

## Women and Water Management: A case study from the rural communities in Vietnam

Nguyen Van Thai  
An Giang University, Vietnam

### ABSTRACT

*Women in developing countries are domestic water managers, and therefore can be regarded as the primary beneficiaries of water supply project, particularly domestic water supply services (DWSSs). Globally, women are active in water supply policymaking, planning and implementation. However, women are often excluded from water management activities; this can result in the failure of water projects. Research to date shows that women's exclusion from water management processes stems from top-down approaches and traditional norms and gender differences. The work described in this research involved an examination of the effectiveness of DWSS policies implemented in rural Vietnamese communities, and was designed to produce an understanding of women's roles and responsibilities in water management, specifically within the Vinh Phuoc community of the Mekong Delta of Vietnam. The research found that women in Vinh Phuoc were greatly restricted in their participation in water management and in the public sphere in general. Also, it sought to reveal whether women are involved in water management activities and the roles they play in achieving final outcomes.*

**KEYWORDS:** Women's participation, water management, domestic water supply services and policy assessment, policy assessment.

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### Introduction

Over recent decades, the link between gender and water resources management has become an issue of growing concern. Considerable efforts have been made to identify the role of gender in the field, as well as to empower women and their voices in the arena of water management policies. In developing countries, women are the main users of water – for cooking, washing, sanitation and family hygiene (Aureli & Brelet, 2004). Women could play a key role in water management as major stakeholders in the process of policymaking, planning and implementation, but are often excluded and regarded as merely the recipients (Singh, 2004). Women are domestic water managers at the household and community levels, and hence women have the potential to become active stakeholders in processes of management and decision-making within the water sector.

It is important to note that the global policy concepts relating to rural water supply and sanitation (RWSS) have influenced the water policies of most developing countries, including Vietnam (Reis, 2012). The Vietnamese National Rural Clean Water Supply and Sanitation Strategy addresses gender issues, particularly noting that women need to be included in water-related activities because they play a major role in the collection and use of domestic water for maintaining the hygiene and health of the family (MARD & MOC, 2000). However, significant questions have been raised about how national commitments to ensuring gender equity in water-related activities influence policy implementation at local levels. For this reason, this research aimed to determine the nature and the effectiveness of the policies in terms of their impacts on Vietnamese women. A clear understanding of the policy framework is essential to determine how national policies regarding the water services sector are being implemented by local governments, and ultimately how these policies affect women's participation in water management.

Existing studies have shown that social and cultural factors, including gender inequalities and lack of decision-making power, inhibit the participation of women in water resources management (Ademun, 2009; Svahn, 2011). Several researchers have examined key factors that act as barriers to women's participation within the water sector; however, previous researchers have not addressed the significant role played by cultural beliefs – and social structures and practices of local communities in the policy, which in turn influences both the process and the outcomes.

To fill this gap in the literature, the research was designed to assess the effectiveness of existing policies regarding women and water in Vietnam, drawing on the case of women's participation in the implementation of domestic water supply programs in the Vinh Phuoc community of An Giang province of the Mekong Delta. Furthermore, the research examined the influence of socio-cultural factors related to gender equality on women's involvement in water management and the effectiveness of policies on female participation in DWSS issues.

### **Research aims and objectives**

The main aim of the study was to determine the effectiveness of policies related to women and water in addressing the needs, interests and potentials of women in DWSSs in Vietnam. A secondary aim was to examine the role of social and cultural factors in creating and addressing the challenges of women's involvement in domestic water management. The research pursued the following specific objectives to support the primary aim:

1. to identify the current Vietnamese DWSS policies and their nature by ways of questioning whether women have a role to play in the process of decision-making within the water sector
2. to understand how the concept of participation is being practised in Vietnamese domestic water supply policy from a gender perspective and in the complex socio-cultural matrix of the local communities; and

3. to assess the effectiveness of the current policies in relation to women and water.

## **Research questions**

The specific questions that the research sought to answer in order to achieve the objectives listed above were as follows.

1. What are the overall aims of current Vietnamese policies on domestic water supply services (DWSSs)?
2. How do these DWSS policies enshrine the specific gender needs of women?
3. How is the concept of women's participation stipulated in these DWSS policies?
4. How does women's participation occur in Vietnamese rural communities and how do social and cultural factors influence it?
5. How effective have Vietnamese DWSS policies been in implementing women's participation in decision-making to address the specific gender needs of women in local communities?

## **Literature review**

### *Gender and Development and participatory approaches*

**Gender and development.** Gender is defined as the attributes, roles, benefits and relationships with regard to men and women that are socially constructed by cultural, historical and religious patterns and tradition rather than determined by biological features (Acheampong, 2008; as cited in Svahn 2011; Ahmed, 2016). Thus, gender roles are designated as males or females by societies and communities, which accept and perpetuate the socially constructed behaviours, norms and roles. Gender relations are the social and economic relationships, which exist in families, communities and societies between males and females, and are established in legal and institutional systems that are hierarchical relations of power, commonly prejudiced against women (GWA, 2006).

Gender roles and relations are firmly embedded traditions, history and culture, and as a consequence they vary between regions and countries (Coles & Wallace, 2005) and are deeply rooted and context dependent. However, it has been argued that gender ideology could be changed, but specific inputs, attention and incentives are required in this respect (GWA, 2006). Coles and Wallace (2005) claimed that it is possible to obtain such changes, once the positions and conditions of women ought to be largely acknowledged in each cultural and societal context.

To put the rest of this thesis into perspective, an overview of the historical framework of gender within development discourse and practice is needed. In the last three decades, Women in Development (WID), Woman and Development (WAD) and Gender and Development (GAD) approaches have shaped the development discourse, especially with respect to women (Rathgeber, 1990). These paradigms have changed the way in which society

has interacted with gender and women in development processes (Rathgeber, 1990).

The WID approach was formulated in the early 1970s (Rathgeber, 1990) and aimed to integrate women into the existing development processes (Rust, 2007). Under the WID approach, many women-specific projects were implemented to advance women's economic status (Carr, 1997). However, studies indicate that WID failed because it mainly viewed women as the passive recipients of development assistance, such as extension of service provision, credit facilities and other income-generating activities (Kumari, 2013; Rust, 2007). Some argued that gender power dynamics were not taken into account in this approach (Rathgeber, 1990), while others believed that WID was too passive, with women seen as the marginalized group in the development framework and male interests viewed as the norm (Porter & Sweetman, 2005). WID did not challenge the existing policy paradigm: it did not consider women's multiple roles and gender relations in society, and as a result, many WID projects were unsustainable (Kumari, 2013).

As theorists and activists in the Global South reacted against WID, WAD emerged in the latter part of the 1970s (Kumari, 2013). The main aim of WID was to integrate women into development processes, while WAD focused on the interaction between women and development processes (Rust 2007). The WAD approach emphasizes women's roles and power in society, especially their knowledge, goals, work and responsibilities (Rust, 2007). Additionally, the main purpose of WAD was to empower women economically (Oishi, 2002). Many WAD projects were carried out in Africa, and illustrated that women engaging in agricultural activities could improve national economies significantly (Rathgeber, 1990). However, WAD had its limitations: although women were involved in development processes, national and donor plans overlooked and marginalized women's contributions (Connell, 1999). For example, Zimbabwean women remain the main laborers in agricultural households, and greatly contribute to their family income, but men retain power over the family expenditure (Rathgeber, 1990). This reflects the fact that patriarchal domination is the main barrier that influences the transformation potential of women (Barrientos, Kabeer, & Hossain, 2004; Etchells et al., 2017).

The WAD approach was further critiqued as neglecting the experiences of women in developing countries. Muyoyeta (2004) stated that due to the disadvantages of class and unequal wealth distribution, women and men did not benefit equitably from the global economic structures. In contrast, WAD holds that once international structures become more equitable, women's status will improve (Kumari, 2013). Rathgeber (1990) argued that international structures of inequality remained, and meant that women were integrated into development processes in an exploitative way. Other critiques were that much like the previous WID approach, WAD did not adequately address the question of gender roles and social relations between men and women and the impact of these on development (Muyoyeta, 2004).

The GAD approach to socio-economic development was introduced in the 1980s in response to advocacy from feminist sociologists. GAD was an attempt to address the weaknesses of previous approaches, such as the WID and the WAD (Phuong, 2001). Kattel (1992) indicated that GAD not only focuses on women's issues, but on various aspects of the social relations between men and women. For this reason, it is necessary to understand the structure and dynamic of gender relations in order to analyse social progress and social organizations. Gender relations, rather than women were the basis of the GAD approach so as to allow for the assessment of men as potential supporters of women (Phuong, 2001). Because the household is the basic unit of social organization, GAD analysed and evaluated gender issues in development based on understandings of gender relations, the sexual division of labor, and other major household features in planning change and development (Phuong, 2001).

In the GAD approach, women are seen as agents of change rather than passive beneficiaries of development. GAD emphasizes the needs, interests and potential of women to organize themselves for a more active and effective political voice (Rathgeber, 1990). Promoters of the GAD approach stress that the government can play a key role in the provision of social services by promoting women's emancipation and strengthening women's legal rights, including the reform of land laws and inheritance (Phuong, 2001).

The GAD approach recognizes that development policies and practices have differential impacts on men and women (Phuong, 2001). It also distinguishes between strategic needs and the practical needs of women. At the level of project development, the GAD approach has been characterized as difficult to integrate into existing development programs and strategies; instead it requires change in the structures and power arrangements (Rathgeber, 1990). However, this is unlikely to be implemented in local or national agencies (Rathgeber, 1990).

However, at the global level, the topic of women and water was systematically addressed in the UN Water Conference in 1977 in Argentina (Deshingkar, 1995). In this conference, it was recognized that women play a key role in the supply and management of water resources, and this led the UN General Assembly to proclaim 1981 – 1990 as the International Drinking Water Supply and Sanitation Decade (IDWSSD). Providing clean water and sanitation for all was the main goal of the decade (Lundqvist and Gleick (1997). A vision for reaching the needs of the poor and marginalized included in this context, and key themes – gender equality and women's participation began to be recognized.

The 1992 Dublin Statement, the Global Water partnership, and Agenda 21 from the Earth Summit in Rio de Janeiro are major milestones in the development of women and water policies. These efforts provide new concepts of equity and sustainability in water planning (Lundqvist & Gleick, 1997). Under these milestones, the discourse of women and water issues had the potential to be addressed through past approaches, such as community participation and the introduction of the GAD approach.

A women-and-water policy was developed at the International Conference on Water and Environment in Dublin in 1992 (UNESCO, 2002), which stated that women play a major role in the day-to-day supply, management and use of water and are therefore encouraged to be involved in all phases of water management projects, including decision-making and implementation. Thus, the principle in the Dublin Statement was introduced to help address issues related to women's specific needs and the empowerment in order to actively involve in water resources programs.

