



ACCESS TO PIPED WATER SERVICES FROM PRIVATE WATER ENTERPRISES IN RURAL VIETNAM

APRIL 2016

ENTERPRISE IN WASH

'Enterprise in WASH' is a joint research project led by the Institute for Sustainable Futures (ISF) at the University of Technology Sydney, which investigates the role of private and social enterprises in the delivery of water, sanitation and hygiene (WASH) services for the poor. For other Enterprise in WASH publications, see www.enterpriseinwash.info

ABOUT THE AUTHORS

The Institute for Sustainable Futures (ISF) was established by the University of Technology Sydney to work with industry, government and the community to develop sustainable futures through research and consultancy. Our mission is to create change toward sustainable futures that protect and enhance the environment, human well-being and social equity.

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1 EXECUTIVE SUMMARY

This research demonstrates the existence of inequitable outcomes in the provision of piped water services by both private and other service providers in rural Viet Nam. It highlights the need for effective governance mechanisms to ensure inclusive service delivery, and provides examples of how these might be developed.

Private enterprises are increasingly providing piped water services in rural Viet Nam, supported by incentives from the Government of Viet Nam and international donors. While research shows that enterprises are performing a critical role in increasing access to safe water, challenges remain. Rural areas lag behind urban areas, and efforts are needed to improve access for the poorest. This research fills a critical gap, as there is no existing evidence on whether or not small water enterprises are reaching poor people, and what this means for government policy and the role of civil society organisations and donors.

This study is the first of its kind in Viet Nam. It provides robust evidence on who accesses water services from private enterprises. Qualitative research in 61 communes was followed by a quantitative study in six locations. The qualitative research phase comprised 443 semi-structured interviews with householders, government representatives and water service providers (private enterprises and other service providers including government and community-managed systems). The quantitative study comprised GPS mapping of 800 households which were poverty certificate holders. We used spatial and statistical analytical techniques to detect differences in rates of water service delivery and access between poor and non-poor households.

Our primary research revealed that the poor were statistically less likely to be connected than non-poor in the absence of any support mechanisms (and sometimes even in their presence). Affordability was the main reason households were not connected to piped water supply (85%–100% of non-connected households interviewed in the qualitative phase cited this reason). The quantitative phase of the research confirmed that connection fees were the main barrier preventing the poor from accessing piped water (66% of non-connected poor households cited this reason) rather than water tariffs.

The six case studies revealed that the service provider type (private enterprise or other service provider) was not the defining factor in influencing connection rates for the poor. Therefore, the poor were not worse off due to being served by a particular provider type. While some service providers offered support (such as discounts or payment plans) to encourage poor households to connect, equality was in general not systematically factored into water services planning.

Critically, this research reveals that to ensure ongoing quality services, there must be a strong focus on regulation and capacity building, rather than a limited focus on initial construction and investment. It also reveals and that mechanisms to support poor households are needed.

The findings point to a persistent gap in service delivery for poor households across different water provider types, with the cost of connection fees being the most significant barrier. The research also identified broader issues facing the rural water sector such as regulation; the potential to use output-based incentives for connecting poor households; and the need to plan for efficient and equitable service outcomes across multiple provider types. The findings provide a critical evidence base for Viet Nam and the wider WASH sector, as the private sector is increasingly engaged in service delivery to help achieve sustainable and equitable water services for all.

This research was conducted by the Institute for Sustainable Futures in partnership with the East Meets West Foundation and the Centre for Natural Resources, Environmental Studies, Viet Nam National University and the Institute for Water Resources Economics and Management (IWEM) of the Ministry of Agriculture and Rural Development (MARD). It is funded by the Australian Department of Foreign Affairs and Trade (DFAT) under the Australian Development Research Awards Scheme (ADRAS).

We are extremely grateful to the 443 research participants who provided their valuable time and insights to inform this research.



Figure 1. Private water supply pipeline crossing a water course in Region 1 - rural Viet Nam

2 INTRODUCTION

This document presents research on poor households' access to piped water services in rural Viet Nam. It examines the extent to which poor households are reached by private enterprises in comparison to other service providers. This research fills a critical research gap, as there is no existing evidence base on whether or not poor people are being unintentionally disadvantaged or excluded as a result of decision-making processes, or because of the drivers that affect the defining of service areas and the pricing of connection and service delivery.

2.1 BACKGROUND AND OBJECTIVES

2.1.1 Background to 'Enterprise in WASH'

'Enterprise in WASH' investigates the role of micro, small and medium-sized enterprises, as important emerging players in sustainable water, sanitation and hygiene (WASH) service delivery for the poor.

In recent years, civil society organisations (CSOs) and governments, have been working with private and social enterprises to build the 'professionalisation' of service delivery, moving beyond voluntary, solely community-focused approaches, and towards developing much-needed supply chains.

To support this work, there is a need for new thinking and evidence on private and social enterprise involvement in WASH for the poor. 'Enterprise in WASH' investigates how CSOs can best work at the interface of private, civil society and public sectors to support equitable, sustainable service delivery in challenging contexts. It aims to improve the ability of both civil society organisations and governments to support the optimal engagement of private and social enterprises in water and sanitation service provision for the poor.

'Enterprise in WASH' is led by the Institute for Sustainable Futures, University of Technology Sydney, and this research project was conducted in partnership with East Meets West Foundation and the Centre for Natural Resources, Environmental Studies, Viet Nam National University and The Institute for Water Resources Economics and Management of the Ministry of Agriculture and Rural Development (MARD). This study was funded by the Australian Department of Foreign Affairs and Trade (DFAT).



Figure 2. Rainwater collection pots in the Mekong Delta, Viet Nam.

2.2 BACKGROUND TO THIS STUDY

Private enterprises are one management model for piped water service delivery, and are increasingly seen as a viable alternative to government- or community-managed systems in rural Viet Nam. By their nature, private enterprises rely on a customer base willing and able to pay connection fees and tariffs, and for the enterprises to obtain enough capital to manage upgrades, operation and maintenance, and to run a viable and sustainable business. Policy and financial incentives from government and donors have influenced the proliferation of water enterprises in Viet Nam.

For the purposes of this research, private enterprises are defined as entities that have invested private funds in a water system and own and operate the system under a formal (or informal) agreement with a Provincial People's Committee (PPC), or a Commune People's Committee (CPC).¹ This research also examines those entities with multiple shareholders where more than 50% ownership is private.

Other management models include:

- cooperatives
- community management including water user associations (WUAs)
- state-owned enterprises
- Commune People's Committee (CPC)-managed initiatives
- Provincial centre for rural water supply and sanitation (pCERWASS) – as a government department or as a public non-business unit.

For a more detailed explanation of the various management models that are involved in managing water services in rural Viet Nam and referred to in this paper, please see Appendix 3.

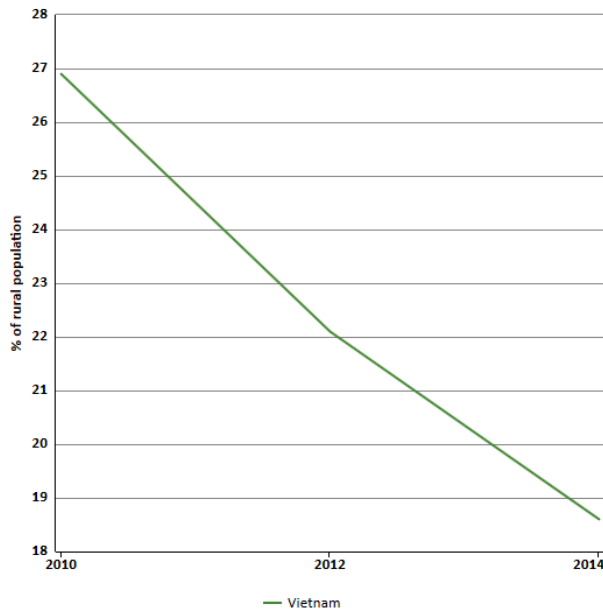
2.2.1 Poverty context

According to the World Bank Viet Nam had 13.5% of its people living below the national poverty line in 2014.² The World Bank also reported that 3.2% of the population lived on less than \$1.90 a day³. Yet, as shown in Figure 3 below 18.6% of the rural population was living below the national rural poverty line in 2014.

¹ 'A private enterprise is an enterprise owned by one individual who shall be liable for all activities of the enterprise to the extent of all his or her assets.' Source: Law on Enterprises: No. 60-2005-QH11 URL: <http://goo.gl/r6lfxe>

² Source: World Bank (2014) World Development Indicators, URL: <http://data.worldbank.org/country/vietnam>

³ Poverty headcount ratio at \$1.90 a day is the percentage of the population living on less than \$1.90 a day at 2011 international prices. Source: World Bank <http://data.worldbank.org/indicator/SI.POV.DDAY/countries/VN?display=graph>



Exchange rate:

1 Vietnamese Dong equals
0.000045 US Dollar

VND1,000,000 = US\$44.86

21 April 2016

Figure 3. Viet Nam – Rural Poverty Headcount Ratio⁴

Definitions of poverty are numerous in the international development literature. This research uses the following categories to assess poverty rates and status amongst householders interviewed, based on official Government of Viet Nam definitions⁵:

- **Poor:** people who hold a poverty certificate provided by the Viet Nam Government. This is currently based on an income threshold in rural areas of < VND400,000 /person/month (less than approximately US\$0.60 per day)
- **Near-poor:** From VND401,000 to VND520,000 /person/month (less than approximately US\$25/person/month = less than a dollar a day)
- **Non-poor:** > VND520,000/person/month (more than approximately US\$25/person/month = more than a dollar a day).

In designing the approach for this study, there was much deliberation about the relative merits and limitations of using the official Government of Viet Nam definition of a poor household. As an income-based measure, the official poverty definition does not account for key dimensions of poverty such as education, health and living conditions. Further, registering as a poor household gives rise to benefits including lower fees for some services and reduced health care costs (which those just above the income threshold are not eligible for), presenting an incentive to under-report income. Despite these limitations, the official definition of poverty was used in this research due to the absence of more holistic or reliable measures and to ensure the research findings are aligned with, and relevant to, official policy discourses.

⁴ Source: World Development Indicators Dec 2015, URL: <http://knoema.com/WBWDIGDF2015Oct/world-development-indicators-wdi-november-2015>

⁵ Decision 09/2011/QD-TTg issued on 30, January 2011, the poor standard in the period of 2011-2015

2.2.2 Access to water

Access to safe water is increasing in Viet Nam, however different definitions of what this constitutes result in differing ideas about levels of access. The Joint Monitoring Program (JMP) reports that in the rural areas of Viet Nam, access to *improved* water supply rose from 50% in 1990 to 94% by 2011, although only 9% of people have household connections.⁶ However, the Viet Nam Government uses different, and more stringent criteria in defining water supply coverage rates, and thus, MARD reports that in 2011, just 37% of the rural population had access to ‘clean water’ – defined as meeting the standards set by the Ministry of Health as shown in Figure 4 below.

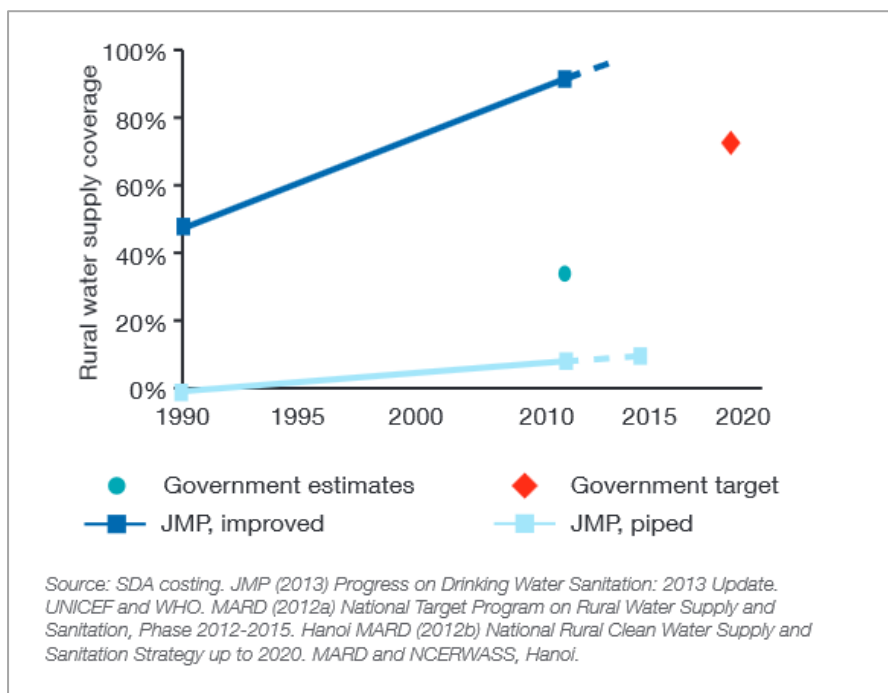


Figure 4. Rural water supply coverage in Viet Nam. Source: World Bank (2014)⁷

In addition, data on access to safe water supplies shows that the richest quintile are gaining access to piped water supply at a much faster rate than other wealth quintiles, and the poorest quintile have a very low level of access (6%) (MICS, 2011 and MICS, 2014)⁸ as shown in Figure 5. Access to piped water is important (assuming quality control of water quality), since research shows that piped water is less likely to be contaminated than other water supply types at both the source and in household water storage.⁹

⁶ World Bank (2014) Water Supply and Sanitation in Vietnam: turning finance into services for the future. Page 3.

⁷ World Bank (2014) page 21

⁸ UNICEF (2011) Multiple Indicator Cluster Survey - 2011 URL: http://www.unicef.org/vietnam/resources_18898.html and UNICEF (2014) Multiple Indicator Cluster Survey - 2014 URL: http://www.unicef.org/vietnam/resources_24623.html

⁹ Shields, K. F., Bain, R. E., Cronk, R., Wright, J. a., & Bartram, J. (2015). Association of Supply Type with Fecal Contamination of Source Water and Household Stored Drinking Water in Developing Countries: A Bivariate Meta-analysis. *Environmental Health Perspectives*, (July 2014). <http://doi.org/10.1289/ehp.1409002>.

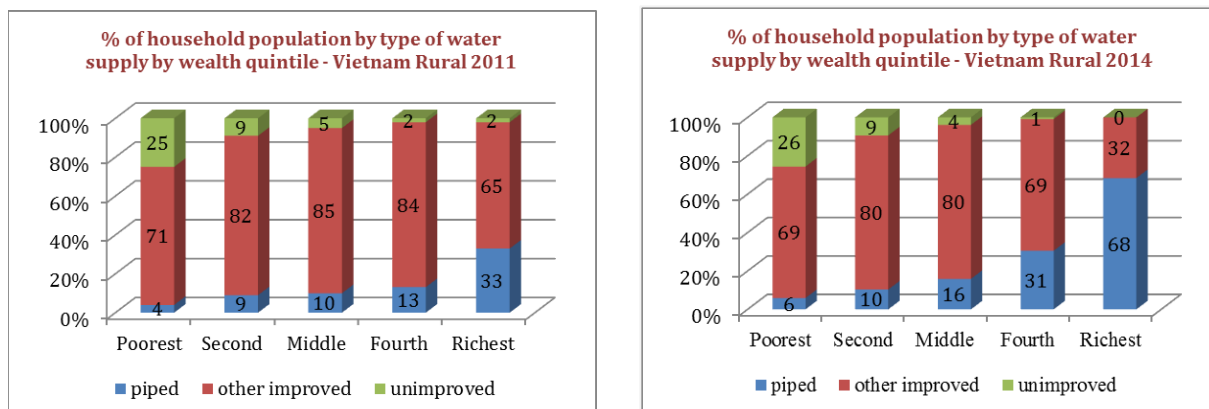


Figure 5. Access to safe water supply by wealth quintile (Source: MICS, 2011 and 2014)

2.3 RESEARCH OBJECTIVES

The objectives of this research were:

1. To determine whether poor people are being excluded from piped water services at higher rates when served by privately operated services than they are when served by other provider types.

