thinking it is the water provision company. They are either not willing to learn about accountability or the system of local government is not transparent enough to allow people to understand and get involved.

When people were asked which office is primarily responsible for water supply, most immediately said no or just “water supply company”.

A local woman in Vo Truong Toan Village said:

“Water provision company is mainly responsible for water system. Sometimes, I want to raise this issue to government but I do not know how I contact the local government and which office is listening to our issue” (Interview 9, 26 April 2016)

There is a big gap between the government and local people. As such, they must suffer water shortage in silence instead of raising it with government.

Moreover, public participation in policy-making processes is challenging due to scarcity of resources, absence of donor funding as well as poor administrative responsibilities and unclear decentralisation to the commune people’s council (Mattner, 2004). The political system in Vietnam, especially the water supply system at the local level, is quite ambiguous so local people cannot easily reach a higher political system to raise concerns about local issues.

Generally speaking, Vinh Quang Ward residents are not considered as a central stakeholder in the policy-making process. Also, they cannot raise concerns regarding water to the local government because they do not know who is listening and supporting them to solve the problem.

4.3.4. Funding and capacity

Indeed, in terms of funding and its capacity, local citizens do not know about those issues. The former Vietnamese Prime Minister said that “...democratic regulation at the grass-roots level must be carried out hand-in-hand with the strengthening of local administration” (Mattner, 2004), meaning that poor capacity and local administration cannot achieve better democratic regulation in Vietnam. In practice, the Vietnamese government has not yet achieved democracy for the local people although it does allow more space for NGOs working in Vietnam since 1986 (ADB, 2011a). A woman in Vo Truong Toan stated:

“Government did not care much about water shortage. As the population grows, local government has not yet invested more in the water supply system” (Interview 9, 26 April 2016)

Although water-related issues became a burden for local people since two years ago, the government has not improved the water supply system to meet local residents’

water demand. Moreover, all local people interviewed said they were not asked to be involved in any meetings regarding the water supply system improvement. As such, the local people remain left behind and unable to raise the issue of water, a basic need, to the government.

4.4. Weak water governance producing water insecurity

Water insecurity in Vinh Quang Ward is caused by weak water governance due to the lack of public involvement, appropriate policies, accountability, funding and. As such, local people are left behind during times of water insecurity.

In terms of public involvement, local people have a very limited role in resolving the water shortage. They did not voice their concerns regarding the water to the government, despite it being a repeat occurrence over the past two years. Moreover, local people are left behind by water scarcity as the amount of water from the water tanker cannot meet their daily needs nor reach people in Nguyen Thai Binh Village. The local government did not hear about this problem, so they will not know a better solution or alternative is needed in order to adequately deal with water insecurity.

Regarding water policy, the top-down policy making process and power of government does not allow the voices of local people to be heard. They suffered water insecurity in silence. Furthermore, local people experience the failure of the water supply system far more than the government. There is no grassroots involvement in the water policy-making process so water insecurity will remain an issue.

Accountability is important for better water governance and water security. In Vinh Quang Ward, accountability of water supply is not transparent - local people do not know who is the accountable agency for their water supply. This causes two problems concerning water insecurity: Firstly, if local people want to raise issues related to water, they do not know who to approach. Secondly, the responsibility for the water supply among official agencies is not clearly delegated in law or policy anyway. The lack of transparency around government funding and capacity also contributes toward water infrastructure failure. Moreover, poor government capacity means they do not have the adequate resources or knowledge to engage local people in addressing water issues.

All in all, according to the selected OECD themes, strong water governance has yet to be achieved in Vinh Quang due to lack of public involvement, appropriate policies, accountability, funding and capacity. Due to this, water shortage or water insecurity has occurred twice over the past two years and it is uncertain how well it will be dealt with in the future.

4.5. Chapter summary

To summarize, local people, businesses, civil society and state apply a variety of strategies to strengthen water security such as water tanker provision and groundwater provision. Even though local people, business, civil society and state made more efforts to overcome clean water scarcity as well as meet local people's basic demand, the government was very passive in dealing with salinity intrusion and complicated weather patterns that led to severe water shortage the last two years. Local citizens, especially the peri-urban poor, struggled to collect a daily supply of clean water. Local government only began to pay more attention to the problem by late April.