The Dublin policy was adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 in an attempt to advocate women – water policies and programs (Sitarz, 1993). One of the major objectives stated in the UNCED was to increase women's presence in decision-making positions at the national level. The UNCED report also mentions the development of public participatory techniques and the enhancement of women's roles in water resources management and planning, as well as their implementation in the decision-making process (UN, 1992).

Application of GAD allows actors in the water sector in particular and development goals in general to be redefined (Parker, Lozano, & Messner, 1995). This approach gives special attention to the goals related to equitable and sustainable changes in terms of mainstreaming gender issues. It helps to reshape the power variables within the water sector, giving women an adequate stake in the participation process while introducing a more even power balance between men and women. Women are able to share what they know in the decision-making process (Parker et al., 1995).

Present policies in relation to women and water, formulated under the GAD framework, recognize that women and men have equal opportunities and assets in the sector and must be equally engaged in the activities of water development and management, from designing, implementation, and decision-making to evaluation. Brismar (1997) asserted that all decisions concerning the location, design, operation and maintenance, development and management, and assessment of water-related issues must emphasize the needs, interests, potentials and powers of women as well as men.

Current policies view women's roles in the water sector not only as water collectors, users and managers, but technicians, planners and social development advisors. However, Athukorala (1997) observed relatively recently that men were still regarded as the key actors in the "water world". Some policies retain an emphasis on enhancing men's involvement in decision-making positions in government institutions as well as international water meetings. To redress this inequity, over the past two decades the focus has been turning to assisting and enhancing career opportunities for women in the water sector (Davis, 1996). Also, attention should be paid to creating an enabling environment for women living in rural communities to be engaged in the process of planning and decision-making about water (SIDA, 2002). In addition, women should be given opportunities to enroll in training courses and subsequently

be engaged in technical activities, rather than maintaining the emphasis on women's health and hygiene within family units (Abzug & Islam, 1996).

Issues regarding women and water, using invoking the GAD approach, have emerged at international forums over recent decades. At the Latin American Workshop held in Mexico in 1998, Tortajada (1998) contended that women play a crucial role in water resources management, and their roles are not as an end but as a mean to an end in the sector. Recognition of the significance of women's roles in planning, conservation, management and use of water resources was a major outcome of this workshop. At the same time, at the 8<sup>th</sup> Stockholm Water Symposium, delegates agreed that it was vital to create an enabling environment such that women could be equally engaged in processes of decision-making, and in the practical design, planning and installation of water supply structures (Tortajada, 1998). The consensus was that women's education should be fostered, and in particular women should be given equal opportunities for scientific and technological training relevant to the water sector (Hossain & Aydin, 2010, 2011; Sudman, 1998). Also, delegates agreed on the need to appoint women to decision-making positions in government institutions, as well as create a favourable environment in the absence of gender imbalances through institutional overhaul (Michael, 1998).

In summary, the major objectives of GAD are to champion the needs, interests and potential of women and empower women in order to improve their position relative to men in society (Phuong, 2001). In this thesis, the GAD approach is used as a key theoretical framework to determine who benefits, who pays, and what constitutes the balance of power and privilege between men and women as well as challenges of women's participation in the water service sector. The GAD approach raises fundamental questions about development and the gender relationship processes within it.

### **Participatory approaches**

The concept of participation in development is part of the post-development paradigm that eschews top-down planning and technocratic approaches to development in order to ensure the success and sustainability of development interventions (Classen, 2003). In participatory development, affected communities play a central role in the development process with the aim of achieving sustainable long-term remedies to development issues (Vainio-Mattila, 2000). Participatory approaches to development are also justified in terms of contributing to democratization and empowerment processes, as they ensure the appropriate engagement of the ultimate beneficiaries of the supply and management of resources, services and facilities (Clever, 1999; Lafer, 2014). In the past, participatory approaches to development have often failed in the project design and planning phases due to the ignorance of the affected communities' viewpoints and life experiences. Therefore, it is important to note that local participation in development projects must meet the needs of poor rural communities in a way

that encourage community members to participate in decision-making processes that influence their own lives (Dyck, Buckland, Hander, & Wiens, 2000).

Utilizing participatory approaches in projects, understanding the community, its problems and its politics is a challenge for development practitioners. The practitioners who work with the community cannot be effective without an understanding of their concerns which can only be obtained through working with and listening to the community (Edwards, 1989). Participation enables development practitioners to collect important information from the community, but interaction including group and individual activities also creates a space that allows vulnerable groups and illiterate community members to share their opinions and life experiences (Dyck et al., 2000).

Participation as a development tool has the potential to alter politics within a country by deeply considering the participation of all members of the community, particularly marginalised groups such as women, children, youth and the poor. The participation of marginalised groups can play a key role in advocating changes in existing social structures, especially in the allocation of resources (Kardam, 1997 as cited on (Sousa, 2003). Participation can bring benefits to the community such as increased value attributed to local knowledge, motivation of local people to improve their communities, and creation of a sense of ownership and dedication. These benefits contribute to more sustainable livelihoods in the long run (Sousa, 2003).

Participation in development requires many changes, such as changes in methods and procedures, institutions, individual attitudes and behaviours (Chambers, 1994). These changes are necessary in participatory development because they have the ability to reinforce each other as well as representing the starting point for change (Chambers, 1998). More importantly, changes in practice and practitioners and in supporting institutions are required to achieve success, and as a result Participatory Rural Appraisal (PRA) has become a favorite tool of development practitioners (Sousa, 2003).

Participatory Rural Appraisal has become a common component of participatory development. PRA emerged from Rapid Rural Appraisal (RRA), which acknowledges the need to collect local information and extract local knowledge with the aim of improving the efficiency of rural development plans (Chambers, 1994). Chambers (1994) claims that the essence of PRA is the process of changes of roles, behaviors, relationships and learning. Participatory Rural Appraisal activities enable participants (particularly local people) to be in charge of development activities through group discussions that employ techniques such as Venn diagrams, historical timelines, seasonal calendars, priority rankings and community mapping. PRA leads to local people having increased ownership of and dedication to a development project (Sousa, 2003). In addition, the PRA approach enables practitioners to recognise that changes in behavior and attitude of participants are necessary, and it goes beyond traditional methods (Sousa, 2003).

To be effective, PRA techniques promote a creative selection and application of each PRA tool in a manner appropriate to specific contexts (Classen, 2003). The use of PRA techniques is seen as a way of increasing the probability that the development process will be sustainable (Classen, 2003). PRA has the ability to encourage social development that leads to sustainable innovation in the community (Classen, 2003). In regard to this, decision-making and policy creation should take into account in the process and practice to participatory development (Sousa, 2003).

Participation goes beyond “specific techniques in that it can enable those who otherwise have little power to shape the conditions of their lives” (Blackburn & Holland, 1998, p. 3). PRA involves local people working together to identify their community problems and solutions, helping them to confront and change their personal behaviours and attitudes. PRA improves the chances of success in development projects, once development practitioners recognise the social, cultural and political complexities that affect decision-making and power relationships (Sousa, 2003).

PRA methods have been used for integrating gender considerations into development projects over recent years (Coates, 1999). PRA techniques were initially developed in the agricultural sector, and have been used in the water and sanitation sector (Coates, 1999). Therefore, the thesis uses PRA techniques to give women opportunities to identify the challenges of women’s participation in water management activities, and how these challenges have influenced their lives.

## **Water issues and women participation in water management**

### **The water crisis in developing countries**

Some research indicates that poverty, inequality, unequal power relations and misguided water management policies are the major reasons for the global water crisis, particularly in developing countries (UNDP, 2006). In addition, although it is widely acknowledged that women are traditionally the primary water users and managers at the household and community level, women’s voices are hardly heard by policymakers, and this is seen as another cause of the water crisis (Perkins, 2008). Governments in many developing countries do not consider the needs of marginalized groups, and even the activities of the non-government organizations have become unsustainable in the water management arena (Perkins, 2008). For this reason, 1.1 billion people across the world, most of whom are living in rural areas, have no access to safe drinking water (Alford, 2007).

Although water is obviously a valuable natural resource that supports people’s livelihoods and sustains the environment, it is also a source of risk and vulnerability, especially for women (UNEP, 2004). In most developing societies, women are the most vulnerable group with respect to water issues because they are in charge of providing clean and safe water for their households (Buckingham, 2000). In developing countries, millions of women and young girls must walk long distances to fetch water to meet their households’ water needs (UNDP,

2006). This drastically limits women's participation in productive economic activities and decreases girls' rates of school attendance (Coles & Wallace, 2005). Also, previous studies point out that policy constraints and gender inequalities remain common in water-related development projects, resulting in low sustainability of conventional water supplies at local levels (Ademun, 2009; Svahn, 2011). The upshot is that more people living in rural areas in the 21<sup>st</sup> century are deprived of access to clean and safe water than was the case in the 1990s (Sutton, 2008).

### **Domestic rural water supply**

Enhancing access to domestic water supply and improving water resource management and development in rural communities are key components of the Millennium Development Goals (MDGs) (Wright, Lewis, & Lenton, 2008). According to the World Health Organization (WHO, 2003), domestic water is the water used for all domestic purposes, including drinking, cooking and bathing. Water supply that is adequate for these basic uses is fundamental to the maintenance of health and wellbeing (WHO, 2003).

The security of water supply to rural households depends upon the number of water sources and their geographic location, dependability, seasonality, yield and quality (Kahinda, Taigbenu, & Boroto, 2007). Malley, Taeb, Matsumoto, and Takeya (2009) argued that there is a great need to provide people living in rural areas with technologies, materials and skills that enable them to harvest rainwater and exploit underground water sources. This can not only help them to effectively manage water sources but provide sustainable solutions to scarcity of domestic water supply in rural households.

Some studies indicate that improved water supply services in rural communities allow women to engage in productive and empowering activities, adult education and leisure (Panda, 2007). Hence, development projects related to water management can also be regarded as investments in community and socio-economic development. They can empower women and increase their social networking through enabling greater community participation, including in leadership, solidarity building and networking opportunities (Wright et al., 2008).

### **Approaches to rural water supply**

Conventional communal sources and self-supply sources are seen as the major approaches to domestic water supply in rural areas (Ademun, 2009). Conventional communal sources, such as protected springs, collection tanks and wells with hand pumps are justified for improved water quality and use of high-level technology in this respect (R. Carter, Mpalanyi, & Ssebalu, 2005). R. C. Carter (2006) added that powered systems and gravity flow schemes are seen as other macro scheme techniques with regard to rural water supply. However, in most rural communities in developing countries, conventional communal facilities are unsustainable. This is mainly due to their high rate of breakdown, which might be due to poor operation and maintenance, difficulty in operating the pumps, and water demand exceeding the available

supply (Gleitsmann, Kroma, & Steenhuis, 2007).

Self-supply sources require communities or households to have the capacity and ability to invest into supply construction, water treatment and management (Sutton, 2008). In most rural communities, the households in rural areas who have the income, tend to utilize self-supply services available in their communities (R. Carter et al., 2005). However, most people living in rural poor communities are poor and cannot afford self-supply services. Therefore, they try to mobilize their neighbors and friends to improve traditional water supply sources, such as boreholes with hand pumps and shallow wells using local labour and materials (Ademun, 2009).