Source: 2011 Vietnam multiple indicator cluster Survey

Source: 2014 Vietnam multiple indicator cluster Survey

2. To understand what the barriers are for poor people in connecting to piped water services
3. To understand what the barriers are for poor people in connecting to piped water services
4. To identify strategies that could support more poor people gaining access to piped water, and strategies that could reduce inequalities in piped water provision.

In line with these objectives, the research aimed to:

- Identify the costs of connecting to rural piped water services for householders
- Investigate the perceptions of key stakeholders with respect to who and how decisions are made in regard to where a piped water system is placed, and who is served
- Understand whether or not subsidies, exemptions or other pro-poor policies were in place across different types of service providers delivering piped water in rural Viet Nam
- Map the location of poor households in six communes, and identify whether or not they were served by piped water services to determine if there was a statistically significant correlation between poverty status and access to piped water.

2.3.1 Research questions

The research was conducted in two phases. The first was qualitative in approach, and the second was primarily quantitative, with some qualitative aspects. Research questions for each phase are as follows.

Phase 1 Research Questions

1. What are commune leader and service provider perceptions of who is and isn't served?
2. Do decision-making processes underpinning service delivery systematically include or exclude the poor and disadvantaged? What would need to change to increase access to these groups?
3. Do service providers (private enterprise providers and others) consider equity outcomes to be important? Are they making any specific efforts to reach poor or disadvantaged groups?
4. According to households, what are the main factors affecting ability to access (e.g. affordability of connection fees or tariffs, location of piped networks is far away etc.)? Are there any gender dimensions to ability to access (e.g. for households headed by females)?
5. What are stakeholder perceptions about how well private enterprises serve the poor as compared with other service providers?

Phase 2 Research Questions

- 1) Are poor households less likely than non-poor households to be within a water service area?
- 2) For those households within a water service area, are poor households less likely to be connected?
 - a. Does this vary depending on the service provider type (private, government etc.)?
 - b. Why are poor households within the service area not connected?

2.4 OVERALL RESEARCH DESIGN

As mentioned above, the study was divided into two separate phases with related, but different research questions, and as a consequence, the two phases have different sampling approaches and methods. The following section presents a brief overview of the study as a whole, and methodological details are provided on the two phases of the research.

2.4.1 Data and data collection

We collected both qualitative and quantitative data in 60 communes from primary sources using semi-structured interviews with householders, water service providers (private enterprises and other service providers including government owned and managed systems), commune leaders, and district leaders. GPS data was also collected in six communes to map water service provider boundaries, and the locations of poor households.

Phase 1 involved qualitative interviews with 67 service providers across the following nine provinces: Tien Giang, Ben Tre, Dong Thap, Long An, An Giang, Binh Dinh, Ha Nam and Thai Binh. Interviews were also conducted with 316 households and 60 representatives from Commune People’s Committees. The research compared private enterprises with other service providers in order to ascertain whether or not the type of service provider was a critical factor in determining whether the poor were served or not. This phase of the research was conducted between September 2014 and July 2015.

Phase 2 involved six case studies in six communes in Tien Giang, Ha Nam and Thai Binh provinces. Methods included mapping the location of poor households and of the service areas for each service provider in each of the six communes, and exploring reasons why any unconnected poor households within a service area were not connected. This phase of the research was conducted between July and November 2015.

2.4.2 Sample and sampling method

Phase 1 and Phase 2 focused on nine provinces in Viet Nam: Tien Giang, Ben Tre, Dong Thap, Long An, An Giang, Binh Dinh, Ha Nam and Thai Binh as shown in Figure 6.

These provinces were selected because:

- Private enterprises existed as an active management model.
- They provided geographical spread across Viet Nam.

Sampled locations in the Mekong included provinces where the East Meets West Foundation has a strong presence and has provided funding support to private enterprises, including a focus on the poor.

Selection of specific enterprises, service providers and communes is detailed under the relevant research phases below.



Figure 6. Private Enterprise owned and managed water tower in Region 1, Mekong Delta, Viet Nam.

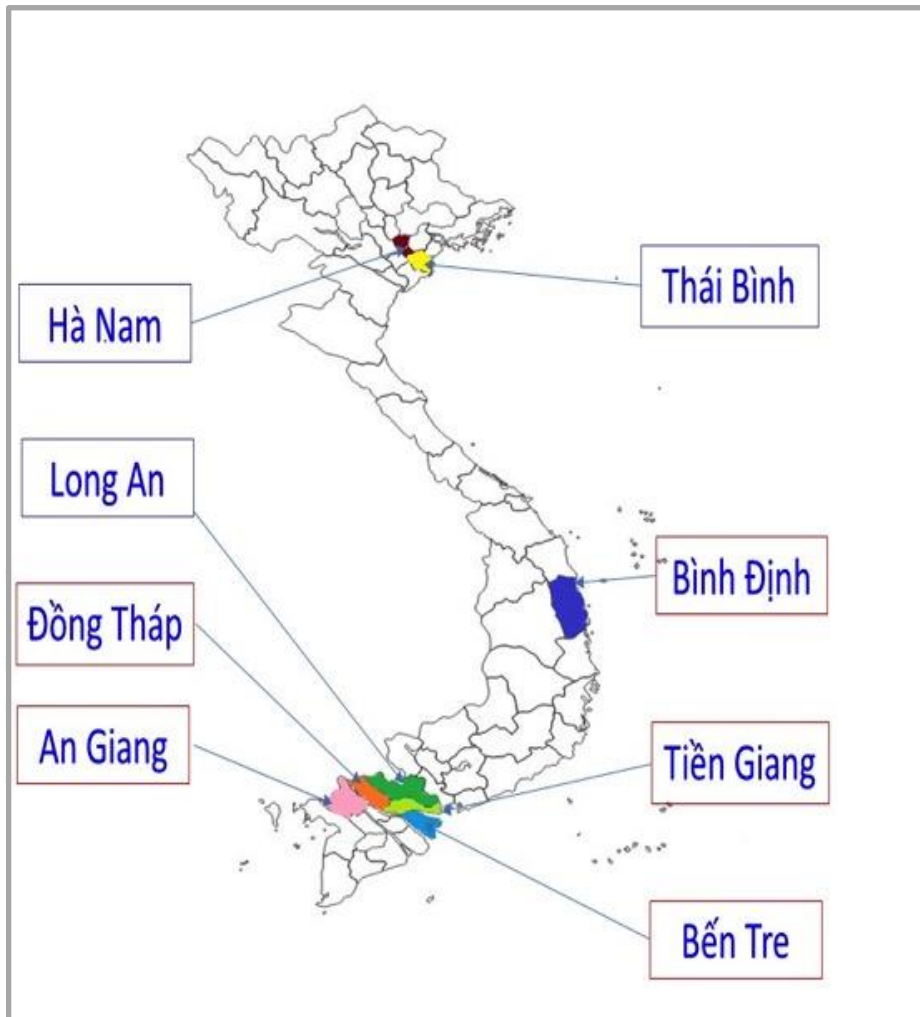


Figure 7. Research locations in Viet Nam

2.4.3 Key terminology and definitions

The definitions of poverty used in this research were outlined above. Other key terms used throughout this research include:

Private enterprise: As noted above, ‘private enterprise’ in this research refers to any organisation defined as such by the 2015 Viet Nam Law on Enterprises. This includes any organisation owned by one person, who has invested funds in a water system and owns and operates it under a formal or informal agreement with the Provincial People’s Committee, or the Commune People’s Committee, and entities with multiple shareholders where more than 50% ownership is private.

Other service provider: All service providers who are not private enterprises, including state-owned enterprises, community-managed systems (including water user associations), cooperative systems, CPC managed services and pCERWASS schemes.

Water service area: The area within which the service provider will connect customers. Households in the water service area would typically have the *option* to connect to the piped network.

3 NATIONAL POLICY CONTEXT

The provision of water and sanitation services in Viet Nam is managed by a number of government institutions from the national to community level as shown in Figure 8 below:

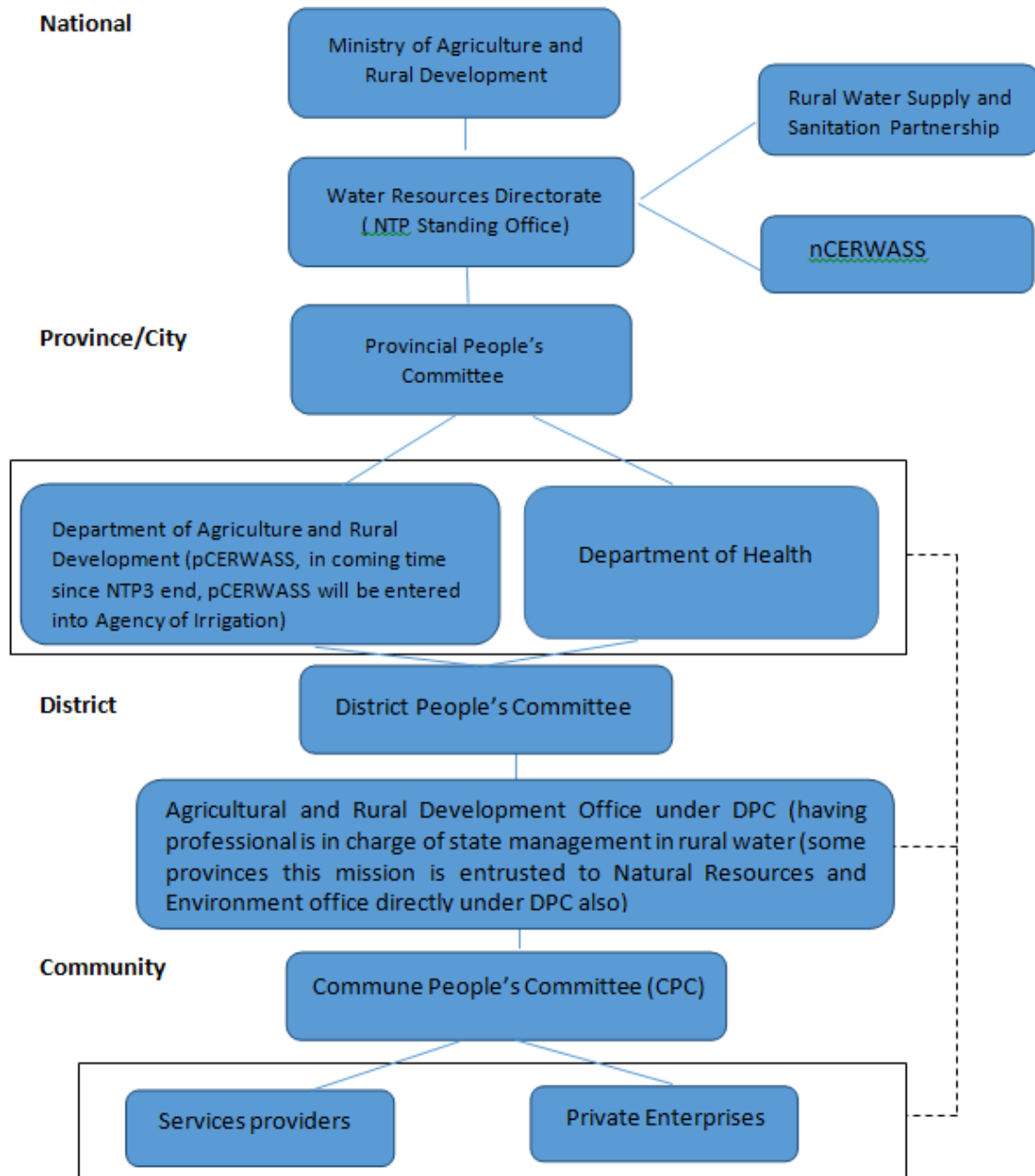


Figure 8. Key rural water management institutions in Viet Nam

Please see Appendix 2 for a list of the key institutions involved in managing rural water in Viet Nam, together with their functions.

The Ministry of Agriculture and Rural Development (MARD) is the leading national ministry for managing both water and sanitation. In the past, MARD, along with its provincial counterparts, the Department of Agriculture and Rural Development (DARD), the Provincial People's Committee and the Provincial Centre for Rural Water Supply and Environmental Sanitation (pCERWASS) have overseen funding allocated to water and sanitation programs.¹⁰ Decentralisation has altered the role of central agencies, and as a result, national level ministries now focus on policy development and oversight rather than direct control of service delivery.¹¹

Efforts to reach the poor and to improve access to services have been underway through direct budget support to the government from international donors. Viet Nam's National Target Program for Rural Water Supply and Sanitation (NTP) has been the primary initiative driving water and sanitation since 1998. The program was delivered in three phases: Phase 1 (NTP1) from 1998–2005; Phase 2 (NTP2) from 2006–2010; and Phase 3 (NTP3) from 2011–2015. In 2014 World Bank noted that the National Target Program 3 (NTP3) strategy gives 'high priority to poor areas and poor people, specifically 62 remote and poor districts'. However, it also identified that as of 2014:

'this focus has not been operationalised and program allocations have been divided equally among the provinces, regardless of levels of access among the poor ... access to piped house connections is only 3% for the lowest quintile, and 43% for the highest quintile of the rural population, illustrating disparities in service levels.'¹²

At the provincial level, NTP3 activities are overseen by pCERWASS. Figure 9 below shows how water and sanitation decisions and budgets are managed at the provincial level.

¹⁰ Gero, A. and Willetts, J. (2014) 'Incentives for enterprise engagement in Vietnam', Private and social enterprise engagement in water and sanitation for the poor – Working Paper 2b, Institute for Sustainable Futures, University of Technology, Sydney, p. 4.

