

Women and Water Management: A Policy Assessment—A Case Study in An Giang Province, Mekong Delta, Vietnam

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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 participation in Vinh Phuoc was greatly restricted in the 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, Mekong Delta, Vietnam, water management, domestic water supply services, 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 usage of domestic water for maintaining the hygiene and health of a 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 the 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 the existing policies regarding women and water in Vietnam drawing on the case of women's participation in the implementation of domestic water supply programmes 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:

- 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,
- 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,
- 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 DWSSs?
2. How do these DWSS policies enshrine the specific gender needs of women?
3. How the concept of women's participation is 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?

Research Methods and Design

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 1):

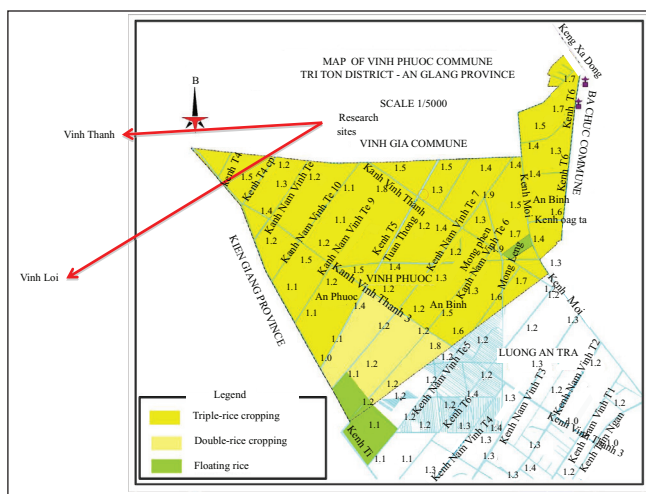


Figure 1. Location of Study Sites

Source: Pham Duy Tien (2016).

1. The Vinh Thanh village had a water supply station which is funded by the UNICEF,
2. The Vinh Loi village mainly depends on groundwater from the hand pumps for domestic use,
3. The private and communal initiative were identified in the construction and management of these water sources,
4. Women play a major role in water collection, use and management at household and community levels.

Data Collection Methods

Secondary Data

Secondary data is very important for understanding the background of research sites, DWSSs, socio-economic conditions as well as issues related to women and water. The secondary data used in this thesis was obtained from different sources: annual local government reports on socio-economic development, recorded information about the implementation of DWSS programmes and their impacts on water users and human health, and unpublished papers, and *International Journal of Water Resources Development* and *Journal of Gender & Development*. I visited provincial and local institutions to obtain the local government reports on the issues of gender and water supply programmes. I went through the abstract, methodology and finding 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 RWSS 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 reports and receives 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

Women in the two communities were selected to be involved in the focus group discussions (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 programmes. FGDs were set based on a list of designed open-ended questions. The participants were 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 used were: timeline, seasonal calendar, Venn diagram and SWOT analysis. Such techniques give women the opportunities to express their voice about the actual implementation of DWSS programmes and challenges of women's participation in water management activities

Results and Discussions

Household Water Use and Water Collection

The 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 used 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 the access to hand pumps because they believe that this supplies 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 from 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 of 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 break 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 per cent of households in Vinh Thanh collect water from the communal water supply station while in the Vinh Loi, 70 per cent 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 have access to water from hand pumps under the support of the Research Centre for Rural Development (RCRD) in 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, and quality and quantity are significant elements that help to determine how policy guidelines in relation to women and water under the National Target Programme (NTP) for RWSS at the national level are being practised at the local level, and how these policies have impacted 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 such as 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 2 identifies all water-related issues that households in both villages are facing over a 12-month period.