### **Factors influencing women's participation in water management**

Public participation is a key element of successful water resources management, especially in developing countries (Tennyson 2005, as cited in Svahn, 2011). Swallow, Okono, Achouri, and Tennyson (2005) asserted that engaging communities and all actors in the process of planning and implementation can make water management approaches successful and sustainable in the long term because it gives water users a sense of responsibility and ownership for the water sources. Participation also enables all stakeholders, especially local people, to develop knowledge, awareness and understanding about water development projects (Dungumaro & Madulu, 2003) and increases the public's trust and interest.

As previously noted, women's participation has been identified as a key factor associated with the effectiveness of water management projects (GWA, 2006). Equal participation improves project outcomes and enhances sustainability. For instance, water development projects are more likely to be successful if men and women are regarded as equally active participants as well as decision-makers (Svahn, 2011). Unfortunately, although women globally are considered the main actors in water supply management, they are being ignored in the process of planning, formulating and decision-making and implementing management policies (GWA, 2006). Hamdy, Quagliariello, and Trisorio-Liuzzi (2004) argued that gender inequalities and promoting female participation have not been recognised in the Integrated Water Resource Management approaches; however, these issues must be implemented and enforced in the arena of water management.

According to GWA (2006), when participatory approaches involve all of the stakeholders, including men and women, gender differences and inequalities in water development projects can be recognized. In developing countries, the gender and power imbalances within the household, family relations and the communities with limited abilities and constraints frequently prevent women from participating in water supply projects. When water projects are implemented at local levels, many components must operate under local governance. For example, women can be elected to water management committees, but many are not confident to express their views in a male-dominated society, and in fact their voices are not always heard (GWA, 2006).

Choices of water supply technology are often made by men, while women are the everyday users of the water supply systems and have better understanding of water management (Svahn, 2011). For example, women often know the location of groundwater and where wells should be installed. Thus, if women have equal rights to make decisions about technologies and how to maintain water sources, the result will be more efficient water use (Dejene et.al. 2008 as cited in Svahn, 2011). Taking account of women's knowledge in water resources management is likely to reduce water demand per person, which is particularly important in periods of water scarcity (Svahn, 2011).

Increased female participation in water-related projects with regard to location, management and financing improves their access to water supply in terms of both quality and quantity (Svahn, 2011). Because women are the main water collectors, users and managers of domestic water resources, their involvement in water supply projects improves the capacity to identify water utilization issues (Svahn, 2011). From this perspective, a gender approach has the potential to promote equal participation between men and women, as the challenges and benefits of water-related activities will be equally divided within the household and the community (Hamdy et al., 2004). Conversely, water development and management projects or programs that disregard issues of gender differences between men and women as well as their different opportunities are more likely to be unproductive, inefficient and unsustainable (GWA, 2006).

A large body of literature documents that gender inequality is a significant factor that constructs different opportunities for men and women (Svahn 2011). Gender inequality exists when women have inferior rights to the development of their cultural, social and human aspects (Acheampong, 2008). Women's voices are neglected in decision-making processes relative to men (Were, 2008) and they have different responses to the changes that influence their lives, their actions and the wider society (GWA, 2006).

### *Cultural rules and norms*

A range of cultural norms and behaviours determines the conduct of a specific group of people with respect to the relationship and utilization of water and other natural and socio-economic resources (Minoia, 2007). Such norms and behaviours further produce and reproduce this conduct for the stakeholders who are engaged in the specific water culture. Rules and social norms in the field of water management come to light when new policies and projects are implemented by governments and international agencies (Minoia, 2007). Without a deep empirical study, these rules and norms within water management are not acknowledged and are consequently ignored. According to Minoia (2007), policy and project implementation that takes account of gender issues and women's participation in the field of water management, overcoming the restrictions of traditional rules and norms, is able to achieve effectiveness and sustainability in the long run.

Women's perspectives have often been ignored. This is more common in developing

than developed societies, but women globally experience barriers to equal participation in many forums – economic, social and political (Samwinga-Imasiku, 2008). Minoia (2007) argued that stereotyping of women remains an enormous concern in the water sector. Minoia (2007) outlined the dominant views of gender roles with respect to water:

Farmers are seen to be concerned mainly with irrigation water and women with drinking water, and more significantly, intricate webs of reciprocity with neighbors and patrons shape people's willingness to publicly participate in, or to question dominant norms of water management (Minoia, 2007, p.11).

According to Minoia (2007), women's right to water could be improved, once issues related to inequitable access established in culture and tradition have been recognized and overcome. However, as previously argued, core traditional and cultural norms hinder the participation of women in society and consequently maintain inequity (Minoia, 2007; Svahn 2011). Cultural norms that commonly limit women's participation in wider public decision-making need to be taken into account in water projects and research (Svahn, 2011).

#### *Socio-economic issues and challenges*

The barriers that prevent women from fully participating in the public sphere derive from the gendered division of labour, social structures, the distribution of political, social and economic privileges, and hegemonic social identities and norms (Minoia, 2007). In the broad terms, communities are commonly divided by power relations associated with class, age, religion and gender (GWA, 2006). Therefore, it can be argued that power differentials are the main determinant of who is involved in dialogue, meetings and decisions (Svahn, 2011). Community leaders are commonly men; they hold power and control public affairs in the community and are often invited to participate in preliminary meetings about community-based development projects or programs. Even when allowed to participate, women in some cultures face obstacles to freely speaking their views in front of men. Moreover, in some cultures women believe that workload activities and discrimination issues should not be discussed in the public (Svahn, 2011).

A heavy daily workload means many women find it difficult to be involved in extra activities, especially meetings held at mealtimes or other times when they are typically very busy with childcare and household chores (Ivens, 2008). Furthermore, women in many societies face unwritten norms that oppose their right to participate. Gender biases in education are also common. In many countries women and men experience different access to education; women and girls have relatively limited access than men and boys because of their heavy domestic workloads (Svahn, 2011). As a result, in many countries illiteracy is higher among women and girls.

Women's involvement in community activities is often impeded significantly by economic obstacles. In developing countries, women and girls can spend hours each day

collecting water, which prevents them from attending school and performing other work (GWA, 2006). Thus, the opportunity costs of these water-related activities are considerable. These costs are even greater during drought or other periods of water scarcity (GWA, 2006) as water fetching activities consume even more time. It has been observed that women's socio-economic advancement could be greatly enhanced if they could devote less time to collecting water and more to participating in other productive activities (Gor, 2008), including income-generating work, and local and national economies would benefit accordingly.

As previously outlined, engagement of women in water development projects is an obvious and appropriate means of empowerment, and such projects can even incorporate work that enables women to earn extra income directly. Indirect benefits of improved water access and supply are greater agriculture yield, which can simultaneously improve food security, economic security and health. Improved health enables higher productivity and greater income generation (GWA, 2006).

#### *Lack of decision-making power*

The literature shows that women's participation in water management and community activities will not allow for women's empowerment unless power imbalances between men and women are addressed (Ivens, 2008). In hierarchical and male-dominated societies, power and status imbalances stem from traditional norms and practices (Dejene et al., 2008). Since men dominate, gender issues cannot be altered and addressed without men's approval and participation (Svahn, 2011). Power imbalances prevent women from raising their voices in front of men (their husband or fathers) to participate in making decisions, either in the home or community activities (Svahn 2011). Lack of decision-making power constitutes the major barrier to women's participation outside the home. With respect to water issues, powerful male-dominated groups often control water resources (GWA, 2006).

In summary, cultural rules and norms, socio-economic issues and lack of decision-making power have been identified as significantly hindering women's participation in community activities, especially in water management at household and community levels. They are also key factors examined by the thesis.

## **Water resources policies and issues related to women and water in Vietnam**

### **Water resources policies**

In 1998, a National Law on Water Resources (LWR) was enacted and adopted by Vietnam's National Assembly (GWP, 2011; Long 2001). The Government and concerned ministries implemented regulations based on the LWR (Long, 2001). In this regard, there is a great need for the LWR to adopt two major policy components. First, the government is responsible for ensuring that water is utilized sustainably (Long, 2001). Specifically, under the LWR the government has responsibility for managing, planning, protecting and conserving water use,

setting investment and financial policies for water resources development. The LWR requires the government to develop water resources in rural and remote communities and highly disadvantaged communities. Increasing cooperation among the interested parties is the second major policy component. The national budget cannot cover the use, exploitation, conservation and development of all water resources, thus the participation of local stakeholders is essential (Long, 2001). Active participation by different economic actors, including the private sector, is perceived as the key to the attainment of social and economic development (Long, 2001).

Within the context of increasing industrialization and modernization of the country, guided by the global principles of sustainable development, it is expected that Vietnam will increasingly develop and use water resources, as well as strengthen the mitigation and prevention of severe impacts caused by water (Truc, 2006). To guide this process, on April 14th 2006 the Prime Minister signed decision 81/2006/QD-TTg, promulgating the National Water Resources Strategy towards the Year 2020. According to GWP (2011), the National Water Resources Strategy covers the following policy principles:

- water resources are a key factor for sustainable socio-economic development and for national defense and security;
- water resources belong to the people and are to be managed in a uniform manner by the State;
- management of water resources should be implemented in an integrated and uniform manner on a river basin basis;
- water resources must be developed, exploited and used in a sustainable, economically efficient, integrated and multi-purpose manner; and
- cooperation, sharing benefits, ensuring fairness and appropriateness in the exploitation, use, protection and development of water resources is necessary.

Water supply and sanitation entered international policy discourse for the first time at the 1977 UN World Water Conference in Mar del Plata, Argentina (Reis, 2012). Vietnam adopted the National Rural Clean Water and Sanitation Strategy (NRWSS) in 2000. The main goal of the NRWSS is to provide all rural people with access to sufficient clean water and sanitation and hygienic facilities by 2020, in line with the MDGs (Reis, 2012). In 1999 the Vietnamese government launched a National Target Program (NTP I), the most significant water policy initiative in Vietnam to that point (Smets, 2014). NTP I involved government activity and investment implemented with financial support from donors and NGOs.

An evaluation of the first five years of NTP I revealed both achievements and problems encountered in improving access, reliability, quality and sustainability of water supply and sanitation services to citizens in rural communities (ADB, 2015). In response, the Vietnamese government launched NTP II in 2006, which aimed to identify the needs of water supply and sanitation as well as targets for rural communities for rehabilitation, expansion or development of water-related facilities (ADB, 2015). The NTP II is based on the national sector framework

and the institutional framework, which will be explained in turn.