¹¹ World Bank (2014) SDA, page 12. See also, http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2015/10/22/090224b0831632ce/3_0/Rendered/PDF/Vietnam000Resu00systems0assessment.pdf

¹² World Bank (2014) Water Supply and Sanitation in Vietnam: turning finance into services for the future. p. 23. URL: <http://www.wsp.org/sites/wsp.org/files/publications/WSP-Vietnam-WSS-Turning-Finance-into-Service-for-the-Future.pdf>

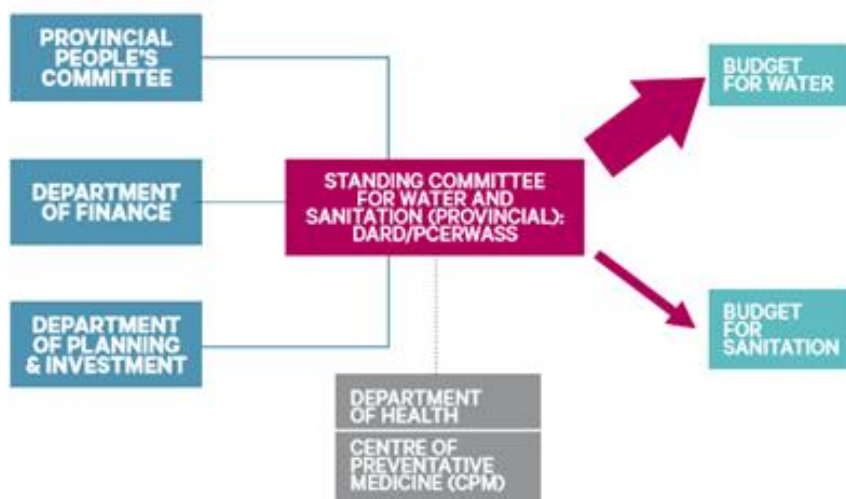


Figure 9. Water and Sanitation decision-making at the provincial level.¹³

3.1 KEY WATER POLICY IN VIET NAM

Analysis of water service delivery in Viet Nam conducted by the World Bank in 2014 identified a number of regulatory and policy strengths and gaps related to water management. In particular, the Bank found that the financial and human capacity of local service providers was a barrier to service improvement and expansion. Nevertheless, the Joint Monitoring Programme (JMP) reports that the water supply and sanitation Millennium Development Goal (MDG) targets have been met in Viet Nam.¹⁴

Viet Nam's water sector policy architecture consists of a complex system of legal documents issued by different state agencies.¹⁵ A number of policy tools and management entities have recently been introduced to regulate water management activities at the national and provincial levels, and one of their aims is to incentivise private enterprises. In particular, the following have significantly influenced the current study:

1. Rural water supply and sanitation partnership (RWSSP).

The RWSSP is a partnership between rural water supply sector stakeholders, and comprises the Government of Viet Nam and 23 signatory organisations, including donors, multilateral institutions, and NGOs.¹⁶ The Partnership plays a key role in coordinating stakeholders (including government and non-governmental organisations) and knowledge management at national level.

¹³ Gero, A. and Willetts, J., (2014) 'Incentives for enterprise engagement in Vietnam', Private and social enterprise engagement in water and sanitation for the poor – Working Paper 2b, Institute for Sustainable Futures, University of Technology, Sydney, p. 5

¹⁴ Ibid, p. iv

¹⁵ Nguyen, TPL., (2012) Legal framework of the water sector in Vietnam: achievements and challenges in *J. Viet. Env.* 2012, Vol. 2, No. 1, pp. 27-44

¹⁶ <http://www.rwssp.org.vn/en/about-us>

2. National Strategy for Water Resources

The national strategy for water resources (2006 to 2020) is outlined in Decision No. 81/2006/QĐ-TTg. This covers the objectives, guidelines and implementation measures related to the protection, exploitation, use and development of water resources.¹⁷

3. Decree on Clean Water Production, Supply and Consumption 117

This decree was issued on 11 July 2007 and covers full cost recovery, service contract and free connections. This is the key piece of legislation on urban water supply. It requires that water supply companies be “equitised” (partially or fully privatised), and that they operate on the basis of full cost recovery with a reasonable profit. Pursuant to Decree 117, in 2012 (May 28) Circular No.88/2012/TT-BTC was issued. It changed the minimum price for clean water in rural areas to 2,000 (VND/ m³) and the maximum price to 11,000 (VND/ m³). The methodology for determining the water consumption price is outlined in Joint Circular 75/2012.

4. Decision 131: Incentives for Private Sector Participation

Issued by the Prime Minister in 2009, this decision encourages the participation of private enterprises in:

- building and operating new systems
- investing in existing incomplete systems, and then operating them
- operating existing systems.

Incentives to promote enterprise engagement include:

- allocation of land, no land rental and tax collection
- enterprise income tax preferences and exemptions
- central budget support and preferential credit
- supports to management and operation
- in the cases where production costs are higher than the price, the PPC is to apply price subsidies using the provincial budget.¹⁸

5. Decree on PPP (2015)

Decree 15 took effect on 10 April 2015 and provides a single legal framework for private investments in the public infrastructure sector.¹⁹ The decree outlines the steps that a public private partnership project must go through.

Please see Appendix 1 for a summary of key policy tools related to the water sector in Viet Nam.

¹⁷ <http://thuvienphapluat.vn/archive/Quyết-dinh/Decision-No-81-2006-QĐ-TTg-of-April-14-2006-approving-the-national-strategy-on-water-resources-to-2020-vb72983t17.aspx>

¹⁸ Gero, A. and Willetts, J. (2014) 'Incentives for enterprise engagement in Vietnam', Private and social enterprise engagement in water and sanitation for the poor – Working Paper 2b, Institute for Sustainable Futures, University of Technology, Sydney, p. 19

¹⁹ Decree 15 replaced Decree 108 dated 27 November 2009 (as amended) and Decision 71 dated 9 November 2010 on the pilot PPP investment scheme. Source: <http://www.financierworldwide.com/vietnam-new-decree-on-public-private-partnership-investments/#.VIPBvEYwDzw>

4 PHASE 1 – QUALITATIVE RESEARCH

This section presents the methodology, data, findings and conclusions from the first phase of the research (Phase 1), a predominantly qualitative study examining poor people’s access to piped water services and the factors that affect that access.

4.1 METHODOLOGY

Phase 1 examined poor households’ access to piped water services supplied by private enterprises and other service providers operating in rural Viet Nam. This research was conducted over four field trips from January to July 2015.

Eight provinces were selected as research locations. Selection was based on the active involvement of private enterprises in service provision, and balance was sought across southern, central and northern provinces to ensure a representation of the different geographical regions in Viet Nam (see Figure 10 below).

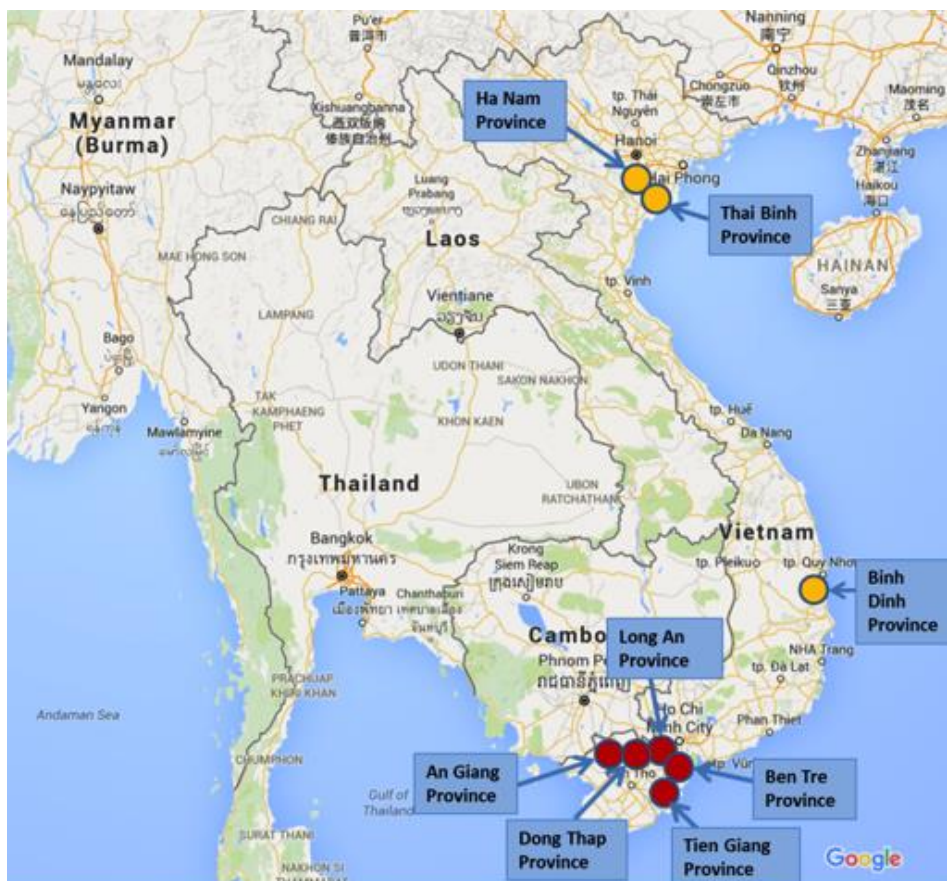


Figure 10. Map of Viet Nam and Provinces included in the Research

Key: Region 1 (South/Mekong): An Giang, Ben Tre, Dong Thap, Long An and Tien Giang Provinces

Region 2 (Central/North): Binh Dinh, Ha Nam and Thai Binh Provinces

4.1.1 Data collection respondents and tools

Structured interviews were the main method of data collection. They included some quantitative responses but were predominantly qualitative. In total there were 443 respondents from 316 poor, near-poor and non-poor households. Some were households with female heads, households which included people living with a disability, and ethnic minority households. Interviews were also held with 35 private enterprises, 32 other types of service providers, and 60 government representatives (predominantly commune leaders who were members of the commune people’s committee, the CPC). Table 1 below summarises details of the respondents involved in this study:

Table 1. Summary of research respondents

	Region 1	Region 2	Total
Geographical regions	Mekong Delta (An Giang, Ben Tre, Dong Thap, Long An and Tien Giang Provinces)	Ha Nam, Thai Binh, Binh Dinh Provinces	8 provinces
Private Enterprise (PE) interviews	17	18	35
Other service provider interviews	13	19	32
Commune Leader interviews	PEs = 17; Other = 6. Total = 23	PE = 19; Other = 18. Total = 37	60
Householder interviews	PE = 107; Other = 28. Total = 135	PE = 104; Other = 77. Total = 181	316
Total interviews across all groups	188	255	443

In Phase 1 we developed separate questionnaires for each of the following groups: householders, service providers and government officials.

The questionnaires covered the following areas:

- History of the water scheme
- Connection fees and tariffs;
- Support for the poor – subsidies/exemptions and instalments
- Reasons for not being connected to the piped water service
- The influence of gender on decision-making and ability to access piped water systems

- Who makes decisions with regards to where a piped water system is placed, and what factors influence these decisions.

Table 2 provides details of the demographics of sampled households in the four research groups, as well as estimated percentages of people within and outside of service areas.

Table 2: Details of household respondents

Region	Region 1 (Mekong Delta)		Region 2 (North and Central)	
Service provider	Private enterprises (PEs)	Other Service Providers	Private enterprises (PEs)	Other Service Providers
Sampled households (poor/non-poor, in/out of WSA)	<p>47% of households had poverty certificates, 23% near-poor; 25% non-poor, 10% unknown (n=107).</p> <p>90% of households were in service area.</p> <p>61% of households were within the PE service area <i>with</i> piped water</p> <p>29% were within PE service area <i>without</i> piped water</p> <p>9% were outside the PE service area <i>without</i> piped water.</p>	<p>50% of households surveyed had poverty certificates, 11% were near-poor; and 39% were non-poor (n=28).</p> <p>71% of households were connected to a service provider's piped water service).</p>	<p>54% of households had poverty certificates, 25% were near-poor and 21% were non-poor (n=100).</p> <p>All households were in service area.</p> <p>61% of households were within the PE service area <i>with</i> piped water</p> <p>27% were within PE service area <i>without</i> piped water</p> <p>12% were within PE service area <i>with piped water from another provider.</i></p>	<p>62% of households had poverty certificates, 15% were near-poor and 24% were non-poor (n=76).</p> <p>99% of households were in service area.</p> <p>69% of households were in service area <i>with</i> piped water from a provider²⁰</p> <p>30% were within service area <i>without</i> piped water</p> <p>1% were outside service area <i>without</i> piped water.</p>

4.1.2 Data analysis

Qualitative data (across 443 respondents) from Phase 1 were analysed in commune groupings in order to triangulate the data, and identify findings at the commune level. Quantitative data collected during Phase 1 (such as details of tariffs and connection fees) were also analysed at the commune level, and by poverty status type (poor, near-poor and non-poor).

²⁰ Answers for PE and other service providers were combined due to likely confusion with wording, question asks if you receive piped water from the PE, and we don't know whether this was asked as PE or the specific SP.

4.1.3 Limitations

A systematic approach to data collection was employed in this research in order to overcome issues around data quality and consistency. The research was affected by data quality issues due to challenges in accessing certain informants, and due to the depth of questioning, probing and data capture during the data collection phase. We also had difficulties providing enough notice to key informants (particularly government officials) about the types of information we wanted, and this affected their ability to provide accurate data.

Other limitations included:

- Some enterprises received funding from external agencies, which affected if and how they reached the poor, and the size of their connection fees. This is explained in the analysis where it applies.
- We could not include all poor households. People classified as ‘near-poor’ had incomes of less than a US dollar a day which is the international standard for extreme poverty. Due to time and resource constraints, it was not possible to include ‘near poor’ households in Phase 2.
- Timing of connection fee payments: Making comparisons between schemes which had been running for different lengths of time, to which different households connected at different times, added inevitable complexities to the analysis of connection fees, and the results should be interpreted with this in mind. Where possible, explanations of these complexities have been included in the analysis.
- There were many types of ‘other service providers’ but in this research they are combined as a single group. Where it is important, explanations have been provided as to how particular management models performed. In addition, the private enterprises and the sizes of the schemes they operated varied significantly.

Two scope limitations that are worth mentioning are:

- Due to time and resource constraints we did not collect detailed historical information, so there is no information on financial handover arrangements and their timing, and there is no detailed technical information about the schemes.
- The schemes had different financial models and different levels of investment in operations and maintenance. This affected connection fees and tariffs but a detailed review of these differences was outside the scope of the research.

4.2 OVERVIEW OF STUDY DATA

Table 3 below summarises the sample for Phase 1 across two geographical regions, and across two groups of service provider types.²¹

4.2.1 Management models, locations and their characteristics

Table 3. Management models, locations and characteristics

²¹ **Note that** the number of data entries (n) varies throughout the document for different research results due to data cleansing i.e. blanks have been removed and hence there were varying numbers of responses received for individual questions.

Region	Region 1 (Mekong Delta)		Region 2 (North and Central)	
	Private enterprises (PEs) (n = 17)	Other Service Providers (n= 13)	Private enterprises (PEs) (n= 18)	Other Service Providers (n=19)
Service provider	Private enterprises (PEs) (n = 17)	Other Service Providers (n= 13)	Private enterprises (PEs) (n= 18)	Other Service Providers (n=19)
Provinces covered	An Giang, Ben Tre, Dong Thap, Long An , and Tien Giang	Dong Thap, Long An, Tien Giang	Ha Nam, Thai Binh, Binh Dinh	Ha Nam, Thai Binh, Binh Dinh
Details of service provider types	Private enterprises	3 community managed; 2 cooperatives; 2 government-built/NGO-built but now managed by a family business, 2 pCERWASS managed, 1 state-owned enterprise, 3 water user associations.	Private enterprises	2 community managed (one built with donor contribution), 2 cooperative, 6 CPC managed, 3 pCERWASS, 6 joint stock companies (3 built with World Bank contribution). Remainder were built with government investment and some contribution from households.
Number of communes ²²	17	10	26	20
Commune size (population)	2000 to 14,500	8200 to 14,100	1350 to 12,400.	2300 to 17,500
Number of households in communes (range, median)	This was not provided in the Mekong PE data set.	Range: 1800 to 2275 households Median: 2784 households	Range: 348 – 4430 Median: 2215	Range: 618 – 4284 Median: 1915
Poverty rates ²³ (range, median)(Reported by Commune Leaders)	Range: 3%–13% Median: 6%	Range: 1%–8% Median: 5%	Range: 1%–62% Median: 5%	Range: 3%–74% Median: 5%
Respondent perceptions of location of poor households (dispersed or concentrated in	Mainly dispersed (but mixed responses)	Dispersed	Dispersed	Dispersed

²² Please note that some communes had multiple providers so some service providers are from the same commune.