Furthermore, water provision mechanisms in Vinh Quang Ward include formal and informal water supply provision. Local people get tap water from the public water supply service. Also, local people in Vinh Quang Ward help their neighbour access groundwater to enhance water security during the dry season.

Lastly, there is a big gap between local government and local people in the water policy-making process as well as in water governance. These processes do not include the participation of grass-roots level or civil society. Local people have no choice but suffer water issues despite its importance for their own health and livelihoods. They do not even know where to raise such issues and who is available to listen to and resolve such issues for them, especially the peri-urban poor.

Chapter V: Conclusion and Recommendations

The case of water scarcity in Vinh Quang Ward is an example that demonstrates the failure of water governance in Vietnam during the periods of water requirement and conflicts. This failure is attributable to two major reasons - namely salinity intrusion and the government weak response to the issue. Such water shortage has happened twice over the last two years (2015-2016), but the local government has allowed it to worsen. Local people in Vinh Quang Ward struggled meeting their daily domestic water needs for the entire month of April this year and for a period of about two weeks in April of last year. Actually, due to the passive response from government, the issue became more severe, affecting local people's health as well as their livelihoods.

This chapter analyzes the extent that there is water insecurity in Vinh Quang Ward. Additionally, it summarizes the impacts on local people and business, including for the people who are more vulnerable than others due to gender and economic status. Moreover, this chapter identifies the main reasons for water insecurity in Vinh Quang Ward and the formal and informal water governance and mechanisms in Vinh Quang Ward. Also, the extent to which water governance in Vinh Quang Ward is inclusive of all water users is analysed.

This chapter starts with Section 5.1.1. discusses water insecurity and its impacts on local people and livelihoods in Vinh Quang Ward. Next, Section 5.1.2. highlights areas for improving water governance. Section 5.2. provides recommendations to achieve better water governance and Section 5.3. concludes the thesis with recommendations for future research.

5.1. Conclusion

5.1.1. Water insecurity in Vinh Quang Ward and its impacts on local people and livelihood

Twice in the last couple years, residents of Vinh Quang Ward have suffered serious water shortage. In April 2016, residents of Vinh Quang Ward dealt with severe water shortage for about one month.

Water shortage causes negative impacts on local people's daily activities as well as livelihoods. Rice farming, in particular, was totally destroyed by lack of fresh water. Local people cannot earn a living because they must get water for their families. Local people could not even run their food business because of the water shortage.

Furthermore, children and women are negatively affected by clean water in short supply. Women face additional burden as they are primarily responsible for domestic water collection for their families. Also, children and women experience health issues due to lack of clean water.

The water shortage was caused by serious salinity intrusion, not only from severe drought, climate change, and upstream-downstream water competition but also from poor infrastructure and lack of governmental support at multiple levels. Also, the local government was quite late in responding to the issue, thereby allowing it to recur in two years.

5.1.2. Water Governance in Vinh Quang Ward

5.1.2.1. Public involvement

In terms of clean water shortage in Vinh Quang Ward, local people were not engaged or consulted regarding their concerns. Based on this research, they, especially the peri-urban poor, were left behind and suffered the issue in silence. Moreover, their attitude was not to get involved and they felt intimidated by approaching the government.

First of all, clean water shortage directly affects local people, but their attitude was to ignore it and not complain. Actually, local people at the grassroots level have an important role in enhancing good water governance. Local residents must be concerned about water policies for their own interest rather than be indifferent. One problem is that peri-urban poor are less educated, which is a barrier for them to access governmental policies and understand governmental policy-making process in order to voice their concerns. They have not recognised they have a right to access those policies and voice their concerns to local government.

Secondly, the government has limited the involvement of local people regarding clean water shortage. Local people did not share their concerns about water shortage

because they wanted to avoid complaining about the government. Moreover, they are afraid of getting into trouble if they do so.

In short, the clean water shortage severely affected local people. If they do not raise the issue to local government, weak water governance will not be solved. Local people must consider their role and rights to water so that they can become more involved in policy-making instead of the current top-down policy-making process.