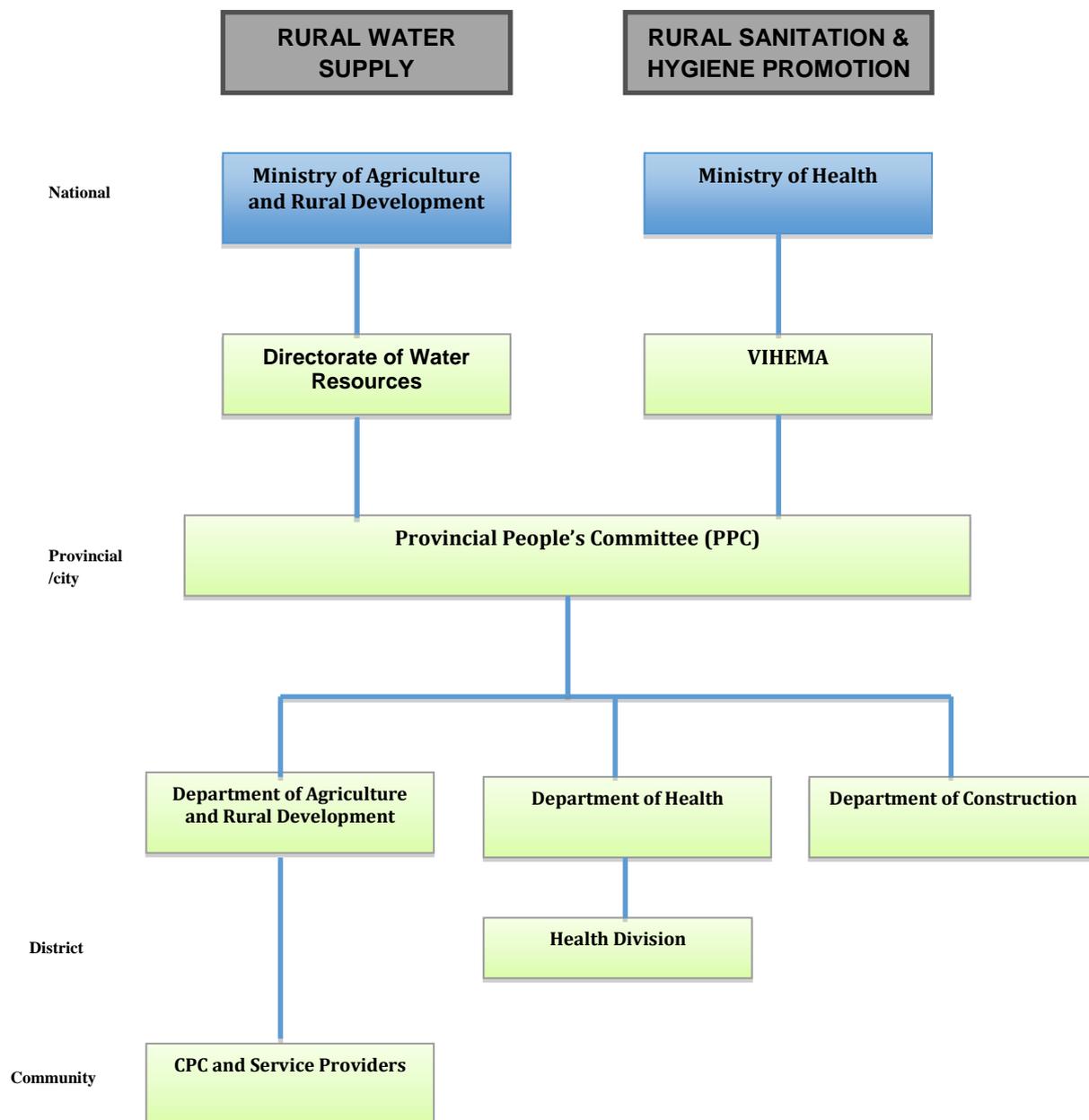
The National sector framework states that poverty reduction is the key goal of the NTP II. It includes the Comprehensive Poverty Reduction and Growth Strategy (CPRGS) and the Five-Year Socio-Economic Development Plan (2006 – 2010) (SEDP) (GOV, 2006). Based on the MDGs, these documents established goals for poverty alleviation for 2005 and 2010. The Government of Vietnam (GOV, 2006) recognises that access to water and sanitation is essential for poverty reduction. Thus, the CPRGS and the SEDP indicate that the objectives of poverty reduction are directly and indirectly related to water supply services, including adequate clean water and sanitation facilities. The NRWSS states: “Safe water and environmental sanitation are basic needs of people’s daily life and they have become urgent requirements for protection and improvement of people’s health and living conditions, as well as for the cause of national industrialisation and modernisation” (MARD & MOC, 2000, p. 1).

Good governance and gender are cross-cutting issues within Vietnam’s national sector framework. Vietnam is a signatory to five of the six major international treaties on human rights (GOV, 2006). However, there is growing consensus that Vietnam must improve the practical implementation of legislation and government policies, especially in regard to raising awareness among government officials and the public of Vietnam’s domestic and international obligations in relation to human rights (GOV, 2006). There is a need to incorporate international commitments into domestic legislation. Furthermore, implementation of democracy at local levels has been promoted in the Regulations of Grassroots Democracy since 1998 (subsequently updated in 2003) (GOV, 2006). The Regulations have an emphasis on public participation, including the right to be involved in local decision-making processes and the right to supervise planning and budget in all expenditures at the local level.

Gender mainstreaming is Vietnamese government policy, thus the NTP II recognises that gender equality plays a central role in the field of water and sanitation (GOV, 2006). Under NTP II, the participation of women in decision-making is supported by agencies at national and local levels. Vietnamese government policy is to encourage women to participate in water user associations and water user groups to improve gender balance (Nguyen, 2012).

Turning to the institutional framework (Figure 1), the Ministry of Agriculture and Rural Development (MARD) is the lead agency for the RWSS NTP II and is in charge of coordinating with relevant ministries (Smets, 2014). The national standing office with the Directorate is responsible for the overall coordination of NTP II, while the National Centre for Rural Clean Water and Environmental Sanitation performs data collection and monitoring and water quality monitoring. Under the NTP II, the Ministry of Health is the lead agency for promoting household hygiene and sanitation via the Health Environment Management Agency (VIHEMA). At the provincial level, the Provincial People’s Committee (PPC) oversees the implementation processes and coordinates with the Department of Agriculture and Rural Development, the Department of Health and the Department of Construction. At the local level, the Vietnam Women’s Union (VWU) has responsibility for mobilization activities and engages

and coordinates the community’s participation, including in finance, construction and management of facilities. Also, the Vietnam Bank for Social Policies is a vital actor, providing subsidized loans for sanitation projects in rural communities.



**Figure 1.** Water and sanitation service provision in Vietnam: a simplified institutional overview (adapted by Smets, 2014)

### Vietnamese women and water: issues and challenges

In this section, the findings of previous research into gender-related aspects of the water supply services sector, including institutional, project, program and the community dimensions, are presented and discussed.

### **The impacts of a water supply project on Vietnamese women, 1992**

Hitchcox (1992) evaluated the impact of an Oxfam-funded drainage project on the Thanh Lang commune of the northern Vietnam paying special attention to the situation of Vietnamese women. Hitchcox commented on how infrastructure, including a pumping station, was introduced and how it influenced the lives of impoverished women living in the community.

Hitchcox (1992) observed that the division of labour within many rural households in the Thanh Lang community was very clear. Women were mainly responsible for agricultural work, including transplanting, weeding, and harvesting while men were in charge of work that required upper-body strength, including ploughing, transporting manure, and assisting with the harvesting. Women also carried responsibility for household tasks and childcare. Hitchcox noted that this was a strong tradition in the commune, and later evidence shows that it continues to influence attitudes to development.

Once the pumps began operating, the lives of women improved greatly. The drainage scheme reduced flooding damage, enabling workers to plant two rice crops a year instead of one and a third crop of vegetables such as cassava and sweet potato. Although this increased productivity was welcome, it was clear that women's workloads had increased since the pumps became operational. Hitchcox indicated that increased workloads were a barrier to women attending VWU meetings at the village level. Overall, it was found that though the project was successful in involving women in the water sector, it did not address the core issues of gender inequality.

### **A study of VWU involvement in the provision of water supply and sanitation in Red River Basin, 1996**

The project reviewed that the gender strategy was the key element with the aim of involving the VWU in decision-making positions through the Public Environmental Education Program. It also aimed to improve access to safe water, drainage and sanitation systems, as well as build the capacity and reform existing sector institutions.

Derbyshire (2005) found that women in Red River Basin have not participated in decision-making and management in water supply and sanitation projects. VWU consultants played advisory and operational roles in designing, planning and implementing water services projects in the first year only. Women worked as community trainers and educators, and played an active role at local levels, but did not have leading roles in the project. That women were recruited for these roles shows that positive discrimination was occurring in the project.

Derbyshire (2005) noted that the inclusion of women in water-related projects can benefit households headed by women in terms of saving time spent in water collection and improved quality and quantity of water supply. Nevertheless, women were not part of the project

monitoring or the impact evaluation system. Therefore, women were not empowered in the way envisaged by the project design.

### **Women's participation in the second Red River Basin Sector Project, 2001**

In 2001, Derbyshire (2005) investigated a project in the Vietnam Red River Basin (the second Red River Basin Sector Project) to determine how improvements in water infrastructure were contributing to poverty reduction in the poorer provinces of the basin. The project was initiated on the basis that the burden of poverty was disproportionately borne by women, and that women were the majority of farmers in the Red River delta region. In some rural areas, women and girls had to spend a great deal of time walking long distances to fetch water, and poor-quality domestic or irrigation water had disproportionately large impacts on women. In this project, the Gender Action Plan was the main mechanism that identified how women's roles were recognized in water resources management, health and hygienic conditions, and how women participated in the planning, implementing and monitoring processes in the project.

Derbyshire (2005) found that the project had failed to implement the Gender Action Plan and had not adopted a GAD policy. The project had focused on improvements to physical infrastructure rather than on gender-sensitive participation. Derbyshire reported that the executing agency staff were confused about how Integrated Water Resources Management, gender-responsive design and community participation should be implemented, and how to translate the Gender Action Plan into practice. The Asian Development Bank's (ADB) gender consultant was in charge of providing domestic consultancy assistance, but this seemed to be an advisory rather than an operational capacity. More importantly, it was found that the project did not provide equal participation to all women across the socio-economic class categories. For instance, women with no positions at the local governmental office did not have the chance to speak in community meetings, which were mainly organized by the local VWU. Also, the staff at the district level had responsibility for implementing community participatory approaches for the program. However, the staff felt that the Gender Action Plan did not provide practical guidelines to assist in the implementation of community participation. Furthermore, there was diversity across the project area, while gender-related actions might be adequate in one area in the community, but it would not necessarily be adequate in another area.

It is important to note that there was a need for the gender consultants to revise these issues in collaboration with the local staff team. This example demonstrates that without practical support, projects may fail to maximize the participation of women and benefits in the water services sector, and participatory poverty reduction activities will be carried out without proper attention to gender-related issues.