²³ Poverty here is defined as registered poor with the Government of Viet Nam

certain areas)				
Reported service coverage within service areas (Reported by Service Providers)	Between 22% and 100% served. Median: 69% Average: 66%	Between 43% and 100% served. Median: 89% Average: 83%	Between 8% and 100% served. Median: 70% Average: 63%	Between 60%–100% served. Median: 87% Average: 82%

4.2.2 Connection fees and tariffs

Connection fees and tariffs varied somewhat across both private enterprises and other service providers within both regions, and did not necessarily reflect the cost structure for building and sustainably operating a scheme. Rather, the differences in connection fees and tariffs reflected a wide variety of factors, including different geographical and policy contexts, the different ages of systems, differences in operational costs (for example electricity), different accepted ‘norms’ amongst communities and different profit margins.

Policy contexts may also have had an influence on the cost of tariffs given that in some jurisdictions the province set floors and caps on tariffs, and recently Tien Giang province decided that tariffs must include the price of connection so that a separate connection fee is not charged.

Other than this, it seems that water service providers have a great deal of autonomy over price setting (within the floor and ceiling price range set by the province). In one commune in Region 1 (Tan Phong), the owner of a recently established PE stated that they did not charge the ceiling price of VND6700/m³, and instead charged VND6000/m³ so that it was more affordable for poorer people. However, there seems to be little reference to long-term operation and maintenance costs (long-run marginal costs), or augmentation of supplies as being the reason for setting connection fees and tariffs. In another commune in Region 1 (Tan Phong), a leading water user association member stated that the connection fee of VND900,000 was set (15 years ago) because they had heard that another service provider in a neighbouring commune had charged a similar connection fee, as opposed to it being based on a strong understanding of the short and long term costs of the system being put in place.

Median tariffs varied a little across the communes and service provider types studied. In the Mekong Delta (Region 1) for areas serviced by Other Service Providers, the median tariff was VND4000/m³ which was lower than in the other three areas which had medians of VND5750/m³, VND5700/m³, and VND5000/m³. This likely reflects the high proportion of community-managed systems in this sample set.

Figure 11 shows the median water prices reported by service providers themselves across the two regions, and across two provider types. It shows that median tariffs ranged from VND4000 to VND5750/m³ (approximately US18 cents to US26 cents per m³).

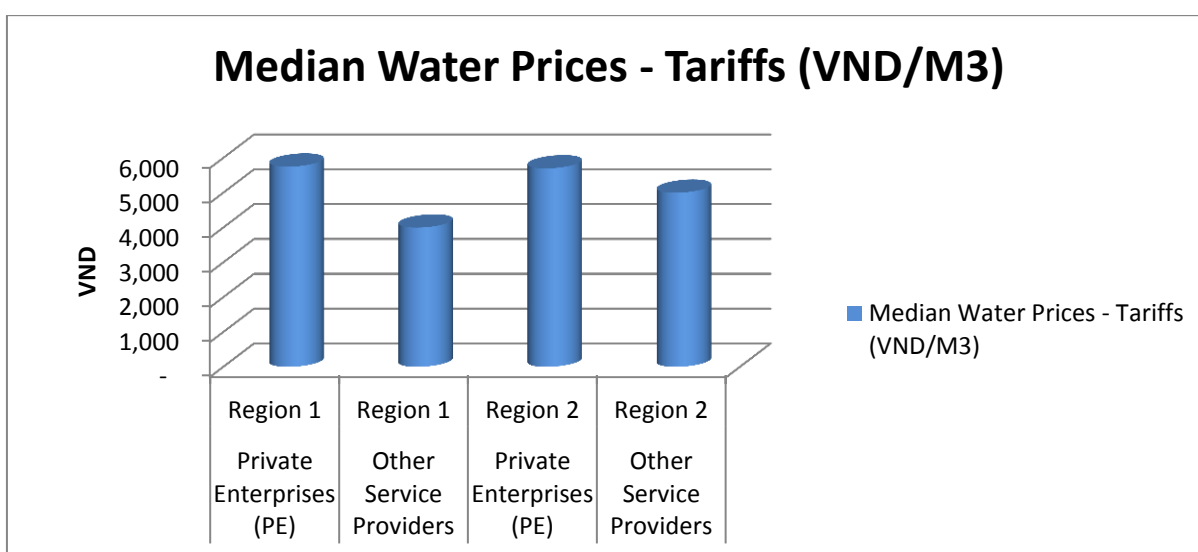


Figure 11. Median water prices – Tariffs (VND/ m3)

Table 4 4 shows that median connection fees were also variable across the private enterprises and other service providers in both regions. The lowest median connection fee reported by providers was in Region 2 for householders serviced by other providers (VND650,000 ~USD \$29), and the highest was found in Region 2 for householders serviced by private enterprises (VND1,500,000 ~USD \$67). The difference between private enterprises (PEs) and other service providers in Region 2 is therefore stark, with PEs charging more than twice the median rate of other providers.

Table 4. Comparison of tariffs and connection fees across study regions and service provider type.

Region	Region 1		Region 2	
Geographical area	Mekong Delta		Ha Nam, Thai Binh, Binh Dinh	
	Private enterprises (PEs)	Other Service Providers	Private enterprises (PEs)	Other Service Providers
Water Prices - Tariffs (<i>data provided from service provider</i>)	Tariff range VND4500–7100/ m ³ . ⁽²⁴⁾ Median: VND5750 / m³ (~USD 25c) Average: VND5613/ m ³ .	Tariff range: VND1300 ²⁵ – 6700 /m ³ ; Median: VND4000 / m³ (~USD 18c), average VND4323 / m ³ .	Tariff range VND4000–7000 / m ³ . Median: VND5700/m³ (~USD 25c).	Tariff range VND750 – 6000 / m ³ . Median: VND5000/m³ (~USD 22c).

²⁴ In Vinh Binh Commune one PE reported that the tariffs were split: VND5975/7100.

²⁵ My Phu Commune reported VND1300 which was the lowest tariff recorded in the data set.

Water Prices – Connection fees (<i>data provided from service provider</i>)	Connection range: VND300,000 – 2million Median: 750,000	Connection range: VND500,000 to VND4 million VND/m ³ . Median: 1 million	Connection range: No connection fee – VND2,500,000. Median: 1,500,000 (~USD \$67)	4.3 Connection range: No connection fee – VND1,000,000 Median: 650,000 (~USD \$29)
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In Region 1, householders reported paying approximately VND450,000 for connection to PE services, and VND700,000 for connection to other service providers. In both cases, this was lower than what the service providers stated as the median connection fees because the median for householders included those people who received their connections for free, as shown in Table 5.

Table 5. Reported connection fees by respondent type (Region 1)

Region 1 (Connection fee)	Other service providers (VND) ²⁶	Private enterprises (VND)
Median from provider	1,000,000	750,000
Median from households ²⁷	700,000	450,000

In Region 2, households reported paying approximately VND918,000 for connection to other service providers and VND1,450,000 for connection to private enterprises. It is interesting to note that for other service providers the connection fee *reported* by households was higher than the fee reported by providers, whereas for PEs the fees reported by households and providers were around the same as shown in Table 6.

Table 6. Reported connection fees by respondent type (Region 2)

Region 2 (Connection fee)	Other service providers (VND)	Private enterprises (VND)
Median reported by provider	650,000	1,500,000
Median reported by households	918,000	1,450,000

In Region 2 the history of the water supply system could be one factor to explain the variations between the connection fees charged by PEs and other service providers. Older government/community run systems may have lower connection fees because they were set a long time ago, and there may be resistance to increasing these fees over time due to

²⁶ Please note that ‘other service providers’ consist of seven types of entities, each with different governance models, levels of financial assistance, and size of customer base etc.

²⁷ Note that this includes free connections (zero paid) where this was reported by householders.

community expectations for them to remain low. Other factors influencing the variations reported in connection fees may include: geographical differences; government support/subsidies; and/or unsustainable financial models.

As shown in Table 6, an interesting finding was that median connection fees reported by households were higher than median connection fees reported by other service providers in Region 2. This could be a result of a number of factors including how far the households were from the main pipe, the date of connection, corrupt practices, and/or data being skewed by a large number of householders in this data set being connected by one service provider. It is of note that one service provider reported that the connection fee was VND935,000, while some householders within the same service provider area reported connection fees up to VND3.8 million.

Figure 12 below shows that median connection fees varied significantly between Regions 1 and 2. This was probably because there was donor funding in Region 1, but not in Region 2. This is based on data received from the private enterprises or other service providers.

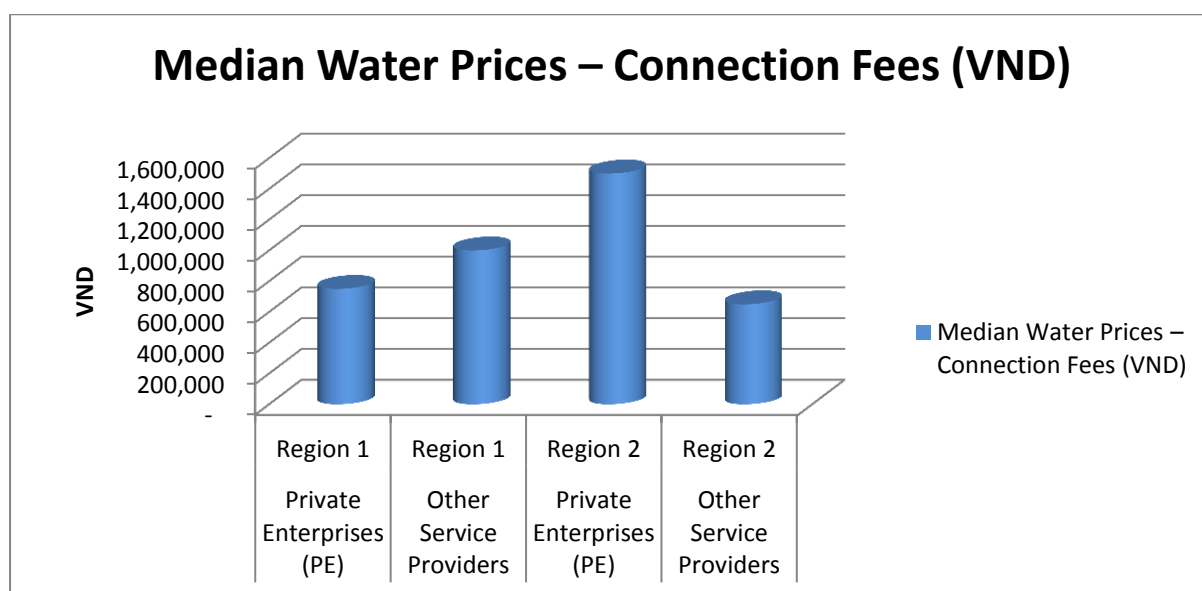


Figure 12. Median Water Prices – Connection Fees (VND)

Prices Reported by Householders

Analysis across the three groups of householders (poor, near-poor and non-poor) on reported connection fees showed that the median price paid by poor households for connection to a piped water service was not lower than the median prices paid by other groups. This has serious equity implications, but due to the small sample size geographically dispersed nature of each group, these results should only be considered indicative and worthy of further research and analysis.

In Region 1:

PE connection fees were lowest for poor households and highest for non-poor households. This may be a result of subsidies offered by private enterprises as a result of output-based

aid, and/or the flexible and case-by-case nature of subsidies reported to be provided by private enterprises. Other service providers' connection fees, however, were unexpectedly highest for near-poor (n=3) and poor households (n=11), and lowest for non-poor. However, there is very little data for this group, so results are indicative only as shown in Figure 13.

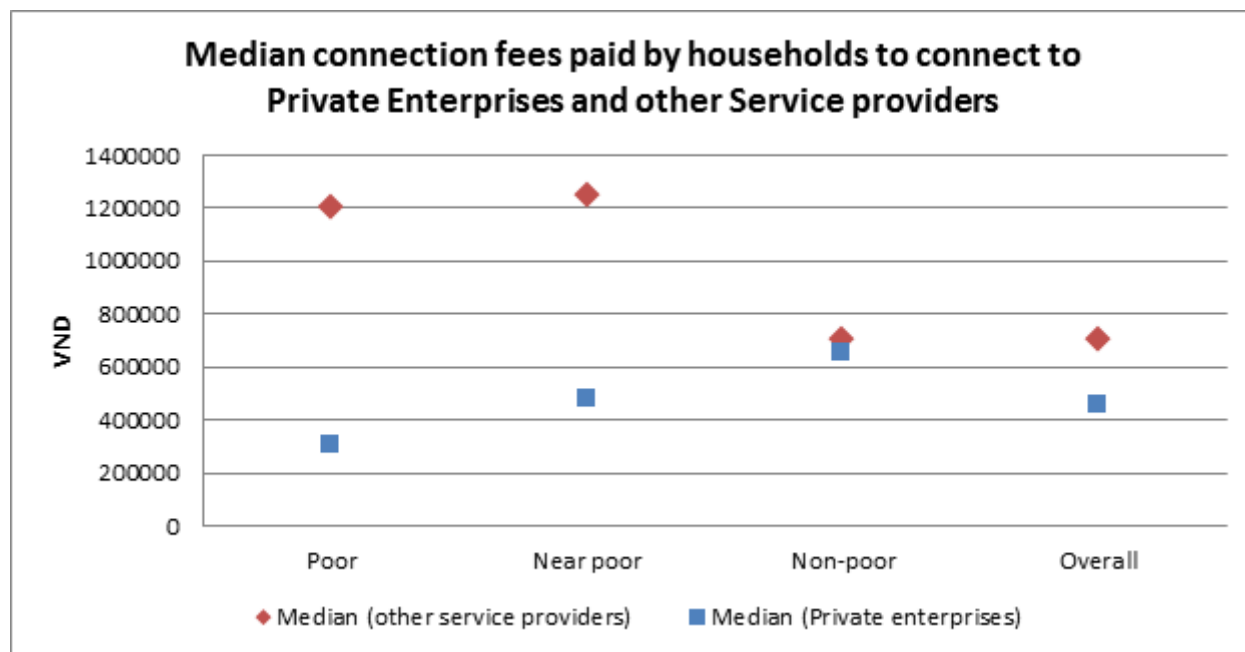


Figure 13. Region 1: Median connection fees paid by households to connect to piped water service by provider type

Table 7 below provides the median amounts reported by householders in Region 1. They are also shown in Figure 14 and Figure 15.