5.1.2.2. Water policies

The top-down approach to water policies should also be taken into account. Water policies must be publicized to reach the grassroots level and ensure its suitability to meet people's needs. The strength of water policies must take into account the effectiveness of water management as well.

A water policy must state the scope of its vision and strategic plan, the framework for which is the 2012 Water Law, clearly states the arrangement for water management (Iza & Stein, 2009). However, Vietnam urban water policies are still vague in terms of vision and strategic planning and do not play a role in the Water Law framework. Moreover, decentralisation in urban water management is in practice in Kien Giang Province, but who within government is responsible for the water supply is quite ambiguous. The Provincial People's Committee is an umbrella power to approve any water policies from the Department of Construction and the water supply company. But besides that, it is not clearly mentioned how water management should be carried out to meet people's water needs except that local government plays a crucial role in water provision. The water policy-making process is top-down and challenging to engage local people - this is a weakness of Vietnam's water policies in practice.

In addition, according to Iza and Stein (2009), good water law must comprise a structure for effective water management, coherent water legal system at all levels and promotion of the efficiency, equity and sustainability of water provision system. Indeed, the latest Vietnam Water Law maintains some weak points although it is revised over several years. Firstly, it does not state the structure of water management. It is an official document that provides the scope of both water resources protection and water management. The ineffectiveness of decentralization in terms of water management is that at the local level, the responsibility belongs to the Provincial

People's Committee instead of the Department of Construction. As such, the Water Law is not strong enough to ensure efficiency, equity and sustainability.

The above failures of Vietnam water policies have brought undesirable effects for local people in terms of clean water scarcity. Furthermore, it causes more troubles for accountability, funding and capacity in addressing water insecurity as well.

5.1.2.3. Accountability

In Vietnam, accountability is not given much attention at the grassroots level because they feel left behind by the political system. Moreover, accountability in terms of water governance is ambiguous in Vietnam, as the Vietnam Water Law and policies do not clearly state which agency is responsible for the water supply system.

Accountability is vague in policy and practice. The Vietnam Water Law mentions that the Ministry of Construction (MOC) plays a decisive role in the water supply system. In practice, at the local government level, the Provincial People's Committee manages the water supply system rather than the Department of Construction (DOC). Additionally, the DOC only designs and suggests water supply projects for the People's Committee's approval. The water supply company is under the control of the Provincial People's Committee as well.

Local residents are unable to access water policies and do not know the accountability of water supply agencies either. They do not know that the People's Committee is a main agency providing approval and management of the water supply system instead of the water supply company. This definitely causes trouble for local people if they want to raise their concerns about the water supply system or other water issues.

Generally speaking, water accountability must be enhanced by local government. Water policies also raise the concern of accountability and accessibility by local people to allow them to raise their concerns and water-related needs.

5.1.2.4. Funding and Capacity

Funding and capacity remain weak in Vietnam as well. Such issues must be made known to the grassroots level. The local people were not aware about any water supply project, especially in Vinh Quang Ward. Moreover, the government's capacity must be enhanced to serve the needs of the local people.

Firstly, funding is not transparent. People in Vinh Quang Ward do not know about the funding process for water supply projects. They also were not aware of any existing or planned water project either.

This research reveals the weak capacity of local government. Particularly, residents in Vinh Quang Ward could not access water policies as they were not made public by local government. Moreover, during the last two dry seasons, water shortage happened twice, but local people did not know what agency to approach about the issue.

All in all, both funding and capacity enhancement would contribute to better water governance in Vinh Quang. These play a crucial role in infrastructure and administrative capacity development to guarantee the sustainability of a water supply system.

5.1.3. Weak water governance producing water insecurity

Generally speaking, weak water governance led to a longer period of water insecurity in Vinh Quang Ward, especially in the past two years. Particularly, the lack of public involvement, clear and appropriate water policies, accountability, funding and capacity relevant to water governance were barriers to grassroots-level involvement in the policy-making process. Also, the top-down policy of central government and local government means there is little consideration for the role of local people in resolving water insecurity.

5.2. Recommendations

In order to reduce water insecurity in Vinh Quang, the argument of this thesis is that water governance must be strengthened. In other words, water insecurity is not a result of physical water scarcity alone, but also relates to how decisions are taken towards how to address this issue.