### **Methods and Data Sources**

The research aims to assess the effectiveness and implications of domestic water supply programs on women in rural communities. 'What' and 'how' questions were used to

understand contemporary social debates and develop relevant hypothesis for further inquiry on women and water (Yin, 2003). A case study of two villages in Vinh Phuoc commune was selected in order to obtain an understanding about the social phenomenon from different stakeholders' perspectives. Therefore, using the same methods for data collection and analysis in both villages in Vinh Phuoc commune was required to show how water issues and gender are related; as a result, the data collected illustrate the effectiveness of domestic water policies that has been implementing in rural communities.

The ontological dimension of this study is constructivist (Bryman, 2004). The constructive approach emphasizes individuals' importance by interpreting what constitutes a fact (Hayles, 1995). This constructivist approach determines the possibility of enhancing women's empowerment as social actors through physical participation of community members, including disadvantaged groups and policymakers in the arena of water management (Sprague, 1999 as cited in Ademun, 2009). Gender is a basic principle, which shapes the specific conditions of women and men in society (Creswell, 2013). Therefore, these assumptions need to be scrutinized by empirical studies in order to examine what constitutes the effectiveness of DWSS policies and challenges of women's participation in water management activities (Bryman, 2004).

The epistemological feature of this study is interpretive ideology (Bryman, 2004). Its main purpose is to obtain a common understanding of societal debates and action (Creswell, 2013). Knowledge can help us to understand changes in the world (Bryman, 2004). However, these debates should be identified by collecting the situated data, which are local and grounded in specific social, physical, historical and cultural context (Llewelyn, 2007). As a result, generalizations are made when the previously developed theory is used and analyzed as a template to compare the empirical results of the research (Yin, 2003).

The qualitative research method is the major mechanism to understand issues related to women and water, based on the main criteria for evaluating for DWSS policies. Qualitative information is collected through FGDs in order to measure how women can get involved in decision-making processes and implement their roles as the main water users and managers in rural water supply programs (Creswell, 2013). Also, this particular research method measures women's actual involvement, which entails their capacity to implement the responsibilities and roles assigned to them throughout the domestic water supply programs without male intervention (Creswell, 2013).

## **Study Area**

The two villages in Vinh Phuoc commune were selected with the assistance of the local staff from People's Committee of Vinh Phuoc and the communal water and environment officials. The researcher also read through annual reports from the provincial and local water

offices to obtain an overview of socio-economic development information of these communities. The following reasons were identified for the selection of the two villages, such as Vinh Thanh and Vinh Loi (Figure 2); i) The Vinh Thanh village had a water supply station which is funded by the UNICEF; ii) The Vinh Loi village mainly depends on groundwater from the hand pumps for domestic use, iii) The private and communal initiative were identified in the construction and management of these water sources, iv) Women play a major role in water collection, use and management at household and community levels.

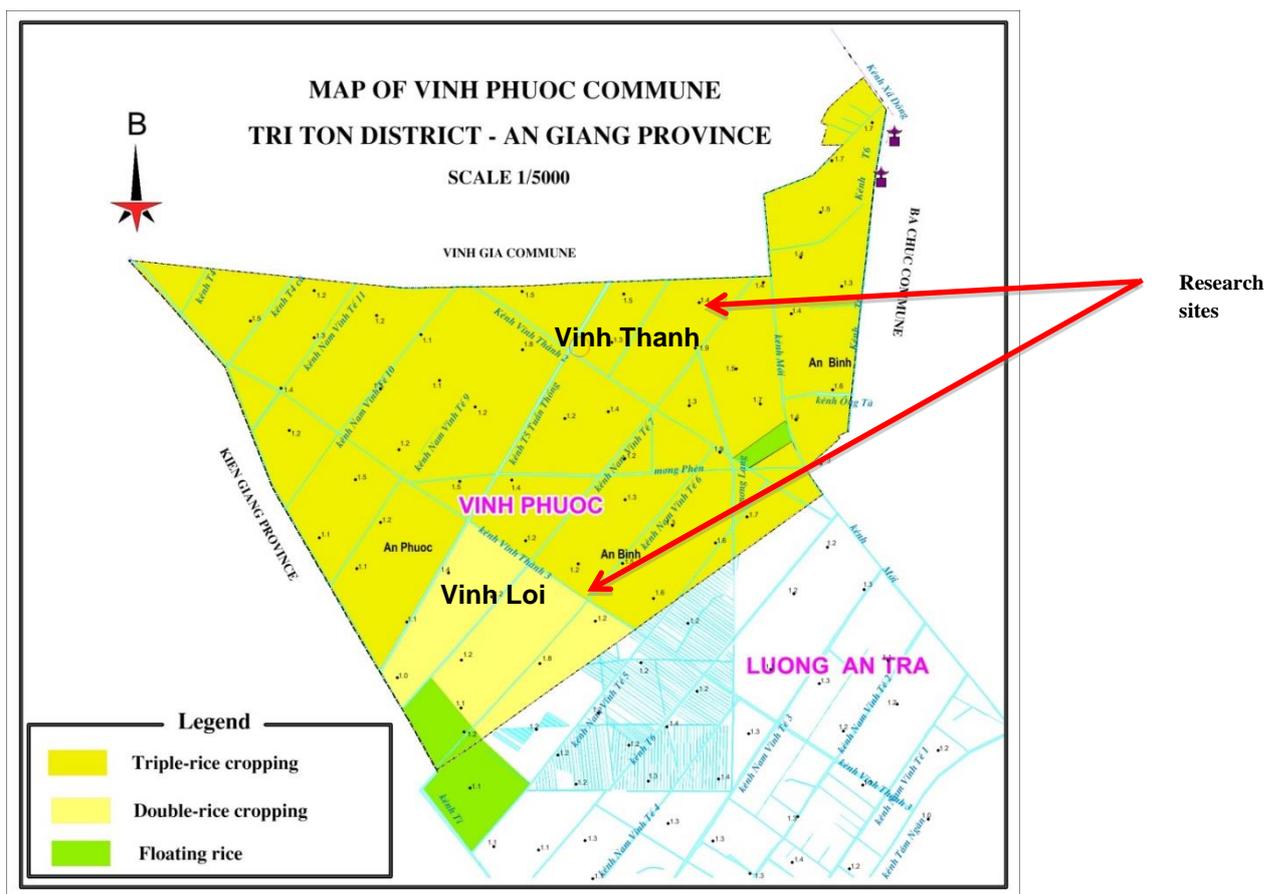


Figure 2: Location of study sites

### Data collection

**Secondary data.** Secondary data is very important for understanding the background of research sites, domestic water supply services, socio-economic conditions as well as issues related to women and water. The secondary data used in this study was obtained from different sources: annual local government reports on socio-economic development, recorded information about the implementation of DWSS programs and their impacts on water users and human health, and unpublished papers and International Journal of Water Resources Development, Journal of Gender and Development. I visited provincial and local institutions

to obtain the local government reports on the issues of gender and water supply programs. I went through the abstract, methodology and findings of each paper to determine whether the article follows the aims, research questions as well as the relevant paradigms and research methods.

## **Collection of empirical material**

### *In-depth semi-structure interviews*

Semi-structure interviews were carried out with the participation of government officials, including Department of Natural Resources and Environment, Centre for Rural Water Supply and Sanitation and People's Committee of Vinh Phuoc Commune regarding gender and the water services sector. The research used open-ended questions, which were designed for the participants as follows:

- The interaction between relevant stakeholders in the water supply services (How often and how they interact with the community and other stakeholders?)
- Who has the responsibility for delivering policies on the water services sector; and who report and receive the feedback from results of water-related projects.
- How effective the implementation of DWSS policies have been achieved?
- Whether policies or guidelines with regard to gender and the water sector are at provincial and local levels?

### *Focus group discussions (FGDs)*

Women in the two communities were selected to be involved in the FGDs. The groups varied in size from 8 – 10 people. The two focus groups were carried out in the Vinh Phuoc commune with women – the water users and managers in the domestic water supply programs. FGDs were set based on a list of designed open-ended questions. The participants are allowed to add topics for discussion if they wanted to. Participatory Rural Appraisal (PRA) techniques were used to allow women to share their knowledge and experience involved in the DWSSs. The four tools were used: timeline, seasonal calendar, Venn diagram, and SWOT analysis. Such techniques give women the opportunities to express their voice about the actual implementation of DWSS programs and challenges of women's participation in water management activities.

## **Results**

### **Household water use and water collection**

This section provides an overview of the background of FGD participants (all women living in either Vinh Thanh or Vinh Loi). Various characteristics – including level of education, occupation, relations in the households, the gender of the main income earner who controls expenditure, and responsibility for water collection – are identified as factors that determine

household water uses. This information provides a better understanding of how women can be involved in DWSSs, including provision, planning, construction, management, operation and maintenance. A deeper understanding of such issues can help policymakers to recognise how to get women involved in DWSSs as well as enhance women's empowerment in the water-related program as a whole. As previously mentioned in the literature, women's participation in water management greatly influences the success of water-related projects. Hence, women's participation and empowerment are essential elements that determine the effectiveness of DWSS policies. Table 1 provides a brief description of the participants' backgrounds in both villages.

Table 1.

*Description of the participants' backgrounds*

Participants' characteristics (N = 20)		Vinh Thanh Village (%)	Vinh Loi Village (%)
Educational attainment	No formal education		
	Primary	80	60
	Secondary	20	30
	High School		10
	Tertiary/University		
Occupation	Housewife	60	40
	Farmer (rice and upland crops cultivation)	20	50
	Hired employment	20	10
Main income earners	Husband	60	80
	Wife	40	20
	Both		
Expenditure control	Husband		
	Wife	80	70
	Both	20	30
Water collectors and distributors	Husband		10
	Wife	100	90
	Both		

**Note:** the data was collected in FGDs (10 persons/group)

According to Svahn (2011), women's unequal access to education is a major barrier to their participation in water management. Table 1 shows that 80% of FGD participants from Vinh Thanh had completed primary education, and 60% of women from Vinh Loi. Although women in both villages are the main users, collectors, distributors and managers of water in households, low levels of education are likely to reduce women's opportunities to become active participants in water management for their communities. The FGD findings show that due to low levels of education, women, especially in poor households have less opportunity to engage in local meetings, and this greatly hinders women's participation in community activities.

When it comes to discuss about the main income earner, there is the difference of household relations between two women groups of the two research sites. It was observed that 80% of men in Vinh Loi were identified as the head of the households, and they play a central part in the decision-making process regarding household expenditures. In contrast, nearly half of the participating women from Vinh Thanh village were the main breadwinners in their households. As shown in Table 1, almost all participants had completed primary school in both villages, the husband is the primary income earner in most households; but the women seem to decide on spending and they also collect and distribute the water.

## **Water use in the household**

The FGDs showed that people in Vinh Loi preferred to collect water for cooking, washing and bathing from the hand pumps near their houses, while in Vinh Thanh bathing and washing clothes are sometimes done in the canal. Generally speaking, the canal water remains the primary water source for people in both villages. Bottled water was identified as the main water source for drinking, while several households in the Vinh Thanh use piped water for cooking, washing and bathing. In the Vinh Loi, some better-off families can afford bottled water for drinking, while many poor households drink rainwater, and some drink water from hand pumps (after filtering it for seven days).