Table 7. Region 1: Median connection fees paid by households to connect to piped water service by provider type

	Poor	Near poor	Non-poor	Overall
Median (other service providers)	1,200,000	1,250,000	700,000	700,000
Median (Private enterprises)	300,000	475,000	650,000	450,000

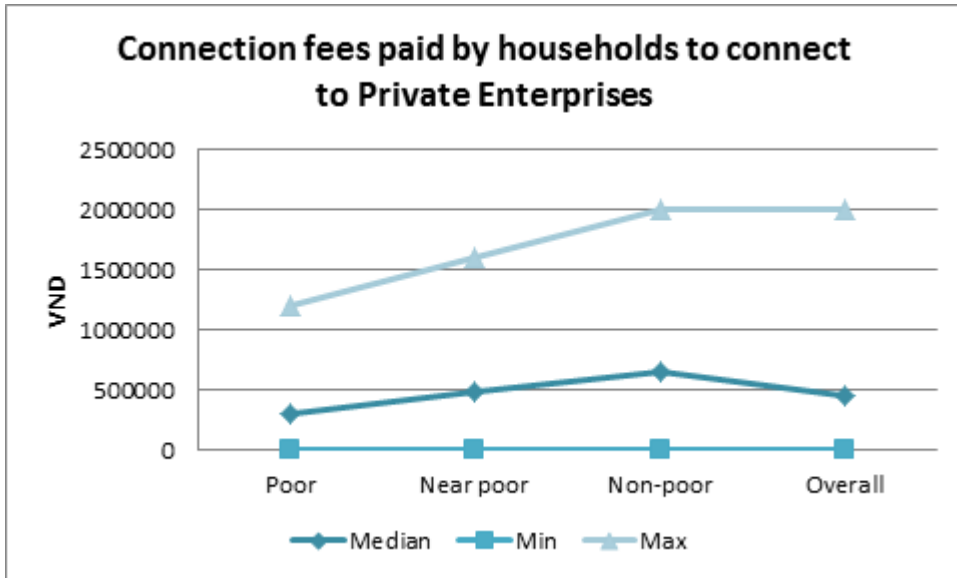


Figure 14. Region 1. Connection fees paid by householders to connect to private enterprises schemes

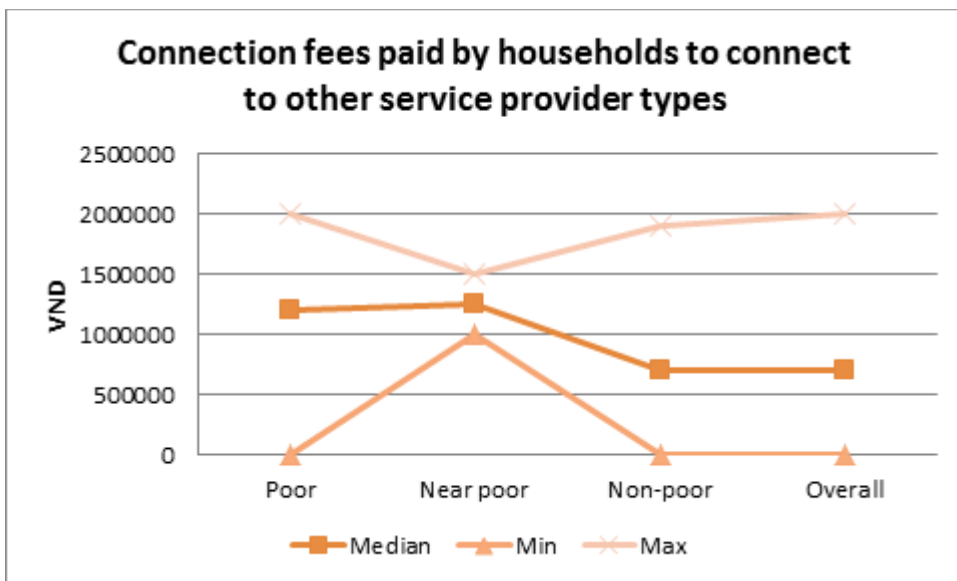


Figure 15. Region 1. Connection fees paid by householders to connect to other types of schemes

In Region 2:

It is of concern that the poor (i.e. poverty certificate holders) serviced by PEs in Region 2 had the highest median connection fee of all groups (VND1,500,000). Private enterprise fees were lowest for the ‘near-poor’ group, followed by the non-poor, and they were highest in the poor group. Other service provider fees were reported to be lowest in households that were poor, and slightly higher for near-poor and non-poor households, as shown in Figure 16 below.

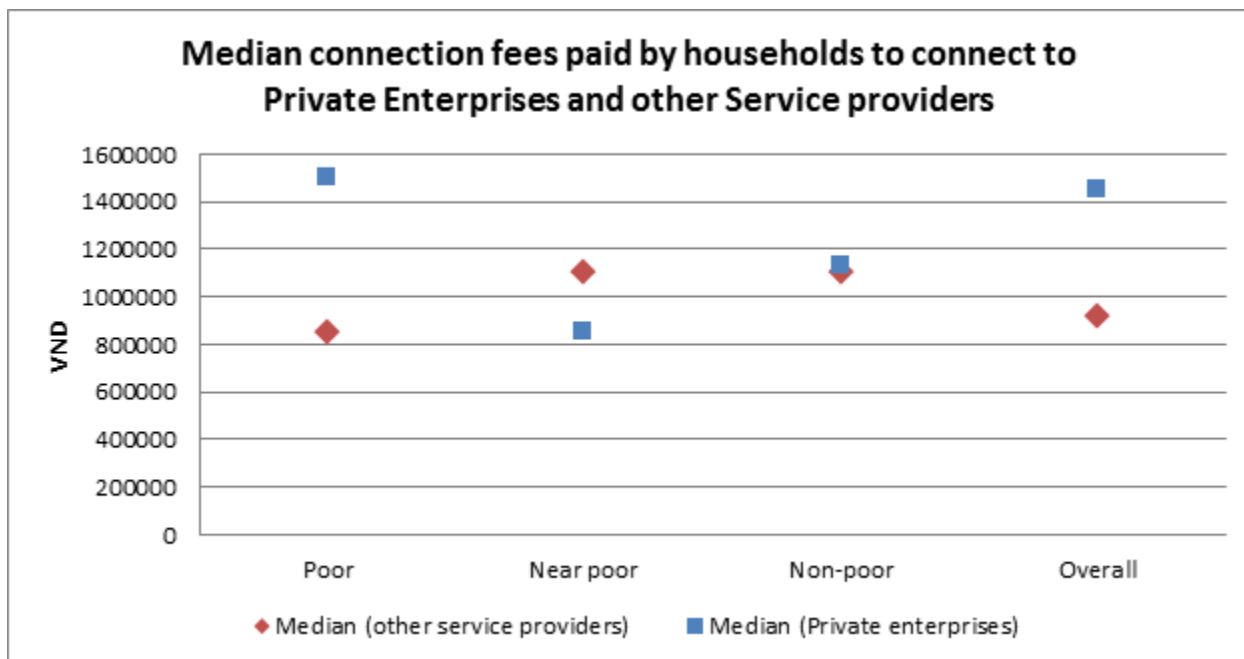


Figure 16. Region 2. Median connection fees paid by households to connect to private enterprises and other service providers.

These figures are further shown in Table 8 below, and Figures 17 and 18.

Table 8. Region 2. Median connection fees paid by households to connect to private enterprises and other service providers.

	Poor	Near poor	Non-poor	Overall
Median (other service providers)	850,000	1,100,000	1,100,000	918,000
Median (Private enterprises)	1,500,000	850,000	1,125,000	1,450,000

It should also be noted that connection fees were reported over a period of time and therefore can only be considered as indicative, given that prices have not been indexed.

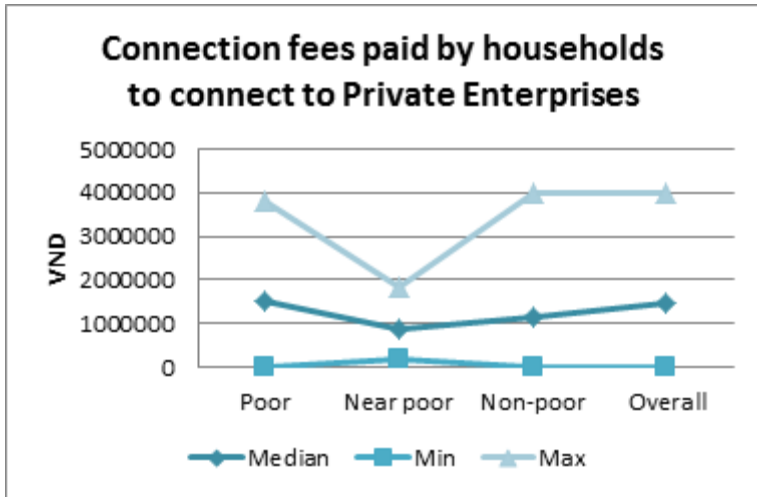


Figure 17. Region 2. Median connection fees paid by households to connect to private enterprises

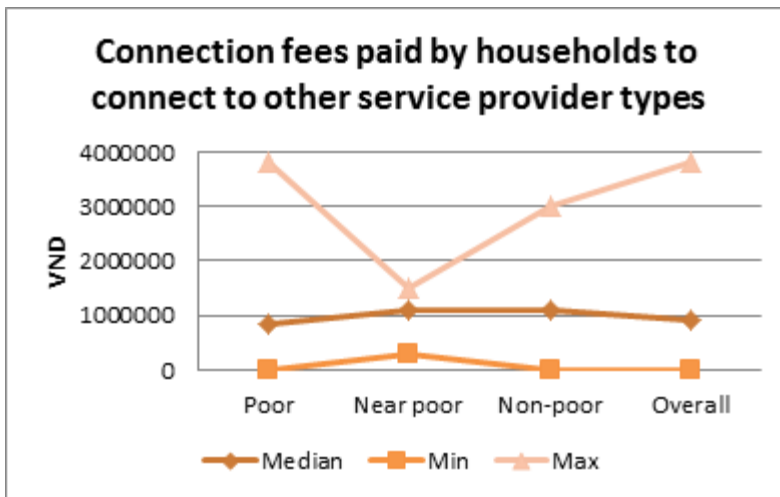


Figure 18. Region 2. Median connection fees paid by households to connect to other types of service provider

4.4 FINDINGS

4.4.1 Who receives piped water, and how?

This section looks at interviewees' perceptions about who makes decisions regarding those served by a piped water service, and what factors influence these decisions. It also covers actions taken by service providers to reach the poor, and what they believe could be done to increase access to the poor.

Some key findings included the following: Firstly, decision-making processes varied across geographical regions in rural Viet Nam, and this influenced the regulation and oversight of private enterprises, and the relative autonomy of these entities. In Region 1 (Mekong Delta region), private enterprises had a high degree of autonomy with regards to the location of a system, and who it served. They needed to keep the CPC informed, but in essence determined the critical aspects of their service. In Region 2 (North and Central-South regions), private enterprises also had autonomy but government entities (PPC, CPC, and pCERWASS) played a much larger role in decisions about water service provision areas for private enterprises and for other service provider types. Understanding who made the decisions was important for identifying the mechanisms for ensuring the poor were reached (and for identifying whom to target).

Secondly, while connecting poor people to a piped water service was not a driving force in decisions made by private enterprises, many (especially in Region 1) offered concessions to poor households through discounts on connection fees and tariffs, or provided facilities for late payments.

Lastly, interviewees from decision-making bodies including government and private enterprises identified a range of mechanisms which could be used to enable more poor people to gain access to piped water systems. These included subsidies, donor funding, increasing demand to raise revenue, augmenting systems so they could reach more people, and pro-poor fee structures.

'The private enterprise has the right to decide how to serve the poor'

Commune Leader from My Phong Commune, Tien Giang Province

4.4.2 Who decides? Perceptions on decision-making about who received services

The results from Region 1 (Mekong Delta region) in areas served by private enterprises indicate that private enterprises (in the perceptions of PEs and the commune leaders) had a relatively high degree of autonomy in terms of deciding where to locate their infrastructure, rather than being directed by government authorities/bodies such as the PPC or pCERWASS. This view was common among both the private enterprises themselves and the commune leaders. The CPC was considered by the private enterprises as the second-most important influence on decisions about who received services. The provincial-level government bodies (such as PPC and pCERWASS) were perceived to have very low levels of influence. Served

households were considered the second-most important influence by commune leaders in areas served by private enterprises, which is likely to have been interpreted as the ability for the household to seek and pay for (i.e. create demand for) a piped water service.

In Region 1, in areas served by 'other service providers', these providers also reported that 'served householders' were very influential in decisions about service areas. This is likely to be a reflection of demand from potential customers and their influence over decision-making processes. In particular, where an 'other service provider' is a water user association or a community-based scheme, the development of the scheme and decision-making is almost entirely community/user based, which is reflected in the interviewees' responses shown in Figure 19 below.

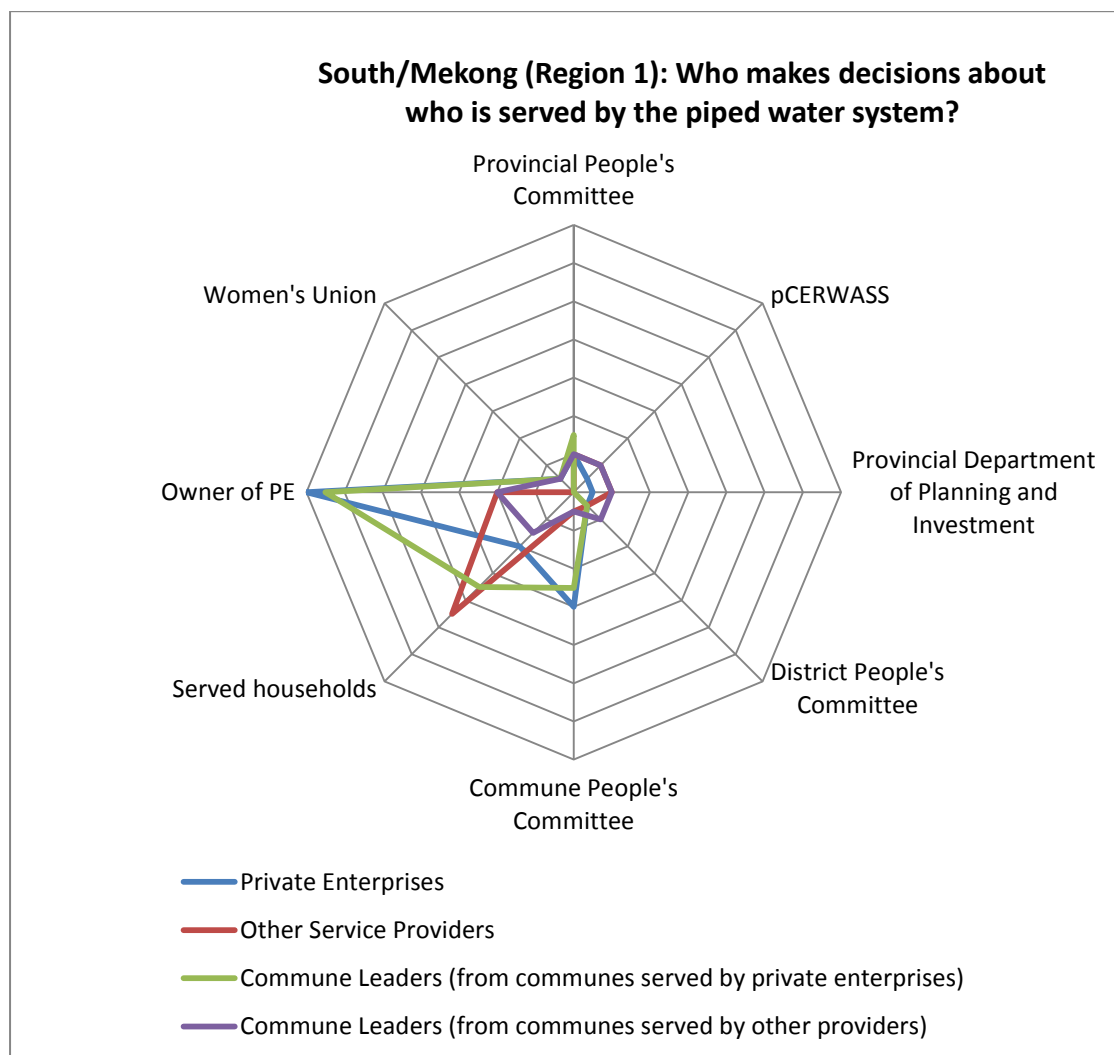


Figure 19. Region 1: Private enterprises', other service providers', and commune leaders' perspectives of who was very important in influencing decisions about who is served

In Region 2 (North and Central South regions), in areas served by private enterprises, private enterprises again were perceived to have considerable autonomy over decision-making, by both the commune leaders and the PEs themselves. They were considered the most

important influence on decisions, followed by the Provincial People’s Committee (PPC), while the influence of the PPC was rated very low by stakeholders in Region 1. Other government bodies (including pCERWASS, DPC and CPC) and served households were all perceived as having some level of influence.