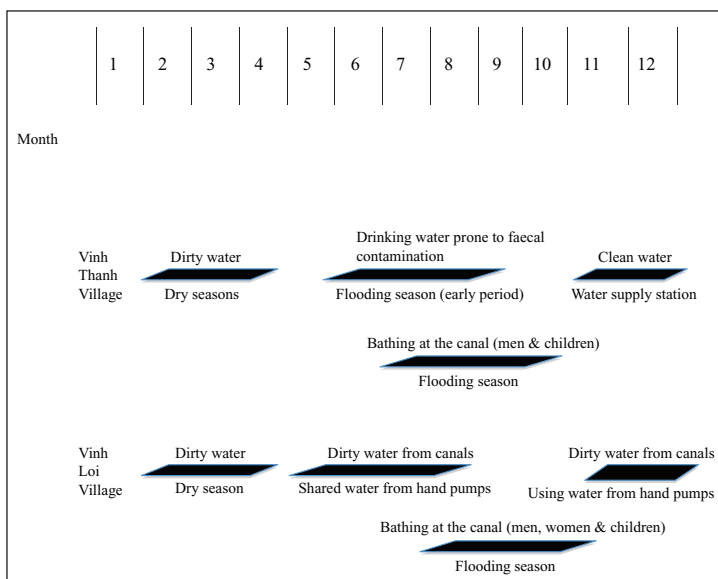


Figure 2. Seasonal Unreliability of the Water Sources in the Two Villages

Source: Own illustration based on focus group discussion, 2016.

As shown in Figure 2, 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 the local officials, rural households pay for water under the decision 23/2015/QĐ-UBND of the Provincial People's Committee. The first 10 m³ of water is priced at 4.50 VND/m³ this price applies for households in both urban and rural areas of An Giang province. The price rises to 11 VND/m³ for the use of 10 m³ of water or more. However, poor people pay only 3.60 VND/m³ for the first 10 m³, and 4.50 VND/m³ for the use between 10 m³ and 20 m³. 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 programmes 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 programmes was carried out in the two selected villages (see Box 1). The researcher found that some responses from the two FGDs were similar. In particular, participants identified similar strengths, opportunities and threats, whereas weaknesses varied with regard to the implementation of DWSS programmes. Hence, this information is presented in an integrated SWOT analysis.

Box 1. SWOT analysis of water supply programmes in Vinh Phuoc

<p>Strengths (S)</p> <ul style="list-style-type: none"> • Easy access to water; reduced time and effort to collect water. • More time to engage in other productive activities. • Water from water supply station and hand pumps is better quality than water from canals. 	<p>Weaknesses (W)</p> <ul style="list-style-type: none"> • Water from the new water sources is sometimes turbid and smells bad. • Water-borne diseases occur when there is no water treatment. • The water supply mainly depends on the power station (Vinh Thanh). • Seeking alternative sources; for instance, canals to collect water in the dry season (Vinh Loi).
<p>Opportunities (O)</p> <ul style="list-style-type: none"> • 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. 	<p>Threats (T)</p> <ul style="list-style-type: none"> • More droughts will result in the water scarcity. • Being scary, the flooding with very low levels in the future. • It is necessary to prepare the tanks to harvest rainwater in order to store and use in cases of severe droughts.

Source: Own illustration based on focus group discussion, 2016.

As shown in Box 1, 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 low level flooding and the decrease in rainfall has led to dry canals 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 programmes in these villages have failed to give women (water users) a 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 utilised 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 realise 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 for their 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 the hand pumps failed to obtain the goal of sustainability in the water

management programmes, specifically evidenced for 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 carers in their families. Poor water quality increases women's workloads because water needs to be boiled before drinking and this is especially hard for people who cannot afford bottled water. However, boiling has its own cost: It takes a lot of time and requires lot of firewood, which must also be collected. Thus, DWSS programmes 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 water, firewood and water boiling.

Water Quantity

Households in both villages utilise 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 estimated to be 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 usage among 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 the 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 (see Figure 2). 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 programmes 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 respect to women and water in the Vinh Phuoc community (Table 1).