Water quality can be improved by treatment; this helps to improve human health by avoiding water-borne diseases. However, the FGD findings show that not all households in the Vinh Phuoc community treat their water before use. The main reason is that the water treatment methods currently available in the community are limited and expensive. Rural households in both villages often boil the water for drinking (other than those with access to hand pumps because they believe that these supply clean water).

Chlorination was once widely used to treat water, especially by poor people, but this method is no longer used; most households now buy bottled water instead. No FGD participants reported using solar disinfection because they believe that it takes several hours for water to settle and become clean and safe for household consumption.

## **Responsibility for collecting water for domestic use**

The FGDs showed that women in the Vinh Phuoc community have the primary responsibility for collecting water for household use. Most women in Vinh Thanh collect water by the water taps from piped water systems and store it in domestic water tanks for later use. The participants stated that it was an easy task for them to meet water demands in the household. Women in Vinh Loi collected water from hand pumps for cooking, washing and cleaning, also storing it in private water tanks. The participants stated that men took over water collection tasks when their wives were sick or absent from the house.

As women have the main responsibility for water collection, they are first to detect water-related problems, such as the water source declining in volume, reduced water quality due to pollution or water taps breaking down. Most women in Vinh Loi said that they identify problems with the hand pumps, and then their husbands help to fix them.

## **Policy effectiveness and its impacts on women and water**

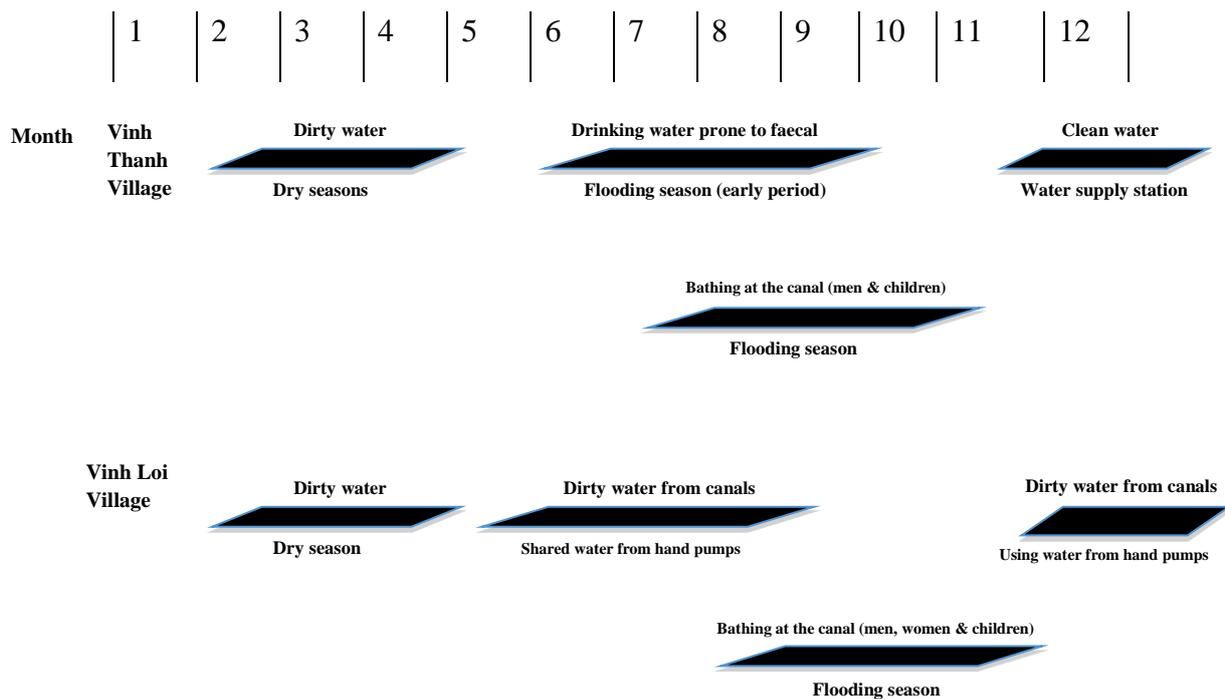
The main sources of water supply in the Vinh Phuoc commune are communal. According to local officials, the communal water supply station provides water to 442 households living in Vinh Thanh, Vinh Loi and Vinh Thuan villages in the Vinh Phuoc

commune. An estimated 90% of households in Vinh Thanh collect water from the communal water supply station while in the Vinh Loi, 70% of the households depend on traditional water sources such as hand pumps and canals. Such water sources are located close to people's homes, but the water is sometimes of poor quality and possibly unsafe.

Vinh Thanh's water supply station was built in 2006 with funds from UNICEF. In Vinh Loi, some households accessed to water from hand pumps under the support of the Research Centre for Rural Development (RCRD) in the year of 2013 (results of the Timeline – a PRA tool). Nonetheless, participants from both villages said that they were unhappy with the quality of water from the water supply services. Some participants mentioned that there is a water testing team that is responsible for the evaluation of water quality annually, but local people had not heard from this team. Similarly, little or no assessment of the water quality from hand pumps occurs in Vinh Loi. Reliability of supply, cost of water, water accessibility, quality and quantity are significant elements that help to determine how policy guidelines in relation to women and water under the National Target Program for Rural Water Supply and Sanitation (NTP) at the national level are being practised at the local level, and how these policies have impacted on the lives of people, especially women in the Vinh Phuoc community. These criteria are discussed in the following sections.

### **Seasonal unreliability of water sources**

The FGD findings show that domestic water supply in Vinh Phuoc commune is impacted by seasonal variations, particularly in the dry seasons. In Vinh Loi, from January to March, traditional water supply sources like canals dry up, water tables fall, so hand pumps produce less and poorer-quality water, and rainwater harvesting is not productive. In Vinh Thanh, where people depend mainly on the communal water supply station. FGD participants said that though water supply station can store plenty of water for the dry season, the quality of the water was poor. Seasonal calendar – a PRA tool was used to collect the information on the reliability of water supply sources in the selected communities. Figure 3 identifies all water-related issues that households in both villages are facing over a 12-month period.



**Figure 3: Seasonal unreliability of the water sources in the two villages**

As shown in Figure 3, seasonal unreliability powerfully affects the use of water in households. In particular, most households in both villages suffered from dirty water sources in the early flooding season. Women in Vinh Thanh stated that though they had access to a treated water supply from the water supply station the water is not suitable for drinking. For instance, the participants said that they often get diarrhoea after drinking water from water supply stations, especially in the first two months of the flooding season, even when the water is boiled first. In Vinh Loi, the canal water is dirty in this season and this affects water from hand pumps used for domestic purposes. In this period, water sources from hand pumps are shared among many households, and this also reflects the value of the communal water resources.

Women are generally identified as the group most affected by seasonal unreliability of water sources, because they carry the main responsibility for water collection, use and management in the home. Therefore, seeking alternative ways to meet the water needs of households puts a heavy burden on women.

### **The cost of water**

Charges for water differ in the two villages. In Vinh Thanh, every household is expected to contribute a monthly fee for water supply. However, as previously noted, many households in Vinh Loi use hand pumps, so no monthly contributions are necessary. According to local officials, rural households pay for water under decision 23/2015/QD-UBND of the Provincial

People's Committee. The first 10 m<sup>3</sup> of water are priced at 4.500 VND per m<sup>3</sup> this price applies for households in both urban and rural areas of An Giang province. The price rises to 11.000 VND per m<sup>3</sup> for use of 10 m<sup>3</sup> of water or more. However, poor people pay only 3.600 VND per m<sup>3</sup> for the first 10 m<sup>3</sup>, and 4.500 VND per m<sup>3</sup> for use between 10 and 20 m<sup>3</sup>. Although poor households pay less than rural households in general for water use, some of them cannot afford access to piped water.

The FGD findings show that women in Vinh Thanh experience great financial constraints for water use. This forces them to collect water from traditional water sources, such as canals. One woman in the Vinh Thanh's FGD said:

*Due to limited financial assets, households often use water from canals for bathing and washing while they use piped water for cooking and drinking.*

Thus, DWSS programs that provided piped water will be unsuccessful if women cannot afford the water use and return to their old sources (canals).

### **Water accessibility**

A SWOT analysis of water supply programs was carried out in the two selected villages (see Table 2). The researcher found that some responses from the two FGDs were similar. In particular, participants identified similar strengths, opportunities and threats; weaknesses varied with regard to the implementation of DWSS programs. Hence, this information is presented in an integrated SWOT analysis, which presents the finding of how local women take advantages of strengths and opportunities regarding water use and management to mitigate its weaknesses and threats.

Table 2.

*SWOT analysis of water supply programs in Vinh Phuoc*

<p><b>STRENGTHS (S)</b></p> <ul style="list-style-type: none"> <li>- Easy access to water; reduced time and effort to collect water.</li> <li>- More time to engage in other productive activities.</li> <li>- Water from water supply station and hand pumps is better quality than water from canals.</li> </ul>	<p><b>WEAKNESSES (W)</b></p> <ul style="list-style-type: none"> <li>- Water from the new water sources is sometimes turbid and smells bad.</li> <li>- Water-borne diseases occur when there is no water treatment.</li> <li>- The water supply mainly depends on the power station (Vinh Thanh).</li> <li>- Seeking alternative sources; for instance, canals to collect water in the dry season (Vinh Loi).</li> </ul>
<p><b>OPPORTUNITIES (O)</b></p> <ul style="list-style-type: none"> <li>- Cooperation between the local authority and donors in community-based development projects, such as floating rice conservation and water-related projects will bring benefits to local people's lives.</li> </ul>	<p><b>THREATS (T)</b></p> <ul style="list-style-type: none"> <li>- More droughts will result in the water scarcity.</li> <li>- Being scary the flooding with very low levels in the future.</li> <li>- It is necessary to prepare the tanks to harvest rainwater in order to store and use in cases of severe droughts.</li> </ul>

As shown in Table 2, the distance that must be travelled to collect water is no longer a problem for women in either village. Women have more time to participate in productive activities, such as rice seeding and transplanting, and small trade – activities that boost their family income. However, the water supply station represents a new source of instability in the water supply to households in Vinh Thanh. The main reason is that this water supply source is heavily reliant on the power supply station, thus when power outages occur consumers cannot access water. One woman from Vinh Thanh said:

*The water supply is reliant on the operation of the power supply system, thus if power outages occur, especially on the weekend and in the dry season, this means households cannot have access to water sources.*

As already noted, many people in Vinh Loi collect water from hand pumps, which are very close to their houses. However, during the dry season the women in this village had to seek alternative water sources, mainly canals.

Women in the FGDs were concerned that future water scarcity would once again burden them with the responsibility to fetch water. One woman in Vinh Loi said:

*The weather today is hotter than in the past few years; people here have experienced prolonged hot days along with flooding with very low levels and the rainfall was less than usual, and this led to dry canals up in the last year.*

People in the Vinh Phuoc community are worried about climate-change-induced water shortages that will restrict both agricultural production and daily activities, forcing them to use traditional sources, such as canals and rainwater, to meet their water needs.