In Region 2, in areas served by ‘other service providers’ the PPC was reported as very important in influencing who the system served by both the commune leaders and service providers. The commune leaders considered the CPC the second-most influential entity, whereas the service providers considered the DPC and pCERWASS as the equal second-strongest influences. The influence of the service provider itself was not considered very important by any of the service provider or commune leaders, as shown in Figure 20.

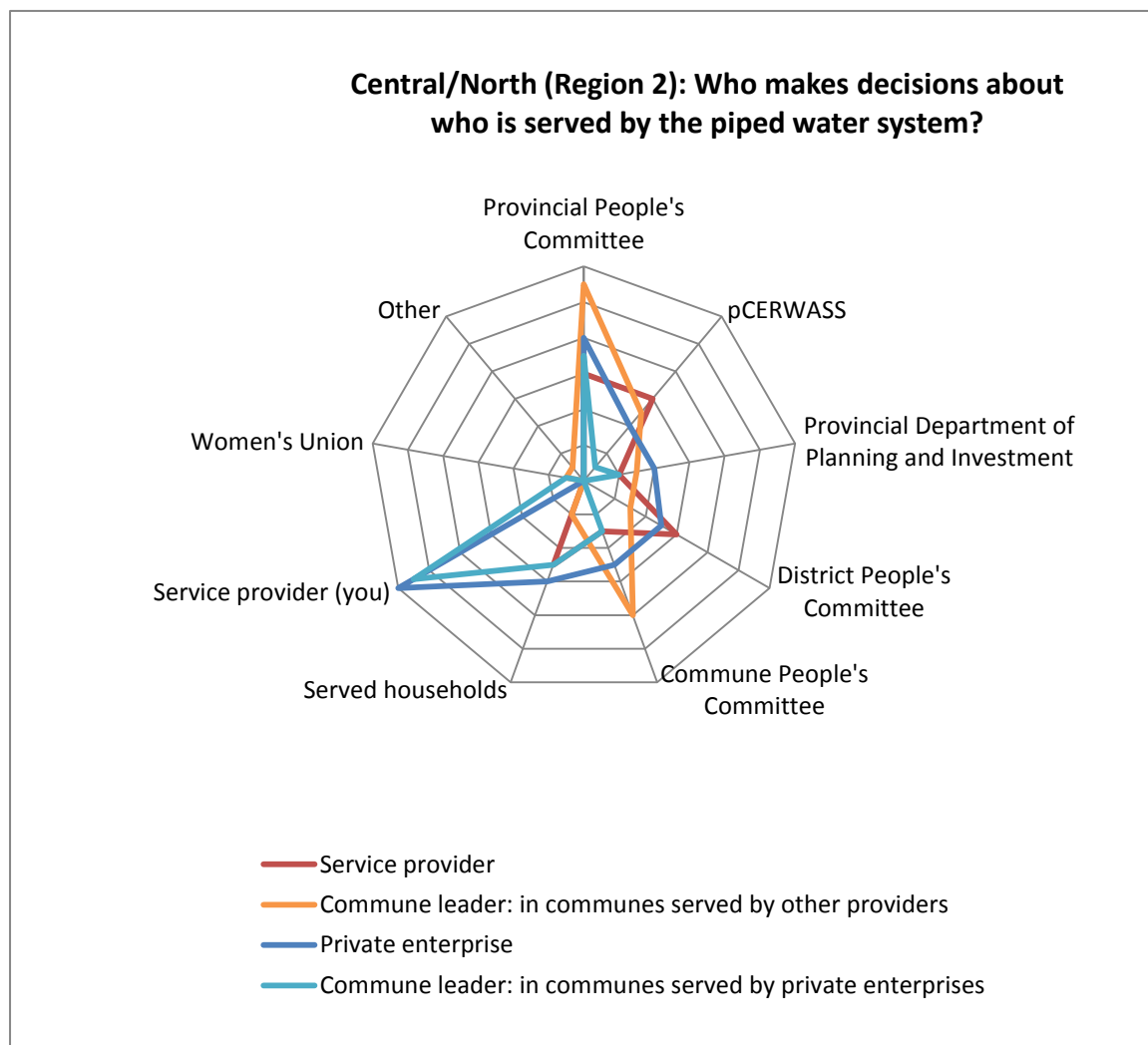


Figure 20. Service providers’, private enterprises’ and commune leaders’ perspectives on who was very important in influencing decisions about who was served in Region 2.

Different results were found for respondents’ perceptions between the two regions. Provincial authorities were seen as having a much stronger influence in Region 2. In both regions PEs were considered the most powerful influences in the areas they served. The key difference was that in Region 2, the PPC had a strong influence on water service providers of

all types, whereas in Region 1 the PPC had a very low perceived influence. In Region 1 the most influential government body was at the local level (the CPC), but in Region 2 the CPC was much less influential than the Provincial government. Therefore the perceived autonomy of service providers was higher in Region 1 than in Region 2.

Interestingly, while the Women’s Union is an influential entity in Viet Nam, overall it was not considered a critical body in making decisions about who was served by a water system. Of commune leaders (in both regions combined), 40% reported that the Union is ‘very important or somewhat important’, and 60% said it was ‘not very important, or not important at all’. Of all responses received from all interviewees (service providers, private enterprises and commune leaders), 26% reported ‘very important or somewhat important’, and 74% reported ‘not very important’, or ‘not important at all’ as shown in Figure 21.

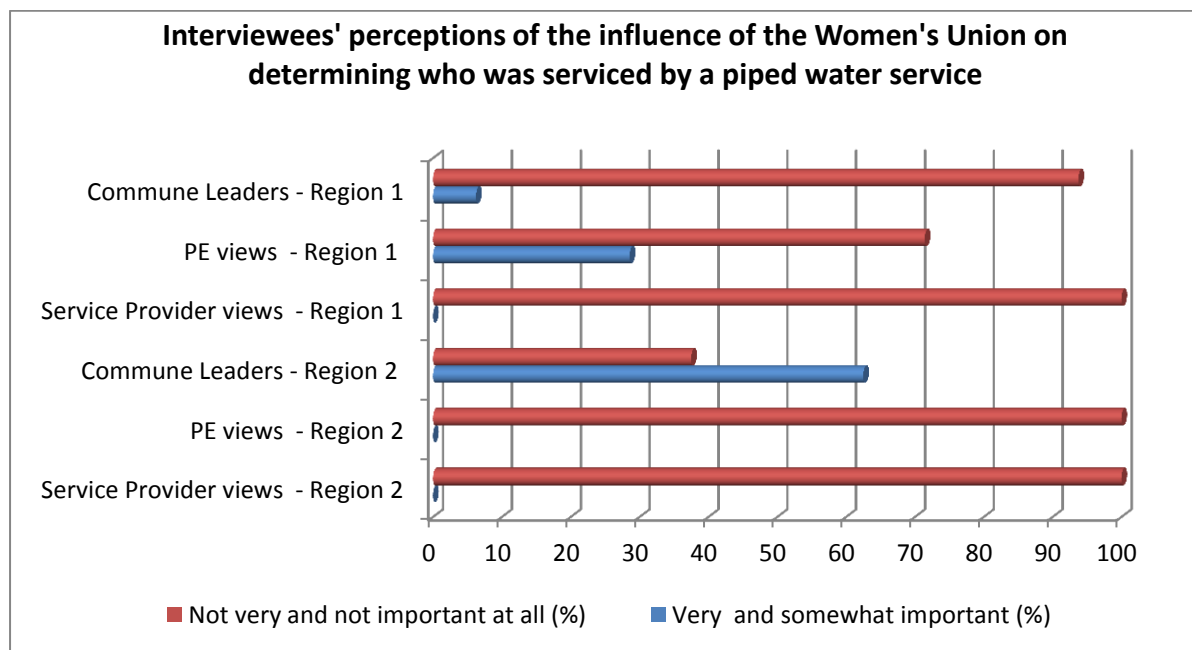


Figure 21. Perceptions about the influence of the Women's Union

4.4.3 What factors are important? Decisions on the location of water infrastructure

In the Mekong Delta (Region 1), respondents who were private enterprise customers considered ‘need for water’ (demand) to be the most important factor overall for determining who received the service. However commune leaders in areas served by PEs did not consider this factor important at all, citing density as the most important. More influences were cited by other service providers, including density of houses, distance from water sources, geography and customers’ ability to pay, in addition to customers’ ‘need for water’. Providing services to poor or low-income customers and providing services to ethnic minorities was not considered important in deciding on the location of water infrastructure as shown in Figure 22.

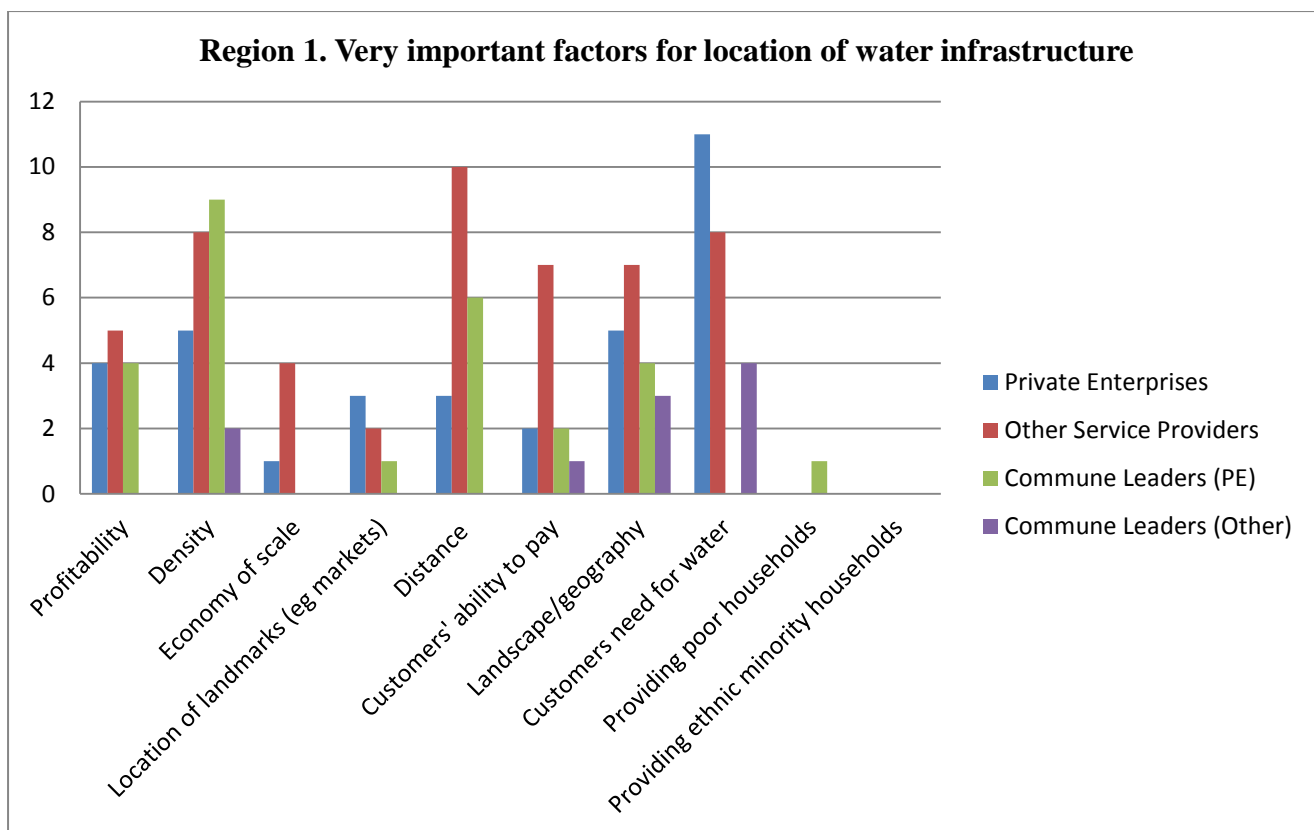


Figure 22. Region 1. Private enterprises', service providers' and commune leaders' perspectives on very important factors deciding location of water infrastructure

In Region 2, customers' 'need for water' (demand) was also considered the most important factor overall by both private enterprises and other service providers. In areas served by PEs, this was the most important factor from the perspective of both the PEs and the commune leader (unlike in Region 1 where the commune leader had a different view to the PE). Commune leaders in areas served by other service providers considered that distance from the water supply and landscape or geographical factors were of higher importance than customers' need for water, though these factors were considered to be of low importance by the providers themselves. Providing services to poor or low-income customers and providing services to ethnic minorities were not generally considered important in deciding the location of water infrastructure, though there were a small number (n=4) of 'other service providers' that considered it important as shown in Figure 23.