Table 1. A Synthesis of DWSS Policy Practices and Challenges of Women's Participation in Water Management in Vinh Phuoc Commune

Criteria	DWSS Programme Implementation	Challenges of Women's Participation in Water Management Activities	Assessments of DWSS Programme Practices
Reliability	DWSS programmes have delivered water supply services funded by the UNICEF and RCRD: <ul style="list-style-type: none"> • Piped water supply in Vinh Thanh • Hand pumps in Vinh Loi 	Women in both villages are facing seasonal unreliability of water supply sources: <ul style="list-style-type: none"> • In Vinh Thanh, the quality of water from the water supply station is poor for drinking. • In Vinh Loi, hand pumps 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. <p>The findings show that women are highly affected by unreliable water sources because they are responsible for water collection, use and management in the home.</p>	The criterion of reliability has not been achieved in practice.
Cost and affordability	The cost of water is applied under decision 23/2015/QĐ-UBND of the Provincial People's Committee.	Payment for water differs in the two villages: <ul style="list-style-type: none"> • 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). <p>The findings indicate that due to the high cost of water usage, households in Vinh Phuoc cannot afford access to piped water and to build hand pumps. This forces women to return to use traditional water sources (canals and rainwater).</p>	The cost and affordability have not been achieved in providing delivery services.
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, such as: <ul style="list-style-type: none"> • 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. <p>The findings show that such challenges burden women with the responsibility to seek alternative sources (canals and rainwater) to meet their domestic water needs.</p>	DWSS programmes have partly achieved to reach their basic goal of providing water accessibility to households in the Vinh Phuoc community.

(Table 1 Continued)

(Table 1 Continued)

Criteria	DWSS Programme Implementation	Challenges of Women's Participation in Water Management Activities	Assessments of DWSS Programme Practices
Quality	<p>Water quality assessment processes differ in the two villages:</p> <ul style="list-style-type: none">• 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.	<p>Women in the two selected villages listed health problems associated with poor water quality, considerably water-borne diseases such as dysentery and diarrhoea:</p> <ul style="list-style-type: none">• 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. <p>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.</p>	<p>DWSS programmes have once again not been achieved in providing clean and safe water to households in the Vinh Phuoc community.</p>
Quantity	<p>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 households mainly depend on water from hand pumps.</p>	<p>The average water use per household differs in the two villages:</p> <ul style="list-style-type: none">• The average water use per household in Vinh Thanh is estimated 80 litres/day.• The water consumption of Vinh Loi's households averages 100 litres/day. <p>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.</p> <p>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.</p>	<p>The criterion of water quantity in DWSS programmes has not been achieved in practice.</p>

Source: The authors.

Generally, DWSS programmes in Vinh Phuoc commune have been unsuccessful. The findings indicate that the major criteria, including reliability, cost and affordability, accessibility, and water quality and quantity have not been achieved in the implementation of DWSS programmes 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 divided 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 organised. 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 (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). 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 the 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 managers 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 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 to take part in water management and water-related project activities (UN-Habitat, 2006, cited by 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 7 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 spent 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 maintain specific water committees nor 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 programmes. 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 principal actors intend to maintain the status quo. Hence, women are only 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, first, that men are considered to have primary responsibility for the maintenance of water sources and, second, 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, some women living in the Vinh Thanh had no 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 recognise 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 level 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 programmes 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 programmes. The corollary, and conclusion, is that efforts of policymakers to encourage women's participation in the DWSS programmes and policies have been ineffective.

Conclusion

Policies on domestic water supply in the Vinh Phuoc commune and in the 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 programmes. 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 programmes 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 programmes, particularly in Vinh Phuoc, have been generally known. In fact, assessments of the water needs of local users are not included in the local government policy. Moreover, water needs were identified by the outsiders, which may differ from and be irrelevant to the actual needs of the local communities. For example, the quality of the drinking water has been universally identified as a crucial aim from the local government's perspectives. However, it tends to ignore the fact that other daily domestic water uses such as cooking and personal hygiene 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 the agencies at the 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 recognised 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 to be 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 recognised

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 the planning, is a significant issue because it has to consider the factors that influence the process of achieving the final outcomes, especially the basic concern of making decisions on proper technology options. 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 the 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 women's participation throughout the public sphere. It can be said that DWSS programmes, 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 the activities, such as cooking, washing and bathing, other than drinking. Hence, the DWSS programmes 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 true based on the following criteria: 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 programmes 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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