The SWOT analysis indicates that women in the two selected villages experience challenges of water accessibility differently. In Vinh Thanh, the water supply station is unreliable because it depends on the power supply station; this compels women to fetch water from canals or collect rainwater for domestic use. In the Vinh Loi, women have to collect water from canals during the dry season as the water supply from hand pumps falls. Hence, DWSS programs in these villages have failed to give women (water users) stable access to water since these challenges force them to seek alternative water sources to meet their household water demands.

### **Water quality**

It is a common observation that due to different water supply services among the two research sites, women in the Vinh Phuoc have different ways to contribute to water management activities, such as recognising water quality and therefore making decision about how best to utilise it or identifying other ways to collect water. In the Vinh Thanh, the water is supplied by the communal water supply station, and sometimes the construction itself failed to meet the desired qualities, which are culturally perceived by the local community. For instance, in the Vinh Thanh village in the Tri Ton district in An Giang Province, the water supply station supplies water that is not regarded as ‘good quality’ or ‘safe and hygienic’ water because it is coloured. One participant said:

*The water from the water supply station is sometimes turbid and even contains alum, and the water must be boiled for drinking purposes.*

Such water is seen as unfit for drinking. Instead, the water from water supply stations is utilized for cooking, washing and bathing, while for drinking, women (except those from poor households) buy bottled water.

Similarly, the water supply from hand pumps is the main water source for households in Vinh Loi. However, such water also has limitations. Most participants agreed with this statement from a participant from Vinh Loi village:

*The taste of the water from the hand pumps is sweet which is very necessary for drinking water. However, women realize that the initial quality of the water is muddy, especially in the morning, thus they have to pump out the first 10 – 20 litres before collecting water.*

Furthermore, women find it difficult that they will have to look for alternatives serving for the household water needs in the dry season when the water from hand pumps gets low and contains lots of alum. For this reason, rainwater harvesting is the main remedy for several households to meet the water demands; some can afford to buy bottled water in this instance.

Therefore, this reflects that water supply from hand pumps failed to obtain the goal of sustainability in the water management programs, specifically evidenced from in the shortage of water in the scenario of climate variability.

The FGD findings show that women in both villages listed health problems associated with poor water quality in their villages, notably water-borne diseases such as dysentery and diarrhoea. These illnesses put a heavy burden on women, who are overwhelmingly the caregivers in their families. Poor water quality increases women's workloads, because water needs to be boiled before drinking, and this is especially hard on people who cannot afford bottled water. However, boiling has its own cost: it takes a lot of time and requires lots of firewood, which must also be collected. Thus, DWSS programs have once again failed to achieve their basic goal of providing clean and safe water to households in the Vinh Phuoc commune. Poor water quality poses health risks and increases women's workloads due to the time spent on collecting firewood and water and boiling water.

### **Water quantity**

Households in both villages utilize water for drinking, cooking, bathing, washing clothes and other activities including watering plants and animals. The FGD data indicate that the water consumption of Vinh Loi households averages 100 litres/day, while the average water use per household in Vinh Thanh is an estimated 80 litres/day. Water needs varied depending on household size and priorities. To explain: differences in geography and water supply services drive differences in water use between the villages. Some households in Vinh Thanh live along the canal, and sometimes their water supply source is water piped from it. Most of the participants in this area said that they had to pay for water from the communal water supply station. To save money, they use piped canal water for washing, and personal hygiene. In Vinh Loi, most households rely on water from hand pumps, and a smaller proportion uses water from the canal. Households relying on the hand pumps do not pay for water use, because they are exploiting a natural underground water resource. This explains the differences in the estimated average water use per household in the two villages.

The FGD findings indicate that women in both villages experience water shortages, especially in the dry season and in times when the water from water supply sources is dirty and unsafe. To obtain sufficient water for domestic use, women often collect water from canals and harvest rainwater. However, such sources are unsafe; such as unhygienic post-harvest practices greatly affect the quality of rainwater (Wilbers, Sebesvari, Rechenburg, & Renaud, 2013). Thus, DWSS programs have not achieved success on the criterion of water quantity; lack of water continues to burden women with the work of fetching water from alternative sources.

## **A synthesis of DWSS policy practices and its effectiveness**

A synthesis of DWSS policy practice and the related challenges women experience in participating in water management activities is provided basing on FGD findings. It reflects the state of implementation of DWSS policies with the criteria, including reliability, cost and affordability, accessibility, water quality and quantity with respect to women and water in the Vinh Phuoc community.

### **Reliability**

The finding shows that DWSS programs have delivered water supply services funded by the UNICEF and RCRD, specifically piped water supply in Vinh Thanh and hand pumps in Vinh Loi. However, women in both villages are facing seasonal unreliability of water supply sources. In Vinh Thanh, the quality of water from the water supply station is poor for drinking; while hand pumps in Vinh Loi produce less and poorer-quality water, especially in the dry seasons. Households in both villages suffered from dirty water sources in the early flooding season. Women are highly affected by unreliable water sources because they are responsible for water collection, use and management in the home.

### **Cost and affordability**

As mentioned above, rural households must pay money for water uses; and the cost of water is applied under decision 23/2015/QD-UBND of the Provincial People's Committee. The research found that payment for water differs in the two villages. In Vinh Thanh, women's ability to pay for piped water use is limited. Some households get water from canals for domestic use. In Vinh Loi, no monthly contributions are necessary because women use the natural underground water from hand pumps (charges only need for hand pump construction).

The findings indicate that due to high cost of water use, households in Vinh Phuoc cannot afford access to piped water, and to build hand pumps. This forces woman returns to use traditional water sources (canals and rainwater).

### **Accessibility**

Households in the communities find it easy to get access to water sources, such as water taps installed in the home (Vinh Thanh), and hand pumps located near the house (Vinh Loi). Women in both villages experience different challenges of access to water. In Vinh Thanh, the water supply station represents a source of instability in the water supply to households. In Vinh Loi, women have to collect water from canals during the dry seasons as the water from hand pumps falls. The findings show that such challenges burden women with the responsibility to seek alternative sources (canals and rainwater) to meet their domestic water needs.

### **Quality**

The finding presents that water quality assessment processes differs in the two villages. In Vinh Thanh, a team of water quality assessment established, and water quality is annually monitored. In Vinh Loi, RCRD only funded the construction of hand pumps for some households, and no water quality assessments is made.

Women in the two selected villages listed health problems associated with poor water quality, considerably water-borne diseases such as dysentery and diarrhoea. In Vinh Thanh, the water from the water supply station is sometimes turbid and even contains alum. The water must be boiled, and households have to buy the bottled water for drinking (except from poor households). In Vinh Loi, the water from hand pumps contains lots of alum, especially when it gets low. Also, the initial quality of the water is muddy, thus women have to pump out the first 10 – 20 litres before collecting water.

The findings show that poor water quality increases women's workloads as the time spent on boiling water for drinking, and the incidence of water-borne diseases as women carry the main responsibility of water collection and use in their families.

### **Quantity**

The average water use per household in the two villages is different. Households in Vinh Thanh mainly use water from the water supply station, while in Vinh Loi those who mainly depend on water from hand pumps.

The average water use per household differs in the two villages. The average water use per household in Vinh Thanh is an estimated 80 litres/day, while the water consumption of Vinh Loi's households averages 100 litres/day. However, women in both villages greatly experience lack of water, especially in the dry season and in times when the water from water supply sources is dirty and unfit for consumption. The FGD data indicates that water shortage, especially in the dry season puts additional burden on women with responsibility to fetch water from alternative sources.

Generally, DWSS programs in Vinh Phuoc commune have been unsuccessful. The findings indicate that the major criteria, including reliability, cost and affordability, accessibility, water quality and quantity have not been achieved in the implementation of DWSS programs in Vinh Phuoc commune. The water supply station and hand pumps represent new water supply sources, but the water needs of Vinh Phuoc households are not met due to the seasonal unreliability of these water sources, restricted financial capacity to access piped water, poor water quality and water shortage. Such challenges greatly influence women's lives and participation in water management activities, especially through incidence of water-borne diseases and increased water-related workloads.

### **Factors that influence women's participation in water management**

## **Traditional norms and practices**

The results show that traditional norms and practice in the Vietnamese society and particularly in the Vinh Phuoc community constitute a major barrier for women to be involved in the public sphere and specifically in water management. In this respect, socially constructed roles and male-dominated society are identified as the major traditional norms and practices that impede women's opportunities to participate in the arena of water management.

Socially constructed roles are the major obstacle affecting women's involvement in water management in Vietnam. Traditional roles refer to how men, women and children traditionally divide the daily work of life (Svahn, 2011). Through many generations these roles have become norms in Vietnamese society. Because traditional roles have been norms for women over centuries, and even women think that this is the way things should be organized. Most FGD participants agreed with the following statement by one woman:

*Labour division between women and men in the family is reasonable; for instance, men must go out to work, women have to fulfil household chores. Thus, water collection and allocation are women's tasks in the home, and it is fair and it is difficult to change this now.*

It has been argued that traditionally constructed roles establish social behaviour within the culture of water management (Minoia, 2007) that influences its level of success. To illustrate this, practices among international institutions and donors sometimes disregard the traditional norms within a cultural context (Svahn, 2011). Therefore, complex cultural barriers are seen as the result of social behaviours and traditional roles that restrict women's involvement and these are often ignored when developing the practices of water management. From this perspective, traditional norms and practices may reinforce the complex gender roles that restrict women's participation in the community as well as improvements of their situation as a whole.

Another significant barrier influencing women's involvement in water management is the dominant position of men in Vietnamese society. FGD participants stated that women's exclusion from water management is commonly due to their husbands' lack of support for their wives' engagement in such activities. Specifically, some of the women in the FGDs agreed that:

*Men have the voice in the family, and they do not like women who often go out of the house and take part in social activities because that is not their role.*

This indicates that women in these rural communities find it difficult to gain support from male family members. However, the FGD participants also stated that while women are often excluded from activities related to water management at the community level, they also restrict their own involvement; one said:

*It is not only men hindering women to involve in such activities and positions, women hinder themselves because they think that it is the role of men.*

Women often experience limited and different opportunities and are excluded from decision-making processes, thus their viewpoints on various issues are different from men (Stamp, 1989). This can result in conflicts between men and women with regard to resource management and development processes. These conflicts may increase disparities between men and women and threaten the power balance in gender relations (Abbas & Yigit, 2016; Stamp, 1989). Women can even face domestic violence related to water consumption, as one participant implied:

*Women are often blamed and shouted at as their husbands find that there is not enough water for bathing when they get home after work.*

Therefore, men in this case find that women have failed to fulfil their household tasks that at times may lead to conflicts in the family, and sometimes even violence. This indicates that women's exclusion from decision making processes at both household and community levels are mainly rooted in social and cultural barriers, in which the gender roles have been conditioned over decades, and where the male is superior to the female. Power imbalances between men and women in the household and community participation activities, especially in water management are clearly discussed in the next section.