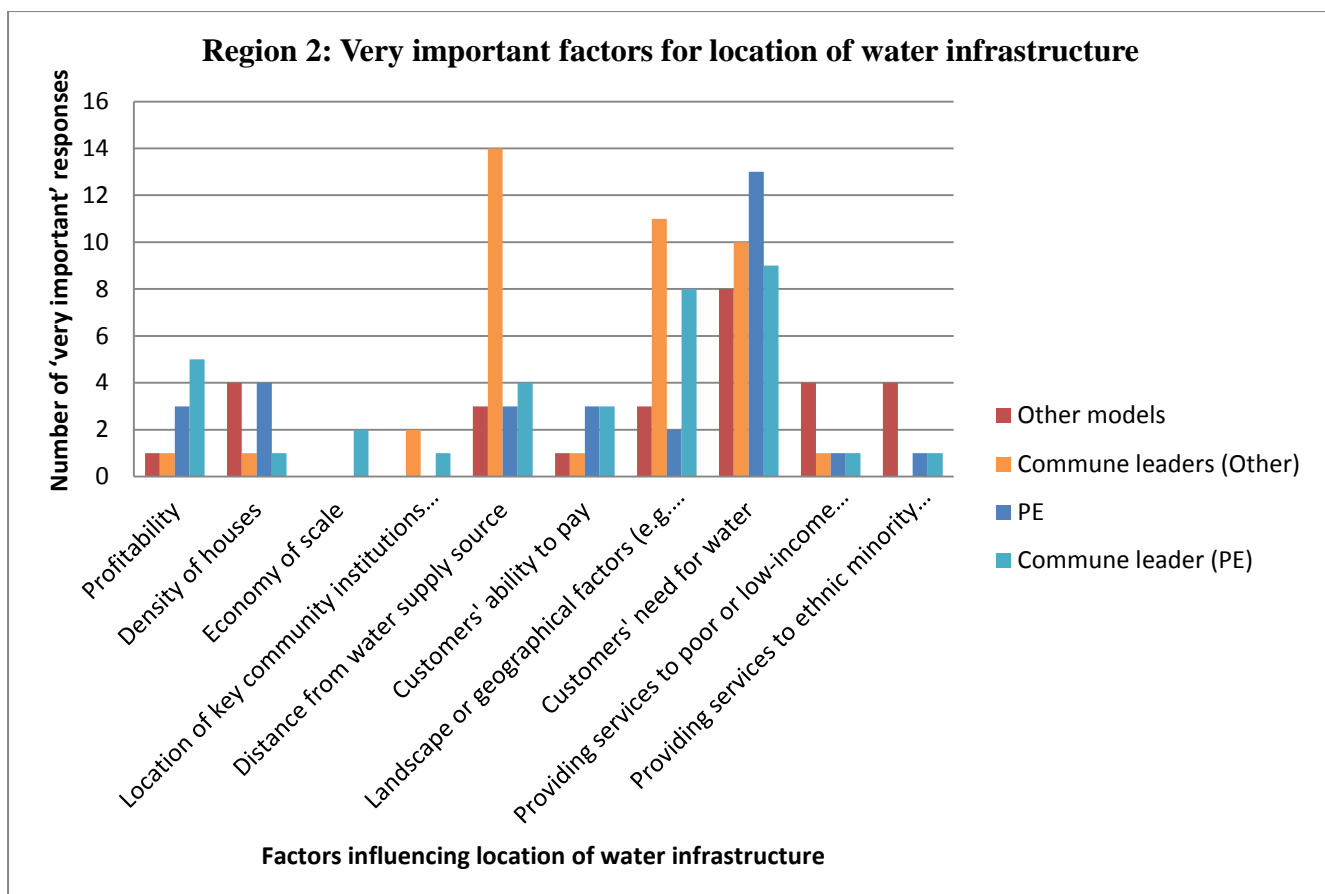


Figure 23. Region 2. Private enterprises', service providers' and commune leaders' perspectives on very important factors deciding location of water infrastructure

4.4.4 Current approaches to reaching the poor and disadvantaged

Many private enterprises interviewed said that they do consider the need to connect poor households in the way they run their operations. Most reported offering subsidies or exemptions and payment plans on connection fees and/or monthly tariffs. Table 9 provides an overview of current approaches by private enterprises and other service provider types to reaching poor and disadvantaged households with respect to the tariff.

Table 9. Current approaches to reaching the poor and disadvantaged (Tariff)

Region	Region 1 (Mekong Delta)		Region 2 (North and South-Central)	
	PEs	Other	PEs	Other
Proportion that offer subsidies or exemptions for the tariff (provider perspective)	71% of the PEs say that they offered subsidies/exemptions (12/17)	Most (85%) of the other service providers reported that they did not offer subsidies/exemptions. (2 yes; 11 No)	44% of the PEs offered subsidies for the tariff, a higher proportion than other service providers	28% offered subsidies, but of the 5 only 4 targeted the poor and one instead targeted those over 80 years old.
Late payments	<i>No information provided by Region 1 PEs on this question.</i>	About half of other service providers said they allowed late payments. (55%)	About two thirds of PEs offered late payments, similar to other service providers (67%)	About two thirds of other service providers offered late payments (64%)

In both regions PEs were more likely than other service providers to offer subsidies or exemptions for the water tariff. In Region 1 this difference was greater, as significantly more PEs offered subsidies or exemptions compared to other service providers, whereas in Region 2 PEs only offered subsidies or exemptions slightly more often. For example in one case a household had failed to pay for many months, yet the PE owner kept them connected because they were poor (Hau Thanh Commune). This was probably a result of the flexibility that PEs have in determining their approach to supporting customers on a case-by-case basis.

Across many of the communes profiled, the connection fees paid by different households varied considerably, with many paying significantly lower connection fees than the standard cited by the PEs and commune leaders. In Region 1 PEs reported that poor households paid lower connection fees on average than non-poor households. This is likely in part due to output-based funding received by PEs to connect poor households in Region 1. Table 10 provides an overview of approaches by PEs and other service provider types to reaching poor and disadvantaged households with respect to the connection fee.

Table 9. Approaches to reaching the poor and disadvantaged (Connection Fee)

Region	Region 1 (Mekong Delta)		Region 2 (North and South-Central)	
	PEs	Other	PEs	Other
Proportion that offered subsidies or exemptions for the connection fee (provider perspective)	Just over 50% of PEs reported that they offered subsidies for the connection fee (Yes 9; No 8)	Just under 20% of other providers offered subsidies for the connection fee (Yes 2; No 9)	About 40% of PEs offered subsidies or exemptions for the connection fee, a higher proportion than other service providers	Approximately 13% of other service providers offered subsidies or exemptions for the connection fee.
Proportion of poor people interviewed that accessed subsidies when scheme set up (householder (hh) perspective)	Most poor hh did know about subsidies avail to the poor: Subsidy/exemptions: (Yes 15; No 2)	Most hh did not know about subsidies: Subsidies/exemptions: (Yes 0; No 3)	Most hh did not access subsidies: Subsidies/exemptions: HH (yes 1; no 3)	Most hh did not access subsidies: Subsidies/exemptions: (yes 4; No 16)
Instalment payment plans for the connection fee	1/2 PEs said they offered instalment plans	More other service providers offered instalment plans (7 yes; 5 No)	Most PEs did not offer instalment payment plans (offered by 19%)	None of the other service providers offered instalment payment plans
Proportion of poor people interviewed that accessed instalment plans when scheme set up (householder perspective)	Instalment – HH (Yes 5; No 2)	Instalment- HH: (yes:5; No: 2)	Instalment: No 28; yes 2)	Instalment: No 15; yes: 12)
Shared connections	More than half of private enterprises (59%) do not offer shared connections. (10 no, 7 yes).	Most Other Service Provider types (85%) do not offer shared connections (11 No; 2 yes)	Most PEs (76%) do not offer shared connections, but a higher proportion than other service providers	Most Other Service Providers (87%) do not offer shared connections

Private enterprises were much more likely to offer subsidies or exemptions for the connection fee than other service providers. Across the communes profiled, the connection fees paid by households varied considerably, with many paying significantly lower connection fees than the standard cited by the PE and commune leaders. In Region 1 (for PEs) poor households were reported to pay on average lower connection fees than non-poor. This is likely in part due to output-based funding received by PEs to connect households in Region 1. While connecting the poor was not a condition of the output based aid (OBA), research conducted by East Meets West Foundation found that:

In the Mekong Delta, the private providers did ‘deals’ with poor households that could not afford the connection charge. The private provider either forgave the charge, or agreed to be paid in instalments. The calculation was easy: either the owner/operator would insist on payment of the \$15 charge and have the household refuse to connect, or to forgive it and collect the OBA payment of \$50-\$60 (EMWF, 2014).

Table 10 shows that approximately half of the private enterprises reported that they provided subsidies or exemptions for the connection fee (in both regions), whereas other service providers reported offering these discounts much less frequently (approximately 13% offered subsidies or exemptions). This is no longer the case in Tien Giang Province (Region 1) where a local law was passed in November 2014 to phase out connection fees.²⁸

In Region 1 a majority of households reported that PEs offered subsidies or exemptions for connection fees. This tended to be on an ‘as needs’ basis rather than a consistent formal process, reflecting their relative flexibility. In other cases most households did not know about or access subsidies or exemptions. Box 1 provides an example from Song Binh Commune where a private enterprise was perceived by the commune leader as better able to serve the poor as a result of its relative independence and associated flexibility.

Box 1. Autonomy and flexibility of private enterprises enable them to reach poor householders.

Song Binh Commune in Tien Giang Province has 8268 people, and 80 households are registered as poor. Poor people are not concentrated in particular areas; they are dispersed throughout the community. There is one PE and one cooperative. A commune leader of Song Binh reported that the typical connection fee is approximately VND1million (0.8–1.2 million range). He reported major variations between the private enterprises and cooperative connection fees because the private enterprise could set the price, but the cooperative had to consult with stakeholders. He said that the most important factors in determining who is served are distance from the water supply source, ability to pay, and geographical factors.

When asked why they were not connected, one householder said that it was not affordable, and another said there was no need as they used water from their brother’s house (poor

²⁸ This is in accordance with the People’s Provincial Council (PPCs) Decision 28 effective from 1 October 2014 where costs are outlined, in the Appendix of the Decision, to charge a tariff which includes the connection fee (VND868.470) in addition to electricity, staff cost, depreciation, insurances etc. As such, the tariff is encouraged to cover the connection fee so the service provider cannot charge an additional connection fee.

household). The poor household reported they would be willing to pay up to VND500,000 for a connection, but the other household was not willing to pay any of the amounts stated. This household gets water from a neighbour who is 10 metres away.

All householders interviewed in this commune (n=4) said the water service reached those who wanted it. This included the poor household who was not connected and used water from their brother. They might see that it is their choice (financial choice) to not be connected to the piped water service due to the cost of connection. The commune leader reported that the private enterprise was much better able to serve the poor than any other model, and the cooperative a little less able to serve the poor than any other model due to the fact that the PE had the *'right to decide who and how they will serve. They will easily cope with and resolve all problems related to supplying water'*.

The types of instalment payment plans offered varied across provider types and regions, showing that this is very much a locally determined and case-by-case arrangement without correlation to a particular governance model. Instalment plans were reported more often in Region 1 than in Region 2, with approximately half of private enterprises and other service providers offering instalment payment plans.. Instalment payment plans were not offered in Region 2 except by a handful of PEs. Interestingly although no other service providers stated that they offered instalment payment plans in Region 2, and yet, almost 50% of households reported that they accessed them.

Most PEs and other service provider types did not offer shared connections (self-reported). This could be because providers did not want to lose the connection fee, and/or concerns about metering. Interestingly, the providers that allowed shared connections the most often were PEs in Region 1.

Providing services to poor and low income households was not considered a priority for private enterprises in Region 1. Over 60% of PEs in Region 1 reported that providing services to poor or low income households was not very important in determining the location of a new water system in the commune, and none stated that it was very important.²⁹ In Region 2 this was also not a priority for PEs, however, a small number of other service providers stated that was very important. It should again be noted that the private water schemes in Region 1 included in this study were government/donor-funded and a condition of funding was that they served the poor.

All service provider types in both regions reported overall that geographical factors, as well as their own financial limitations were the key barriers to their services reaching the poor. Figure 24 shows that the high costs of extending the network were seen as a critical barrier for private enterprises in both regions.

'The government [needs to] pay 100% of the connection fee. If we [poor households] take a loan from the government to connect then we could not pay back the interest as well as the principal amount of the loan.'

Householder from Tan Ninh Commune, Long An Province

²⁹ Of the 16 PEs (Region 1) who responded to the question: how important is 'providing services to poor or low-income households', 10 chose 'not very important' and 6 chose 'somewhat important'.

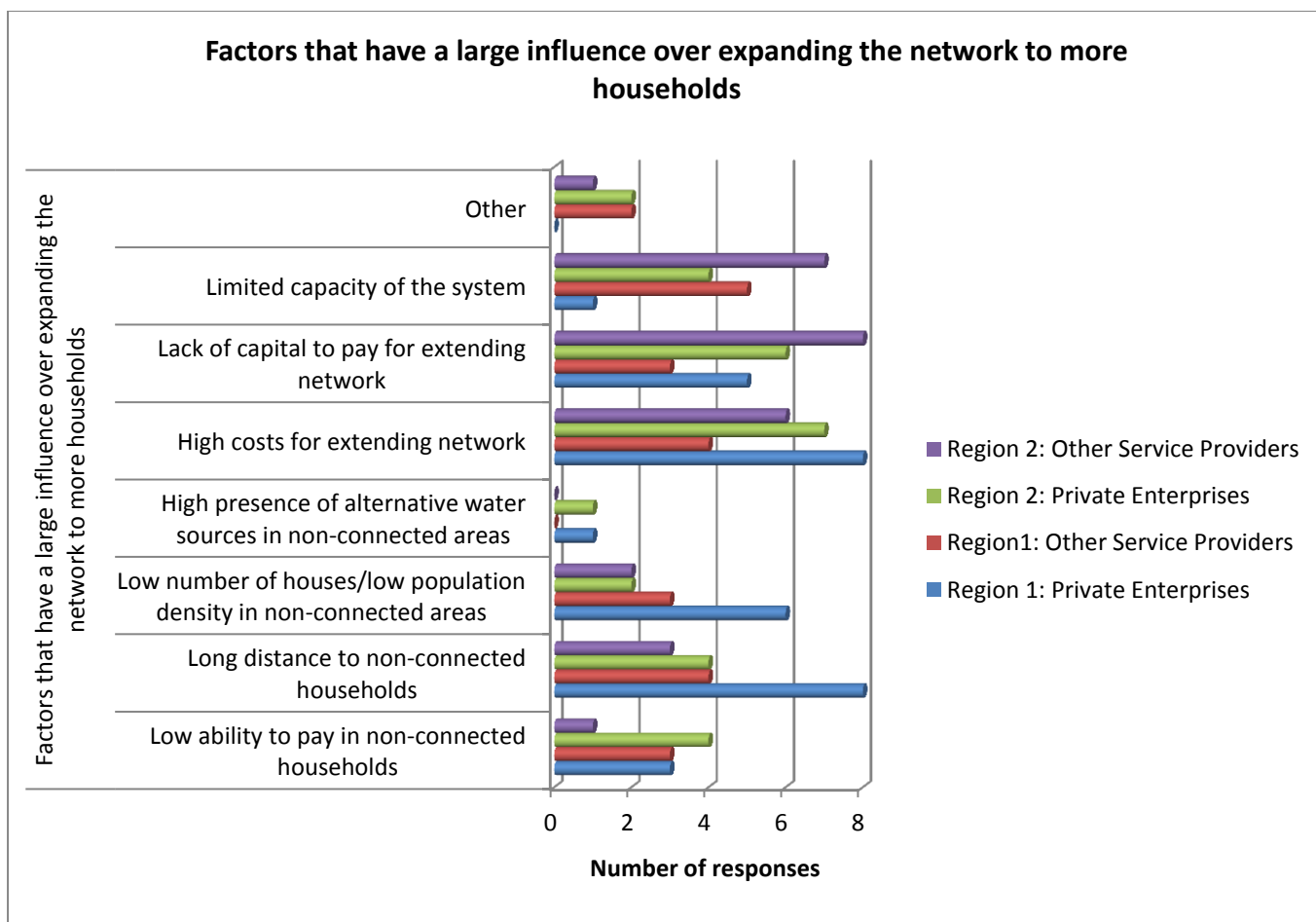


Figure 24. Factors that have a large influence over expanding the network to more households - service providers' responses stating 'a large influence'

In Region 1, distance to households was considered a much larger barrier to connection for PEs than it was for other service providers in both regions and PEs in Region 2. This may have been the result of the different types of agricultural land use, geographical differences, and natural service area boundaries. The limited capacity of the system was identified by other service providers in Region 1 as the key reason for not expanding the network, along with the high costs of expanding and long distances to non-connected households.