5.2.1. Strengthen public involvement

For good water governance, the public or community involvement must play a significant role. It can serve to enhance their rights and the voice of grassroots actors so that they can participate in water-related political activities such as the water

policy-making process. Furthermore, grassroots must improve their own attitude about their involvement.

Firstly, local people or grassroots actors have to consider their own crucial role by themselves. They themselves must recognize that water policies definitely affect them so they must try to be involved and learn about water policies rather than being passive and accepting the local government's policies in silence. The indifferent attitude of local people is a barrier to achieving good water governance in Vietnam.

Secondly, civil society activities are quite significant for local people to interact with government. They bridge the gap between government and grassroots as well as help local people recognize their role and access water policies. Furthermore, civil society empowers local people to deal with water shortage as well.

All in all, grassroots are a major actor in achieving good water governance so their participation in water policy-making process is fundamental to attaining good water governance.

5.2.2. Enhance public engagement on Water Policies

Water policies and the Water Law play a crucial role in public water provision. They are considered umbrellas for the provision of public water service. As local people are affected by these policies, it is important for them to access those policies.

Firstly, the role of civil society must be taken into account so water policies and Water Law should be made public. They can bridge the gap between the government and local people to enhance their participation in the water policy-making process. Moreover, they help local people access water policies and the Water Law.

Secondly, the government requires a bottom-up approach in water-related decision-making. The process must be transparent and allow community participation. The government should significantly consider the grassroots involvement to increase effectiveness and meets everyone's needs rather than leave the poor behind.

All in all, the consideration of water policies and Water Law is quite important as is the involvement of grassroots, and civil society as well.

5.2.3. Increase accountability

In Vietnam, the government at different levels lacks accountability for the water supply system. While water shortage was ongoing, local people could not easily identify which agency to approach about the problem in Vinh Quang Ward.

One of the major causes is that the government is vague about which office is accountable for the water supply service. Decentralisation and indication of the accountable agency for public water supply management should be enhanced in order to achieve good water governance. In addition, the umbrella agency, namely the Provincial People's Committee, should not run the water supply system because of its past ineffectiveness and late response to addressing the clean water shortage. The private sector also plays a key role running the water supply business, but the government is the actor controlling the availability, equity and quality of water for local people.

Furthermore, the accountable agency must be available and consider the importance of the grassroots level. They must be willing to listen to the grassroots level regarding water issues and provide solutions to meet grassroots' needs.

To sum up, enhancing accountability of government is needed for better water governance. Greater accountability allows grassroots involvement and participation in water-related issues.

5.2.4. Improve transparency of Funding and Capacity

The transparency of funding and capacity is worth promoting. It again contributes to the effectiveness of a certain water project. Hence, it also strengthens water policies and Water Law in administrative process.

First of all, failure of public water supply projects is caused by lack of transparency regarding funding. The community and civil society have not seen nor participated in the funding process of a certain water project so it will lead to inefficient use of funds. Also, funding transparency is an important factor for better water supply projects.

Also, strengthening the administrative capacity will enhance the implementation of water policies and Water Law. It will allow the application of applicable water

policies and Water Law in practice. Grassroots level will also receive the benefits of those policies and Law as well.

The achievement of transparency in funding and the improvement of administrative capacity is quite important in order to achieve better water governance.

5.3. Recommended Future Research Areas

Clean water shortage in Vinh Quang is caused by salinity intrusion. It is forecasted to be more severe and unpredictable in the future. Local people will encounter water issues and its uncertain negative impacts on their health, especially poor women in peri-urban areas. An area of future research could focus specifically on poor women's health in peri-urban regions in terms of the impacts of clean water shortage and how to empower them to deal with such a serious issue in the future.

Additionally, another area of research could focus on how local people adapt to climate change and drought in order to ensure sustainable livelihoods in coastal regions. Such research can help local people be more flexible and adaptive to issues such as water scarcity so their livelihoods will not be negatively affected. In the future, water shortage will happen more often and severely, while it takes a long time to resolve.