## **Power imbalances**

It has been argued that once power imbalances in the household and the public spheres are altered, approaches designed to increase female participation will become more effective (Ivens, 2008; Regassa, 2017). Power imbalances exist in terms of the ownership of assets and resources in families and communities. As already mentioned, male-dominated hierarchical structures remain common in Vietnamese society, rooted in traditional norms and practices. Due to the male-dominated nature of society, women in many parts of the country lack the power to make decisions unless their husband or father gives permission. As one FGD participant stated:

*Traditionally, the head of the house is the men, thus women must obtain the consent of men to make decisions about any activities, especially financial investment plans or business matters.*

The FGD findings also show that lack of decision-making power prevents women from participating in water management. Although women are the main manager of water in the households, they are still afraid of speaking about water-related activities in the presence of men due to the restrictive culture. Participants expressed this in statements such as:

*When men have said something, women must be silent because they do not want to cause the conflicts in the family.*

Men in these communities own all the resources because they are the decision-makers and the head of the family. Women are not expected to oppose or argue with men and are not allowed to speak in public due to the culture. Therefore, women find it difficult to adopt

leadership roles and positions in the arena of water management at both the household and community level.

Male dominance within Vietnamese society not only prevents women's involvement and empowerment in community activities but has other pernicious effects. A case study in the Vinh Phuoc commune indicates that women's participation was greatly opposed since the men were reluctant to relinquish leadership positions, especially in the water-related project management committee. Men in Vinh Phuoc are involved in the processes of designing, planning and decision-making in water projects to a much greater extent than women. As one of the Vinh Thanh FGD participants stated:

*The water supply station was constructed with the involvement of the males in the community and male local officials. The importance of female participation in decision-making was disregarded, and that raised some major concerns for the communities.*

The male dominance within Vietnamese society strongly hinders women's engagement in the public sphere. Women will not have opportunities to participate in water management without the creation of an enabling environment.

### **Time allocation**

The FGD findings show that time allocation is also a key barrier to women's participation in water management in the Vinh Phuoc community. This finding corresponds with the literature, which notes that due to the double workload, such as household tasks and childcare, women are often restricted in taking part in water management and water-related project activities (UN Habitat, 2006 as cited in Svahn, 2011). The UNDP (1995) estimated that women spent 9.7 hours and men 0.9 hours per day on fuel (mainly wood) and water collection. Girls devote more than seven times as many hours per day as adult males to such activities and 3.5 times as much as boys.

A case study in the Vinh Phuoc community found that women spent 8 – 10 hours per day on productive domestic activities, including water collection and family care tasks, while men spend much less time than women in these activities. As previously explained, this time has large opportunity costs. Women have little opportunity to engage in other productive activities, such as community development, education and income-generating activities that could improve their situation. Participants from both villages agreed with one woman's statement that:

*Women have to take on domestic tasks, including the care of the home, of children, of families; thus they do not have much time to be involved in other activities beyond their own households.*

Due to their domestic workload, women are often unwilling to participate in water management activities. Nevertheless, the women involved in the FGDs were happy to attend the public meetings in general and meetings on water-related issues in particular. One said:

*When women are invited to take part in local meetings, we are ready to join in, because we can sit together and share and learn from other women's experiences of daily living problems and gain new information.*

However, when the discussion turned to women's participation in decision-making positions and water management teams, women in the two communities studied did not want to be part of it. The main reason is that women believe that undertaking community activities will add to their burden, since their responsibilities for household tasks are not reduced. Ways must be found to increase women's free time and their ability to take part in water management meetings and activities at local levels.

### **A synthesis of women's participation in the DWSSs**

Neither of the villages studied maintains specific water or water user committees that have the potential to take responsibility for water supply planning, operation and maintenance. Generally, local government constructs, monitors and manages the performance and progress of water supply programs. This contrasts with local officials' statements that selected local staff would be in charge of operating and maintaining the water supply system, including monitoring, assessment and repair of water treatment facilities. Issues of women's empowerment may be discussed in the local meetings, but the principle actors intend to maintain the status quo. Hence, women are seen as the beneficiaries and their views are not taken into account in the processes of operation and maintenance of the DWSSs in Vinh Phuoc.

Another factor determining women's lack of involvement in the operation and maintenance of the DWSSs is traditional norms. Vinh Thanh's women believe that the idea of them engaging in the operation and maintenance of water supply station is unconventional, thus they find it hard to adopt. The main reasons they gave were, firstly, that men are considered to have primary responsibility for the maintenance of water sources, and secondly, women trying to participate in these matters are likely to face negative attitudes because they are not expected to work outside the domestic sphere. The FGD data shows that these women do not care about water supply activities as long as the water needs of their households are met. Hence, few women living in the Vinh Thanh had any role in the maintenance of the water supply station.

As previously noted, women in these communities had no opportunities to influence decisions concerning the construction of the water supply station. The main reason is that the local government holds the power to decide where water supply systems should be installed, and who is selected for the management of this system.

Furthermore, women from these villages do not recognize the potential contribution they could make in leadership roles, partly due to cultural dimensions. As previously outlined, social norms strongly influence women's perspectives on such participation. One FGD participant in a statement supported by many others said:

*Management of domestic water supply is female's business, such as water distribution, water fetching and payment for water costs, but we do not think that we expect to be part of the water managing team at the local because these activities and positions are proper for men rather than ours.*

Previous authors have argued that women naturally want to engage in water management activities, but in the Vinh Phuoc's case study cultural barriers prevent them from doing so.

Traditional norms and lack of confidence have been identified as the factors that prevent women's participation in water resources management in Vinh Phuoc. Women are not expected to participate in the management of programs and are not encouraged to work outside of the home in such activities. The local government made no attempt to involve women in water management programs. The corollary, and conclusion, is that efforts of policymakers to encourage women's participation in the DWSS programs and policies have been ineffective.

## **Conclusion**

Policies on domestic water supply in the Vinh Phuoc commune and in An Giang province in general aim to provide water supply services, such as piped water systems and hand pumps to rural households. However, the policies view women as mere 'passive recipients' of the output of these water-related programs. Almost all women involved in the study are not encouraged to engage in the process of planning, implementation, maintenance and decision-making within the water sector. Households and women were merely seen as the end beneficiaries of the DWSS programs being implemented in the community.

NTP policy guidelines state that women are encouraged to participate in water management activities, ensuring that their needs and interests are met at national and local levels. However, the research found that women's needs in the actual implementation of DWSS programs, particularly in Vinh Phuoc have been generally known. In fact, assessments of the water needs of local users are not included in local government policy. Moreover, water needs were identified by the outsiders, which may differ from and be irrelevant to the actual needs of local communities. For example, the quality of drinking water has been universally identified as a crucial aim from the local government's perspectives. However, it is biased in the fact that other daily domestic water uses such as cooking and personal hygiene, which are also women's concerns. In addition, the water from water sources supply for households is perceived as the safe and hygienic drinking water under the policy framework, but this notion is divorced from the local belief about drinking water with good quality. In the case studies, women in both villages employed more than one water source, such as water from canals or rainwater, to ensure that their households' water needs were met rather than they only utilise a single source (the water supply station in Vinh Thanh and hand pumps in Vinh Loi). If the water supply station and hand pumps could fulfil the water needs of rural women in the communities, the

work of women related to water fetching would be greatly reduced. Therefore, water needs and interests must be understood in relation to the social and cultural context of the community.

The participation of women in decision-making in the water service sector in particular and in community management mechanisms in general is supported by agencies at national and local levels. However, the results of the research show that there is no scope for consideration of the gender aspects in the water service sector at the local level. The FGD findings indicate that women in the communities were not given positions to participate in the activities of management, operation and maintenance, especially at the water supply station. Therefore, although women are globally recognized as the primary water managers in water-related activities, women's participation as well as their roles and responsibilities are still disregarded in the perspectives of policymakers and Vietnamese society as a whole.

In rural Vietnamese society, men are regarded as able to fix technical water-related problems, and women are socially and culturally regarded as the main collectors and managers of water in the households. Social principles do not allow women to assume responsibility for equipment maintenance in the water sector. The existing DWSS policy has failed in its intent to include women in this aspect of water management.

Women in the communities lack decision-making power in both the household and the public sphere, especially in activities of operation and maintenance of the Vinh Thanh's water supply station. The FGD data show that women are recognized as the main managers of water at both household and community levels, whereas the site location and mode of operation of the water supply station was decided by the local government, which is male-dominated. Setting up the water supply source, seen as a part of planning, is a significant issue, because this may come along with factors that influence the process of achieving the final outcomes, especially the basic concern is to make decisions on proper technology options. This indicates that a delegation of women in such an activity is limited at the local level. Thus, Vinh Phuoc's women hold little power over the process of planning, implementation, operation and maintenance of the water sources; this is due to local governance structures where males dominate, but also factors including social and cultural barriers that prevent them from being involved in this arena. These factors adversely impact on women's participation throughout the public sphere. It can be said that GAD is an analytical approach to why DWSS programs, particularly in An Giang province did not work because power imbalances and socio-cultural factors were not taken into account and addressed.

The modern water sources – the water supply station and hand pump – have failed to fully replace traditional sources such as rainwater harvesting and water from canals in the Vinh Phuoc community. Such sources provide water, which may be used for activities, such as cooking, washing and bathing, other than drinking. Hence, the DWSS programs recently implemented in Vinh Phuoc have failed to reach their basic goal of providing safe and clean water for all domestic uses. This is particularly in aspects like reliability, cost of water, accessibility, water quality and quantity. In reality, the introduction of a “modern” water source

namely hand pumps in Vinh Loi still meant that women have to spend considerable time and energy fetching water from canals for household use. Similarly, the study indicated that the water supply station constructed in Vinh Thanh did not reduce the burden of local women because they continued to use alternative sources to meet water needs in times when the quality of piped water was not good and when the electricity supply failed. Therefore, Vietnamese DWSS policies or programs have been ineffective in encouraging women's participation in decision-making because the specific needs of women are not addressed in local communities.

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**Thai Van Nguyen** is currently working as a Researcher and Lecturer at the Research Center for Rural Development (RCRD) of An Giang University, Vietnam. Mr. Thai holds BSc on Integrated Rural Development at An Giang University, and MSc in International Development Studies at Royal Melbourne Institute of Technology University, Australia. Mr. Thai's research and projects mainly focuses on sociology, gender and water resource management, rural livelihoods, cultural diversity and ethnicity, climate change and adaptive strategies. Mr. Thai has led and participated in several studies during his work at the RCRD of An Giang University. Mr. Thai has extensively been involved in leading research projects on Gender, Environment and Society. Presently, Mr. Thai is a leader in the projects on gender and water management in rural areas of the Vietnamese Mekong Delta, funded by SEARCA/SFRT, Australian Government and LIN Center for Community Development.