In terms of drought and salinity intrusion, other research questions include: What is the role of groundwater and how effective is it for enhancing water security for local poor people in coastal areas? How to improve groundwater quality to meet local people's health needs? Water insecurity will become more serious, but the poor are most vulnerable to water supply. There is a need to research groundwater and its role and quality for meeting poor people's water needs.



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APPENDIX

Sample questionnaires of semi-structured interview for local people

**Strengthening Water Governance in Vietnam: A Case Study of Community
Response to Water Insecurity in Vinh Quang Ward, Rach Gia City, Kien Giang
Province**

The structure of questions will include three parts such as personal information will be filled in part one. Part two is mentioned the questions for water security learning and water governance is in part 3. The questions order is also based on arrange of needed information for water security and water governance learning, and answering five research questions.

In part 1, interviewees will fill out their personal information. For part 2 and 3, the participants will answer the questions by giving information, their own knowledge and experience.

Part 1: Personal information

Name:

Age:

Gender (male or female):

Education status:

Occupation:

Phone number:

Address:

Part 2: Water security

Goals \ Sources	River	Pipe water	Drill wells	Rain water	Others (bottled water)
Cooking					
Drinking					
Washing					
Showering					
WC					
Watering					
Others					

1. Where does your family get water for domestic use during rainy season?
2. Do you need to filter the water?
If (yes), please tell the reason why.....
3. In the dry season, do you deal with water limitation?
4. How long is water limited during the dry season?
5. Does it happen every year? How serious is the problem in recent years?
6. Which purpose (cooking, drinking, washing....) do you need more water?
7. How much water does your family use for all purposes (cooking, drinking, washing, showering...) per day during the rainy season?

Purposes	Liters of water per day
Cooking	
Drinking	
Washing	
Showering	
WC	
Watering	
Others	

8. During the dry season, where does your family get water for domestic use every day?

Goals \ Sources	River	Pipe water	Drill wells	Rain water	Others (bottled water)
Cooking					
Drinking					
Washing					
Showering					
WC					
Watering					
Others					



9. During the dry season, how much water does your family use for all purposes (cooking, drinking, washing,...) ?

Purposes	Liters of water per day
Cooking	
Drinking	
Washing	
Showering	
WC	
Watering	
Others	

10. During the dry season, what main water source does your family get from for washing, showering,...?

11. During the dry season, what main source water does your family get from for cooking and drinking?

12. Does your family need to buy bottled water for drinking and cooking during the dry season? If yes, how much do you need to pay per bottle of 20 liters? Is its price higher than every day?

13. How much do you pay for pipe water per m³?

14. What do the reasons cause water limitation? Please tell more details.....

15. What are the major difficulties while lacking fresh water for domestic use?

16. Is there any health problem related to water insecurity during the dry season?

If yes, please tell particular diseases

17. Who is the most vulnerable to water shortage during the dry season?

18. Who is prioritized to use fresh water during the dry season?

19. Does water limitation affect to economic development in this area?

If yes, please tell more details

Part 3: Urban water governance

20. How long has water factory operated?

21. Is water cut off regularly?

22. How long has water been cut per day? Day time or night time?
23. Do they announce for water cut ahead to store water?
24. How do you feel about regularly water cut off?
25. Do you know that which governmental agencies are responsible for urban water supply system? If yes, please tell name of agencies
26. Do you complain to water factory or local government about such issue? Why or why (not)?
27. Do you involve in water policy-making process or water infrastructure planning process?
28. If the government allows you to participate in water policy-making process or water infrastructure planning process, are you willing to join in? Why or why (not)?
29. What has local government done to solve water shortage during the dry season?
30. Do you involve in any campaign to save water provided by local government or NGOs? If yes, please tell more details.....
31. Have you complained with local government about water insecurity happened every year? Why or why (not)?
32. Do you know where to complain about water insecurity in your area? If yes, does that agency help you to resolve the problem related to water?

VITA

My name is Phuong Tran Lan Pham. I am from Vietnam. I used to be a high school English teacher. Besides that, I did some translation for Research Centre for Rural Development of An Giang University in Vietnam. That was an opportunity and raised my interest toward Master of Art in International Development Studies (MAIDS), Faculty of Political Science, Chulalongkorn University. The course provides me a great opportunity to get more involvement to grassroots level so that I really enjoy it.