The presence of other water sources was not considered to be a major barrier to extending the network by any respondents in either region. However, research conducted in both Phase 1 and Phase 2 of this study revealed that while most people wanted piped water, they also supplemented their piped water with rainwater and surface water for cooking and drinking/and in order to make the tea and rice taste good. Another reason cited was the need to use other sources to keep piped water bills low.

4.4.5 Stakeholder views on reaching the poor

When asked what more could be done to reach the poor and other disadvantaged householders, commune leaders and private enterprises identified a wide range of

measures. These are summarised in Table below, and broadly fell into the following six categories:

1. 'Government funded' (level of government is not specified) subsidies for the poor (direct subsidies)³⁰
2. 'Government funded' support for service providers
3. Seeking donor (external support) for system expansion
4. Increasing demand for service through promotion of the benefits of piped water
5. Augment systems (increase supply)
6. Pro-poor fee structures and identifying/targeting/selecting the poor/those who need support.

Table 10. Perceptions about what more could be done to address inequalities in access to piped water in rural Viet Nam

	Region 1		Region 2	
	PEs	Other	PEs	Other
Ideas provided by service providers	<ul style="list-style-type: none"> • Government-funded subsidies for the poor • Government-funded support for PE • Donor support • Support for system expansion 	<p><i>There was not a strong or uniform understanding of what needed to occur in order to reach more poor households from these respondents.</i></p>	<ul style="list-style-type: none"> • Government support PE with clear and detailed strategy and budget • Government should help company in investments to maintain and expand system • Financial and technical support for PE • Government should promote benefits of using clean water • State needs a policy to support poor households as company cannot support all • Better system for selecting poor households • Installment payment plans for poor households • Government should support PE with capital before not after investment 	<ul style="list-style-type: none"> • Scheme move under pCERWASS for budget (community managed) • Government funding for expansion to remote areas (community managed) • Government or NGO funding to upgrade system to increase quality and capacity (CPC managed) • Better way to evaluate poor (pCERWASS) • Free supply of 3 m³/month to ethnic minority households (pCERWASS) • Funding from pCERWASS to support connection fee (pCERWASS)

³⁰ Please note that our research partners have reported that the Vietnamese Government has issued 128 policies to support the poor and 70 policies to support ethnic minorities. Ha Thi Thu Hue, Pers Comm, January 2016.

	Region 1		Region 2	
	PEs	Other	PEs	Other
Ideas provided by commune leaders	<ul style="list-style-type: none"> • CPC could support the system to expand, • CPC could financially support households • Develop more water sources (bores) to augment supplies • Equipment upgrades. 	<ul style="list-style-type: none"> • Pro-poor policies • Supporting people who are remote to create their own reliable water source (a bore) • Augment supplies through new infrastructure. 	<ul style="list-style-type: none"> • PE should invest in infrastructure to focus on water quality and expand system • PE should adjust fees for poor households • Government should support poor households for connection fee • Introduce policy for poor like electricity. • PE can be supported by loans and investment 	<ul style="list-style-type: none"> • Reduced or no connection fee for poor households • Tariff should cover maintenance not volunteers. • PPC and DPC should invest in improvements, CPC can help find support for connection fee. • Support for first m³ of water like policy for electricity • Raising awareness among local people of need to use clean water

Some PEs accessed grants from donors to support the expansion of their network to poor people. It appeared that such arrangements are ad hoc, and dependent on the PE's discretion, as well as the ability of the community member to know that they could ask for a subsidy and whether they had the confidence to do so. Box 2 provides a case study from Nhan Binh Commune showing that some people were not connected to a piped water system despite being willing to pay connection fees, and if they knew about subsidies provided to other householders, they may seek to get connected given that they wish to be.

Box 2: Insufficient dissemination of information about subsidies (Region 2)

In Nhan Binh Commune the private enterprise Phuc Loc Limited Liability Company has been operating since 2011 and serves 2700 households. The owner aims to serve all local people with clean water. He offers a reduced connection fee of VND500,000 to poor households, which is less than half of the typical connection fee (VND1.2–1.8 million). When the PE leader offers the subsidies he uses his own methods to identify poor households, rather than only using the Poverty Certificate. In the commune there are approximately 5,500 households in total, so approximately half the commune households are unserved. According to the PE, the people that are not served are outside the service area, and instead use rainwater or well water. However of the five households interviewed, two households, both poor, were not connected to the system and lived within the service area. The two householders reported that affordability was the reason that they were not connected to the system. They knew the price of connection and did not know of subsidies available. They said they would be willing to pay VND750,000 and VND1 million to connect – so if they had

known about the subsidy, and were deemed poor by the PE, they would have been able to afford connection. Both households said they would like to connect to the system.

'We serve all households, poor and non-poor people. We want to contribute to the development of our homeland. We want to reduce some diseases related to water.'

Leader of Phuc Loc PE.

4.4.6 Customer views and experiences

Our data revealed the reasons that people were not connected, perceptions of affordability, and knowledge of costs and support mechanisms.

It is clear that poverty remains a barrier for people to access piped water with 'not affordable' being cited by householders as the primary reason for not connecting to a piped water source in areas serviced by private enterprises in both Region 1 and 2 and by other service providers in Region 2.

Connection fees and tariffs varied across the four groupings which reflects the varied geographical contexts, the age of systems, differences in operational costs (e.g. electricity) and profit margins. Policy contexts also influence the cost of tariffs.

PEs in Region 2 (Ha Nam, Thai Binh, and Binh Dinh Provinces) had much higher connection fees than other service providers (the median was almost double) which had obvious implications for affordability. In Region 1 (Mekong Delta) median tariffs were higher in areas serviced by PEs than in areas serviced by other service providers, with a difference of VND1740 /m³ between the two types. Therefore, while PEs reported offering concessions more often, their overall median connection fees and tariffs were found to be higher, with the exception of PEs in Region 1 which had lower median connection fees. The differences reported between Region 1 and Region 2 may have been due to funding made available to PEs by donors, such as East Meets West Foundation which operates in the South of Viet Nam. Some reasons for lower tariffs applied by other providers included:

- funding from Government and donors
- self-managed schemes (by CPC/cooperatives, users' groups after being handed over)
- tariff being calculated to cover operating expenses only, and not maintenance, capital works or re-investment.

Some householders reported that they were able to keep their water bills low by using alternative sources of water for specific purposes, for example in Binh Phu Commune as described in Box 3.

Box 3: Managing the cost of water by using alternative sources in Binh Phu, Tien Giang

Householders in Binh Phu, Tien Giang explained that in order to keep the monthly tariff low, they managed their consumption by having a variety of sources of water for different uses. For example, a local waterway was used for non-consumptive uses such as washing.

4.4.7 Reasons for not connecting

Across provider types in both regions, the majority said that people did not connect to the piped water service because it was unaffordable (see Table 12). In Region 2, areas served by other service providers showed a different result which was that reasons for not connecting were mixed between unaffordability and satisfaction with existing water arrangements. These other arrangements included sharing a neighbour’s connection, or having an adequate mix of rainwater and surface water, and/or having their own bore.

Table 11. Reasons for not connecting to the piped water service (householder views)³¹

	Region 1		Region 2	
	Mekong Delta		Ha Nam, Thai Binh, Binh Dinh	
Service Provider Type	PEs	Other service providers	PEs	Other service providers
Number of households not connected to piped water system	(n=29)	(n=8)	(n=26)	(n=21)
Not affordable	93%	100%	85%	43%
Satisfied with existing water arrangements			15%	43%
Thought the piped water was polluted				5%
Was not an option (i.e. the service wasn't offered)	7%			10%

While results in Region 1 were relatively consistent across service provider types, interestingly in Region 2, unaffordability was a more significant reason for not connecting in areas served by private enterprises (85%) compared to areas served by other service providers (43%), where potential customers also cited satisfaction with existing sources as their reason (43%).

³¹ Please note that n changes significantly due to blanks being removed. The responses shown in Table 5 are limited to those who were not connected to a piped water service, and who responded to the question ‘Why aren't you connected to the water system?’. In the case of other service providers in Region 1, 8 households were interviewed who were not connected to the system. All responded ‘not affordable’ as the reason that they were not connected.

'I don't want to connect to the piped water service because we are too poor and don't have a poverty certificate. My mother lets us use her water, and that's good enough for me'.

Householder from Song Binh Commune, Tien Giang Province

In Region 2 in areas served by other service providers, affordability was not the primary reason for householders not being connected. While only a small proportion of people (n=1) reported that they were concerned about the quality of the piped water, and that this was the reason that they did not want a connection, Box 4 provides an example of this perspective.

Box 4: Water quality is as important as affordability.

Van Canh Commune in Binh Dinh province is made up of many ethnic groups, including Cham and Ba Na. The water in the commune is provided by Van Canh Joint Stock Company, and according to the director of the company, households outside the service area were 'the minority groups and they live in the villages far from the centre'. The director claims that the most important factor influencing who is served was the budget of the district, as they needed the support of the district to run the system. The householders in the town who answered the survey were a mix of ethnic minority and Kinh people. In this commune, wealthy households had decided not to join because the service was inadequate and they believed the water quality was poor. Two non-poor households reported that the price of water was low, but it was poor quality so they preferred to use well water. *'The water is not good quality and not enough to use all the year' 'Because the water is not adequate all year round, so I would sometimes have to use the well water anyway'* – householders. The two households who were connected also stated that the water was not available in sufficient quantities all year. The director said a PE could better serve the poor: *'A private company invests more in the system so the quality of water is good and service is better'*.

4.4.8 Perceptions of affordability

Of those householders who were interviewed and who responded to questions about affordability (n=189 across Regions 1 and 2 and across all poverty status groupings), it was observed that overall, connection fees were not considered expensive, or 'a little expensive but manageable'. Figure 25 below shows that each region and service provider type was slightly different, but in no case did 'very expensive' receive the majority of responses. Therefore, those who could afford the connection fee, were usually the ones who were able to connect, whereas those who found the connection fee 'very expensive' were probably not connected.

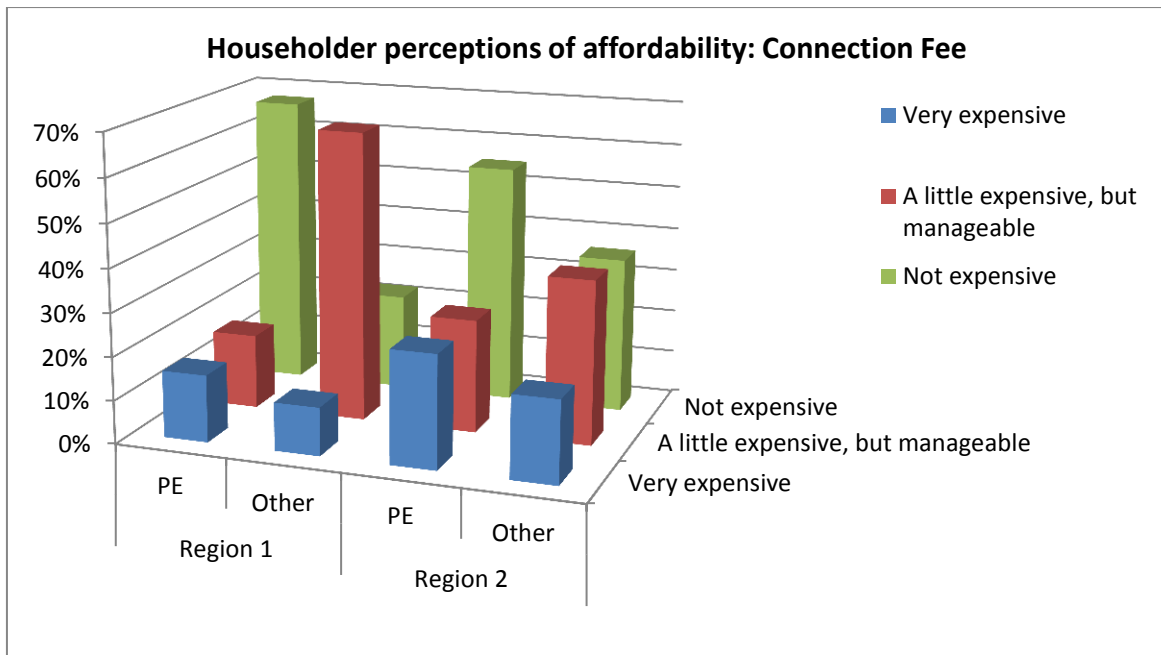


Figure 25. Perceptions of how expensive the connection fee was for those householders who are connected to a piped water service across the two regions, and two provider service types.

An interesting but unexplained finding in Region 2 was that while connection fees for schemes run by PEs were higher, so too was the percentage of responses stating that the connection fee was ‘not expensive’. This finding could be due to multiple factors such as private enterprises serving communities that were more able to afford the service, and the ability of people to pay for the service being correlated with their connection rates.

Box 5 below demonstrates real affordability issues related to the connection fee in Dinh Yen Commune in Region 2.

Box 5: Affordability and Willingness to Pay in Dinh Yen Commune, Dong Thap Province.

The case of Dinh Yen Commune shows the extent to which affordability was a barrier to accessing piped water. The commune leader reported that people were not connected because they were remote and so the cost of extending the pipeline to them was prohibitive. The PE also reported that distance and density were key barriers to extending the service, as well as customers’ ability to pay the high costs for extending the system. Some householders reported that they were able to pay the connection fee by instalment, although the PE reported that this mode of payment was not currently offered. When asked what they could afford to connect to the scheme, the householders (n=4) reported up to VND250,000. In the Mekong Delta, in communes serviced by private enterprises, the median connection fee was VND750,000 so the amount that these householders were willing and able to pay was significantly lower, indicating real affordability issues in Dinh Yen Commune for some householders.

Both regions showed similar patterns in perceptions of affordability of the tariff. On the whole, households who were connected found the monthly water tariff to be affordable, as shown in Figure 26 below. Less than 10% of householders (in both regions and for all service

provider types) found the monthly water tariff to be ‘very expensive’. Phase Two of this research found that householders were able to modify their water use in keeping with their household budgets. For example, poor householders used piped water for very few activities (cooking and possibly bathing) in order to keep the monthly water bill down. These results may therefore reflect the ability of householders to keep water bills in line with their disposable incomes. As with the connection fee, in areas serviced by PE, a higher percentage of households interviewed across demographic groupings indicated that the tariff was not expensive compared to households in areas serviced by other service providers. This is despite the fact that areas with PE providers had slightly higher median tariffs than areas served by other service providers (as shown in Figure 26). This anomaly cannot be explained with the data available, and perhaps warrants further research.

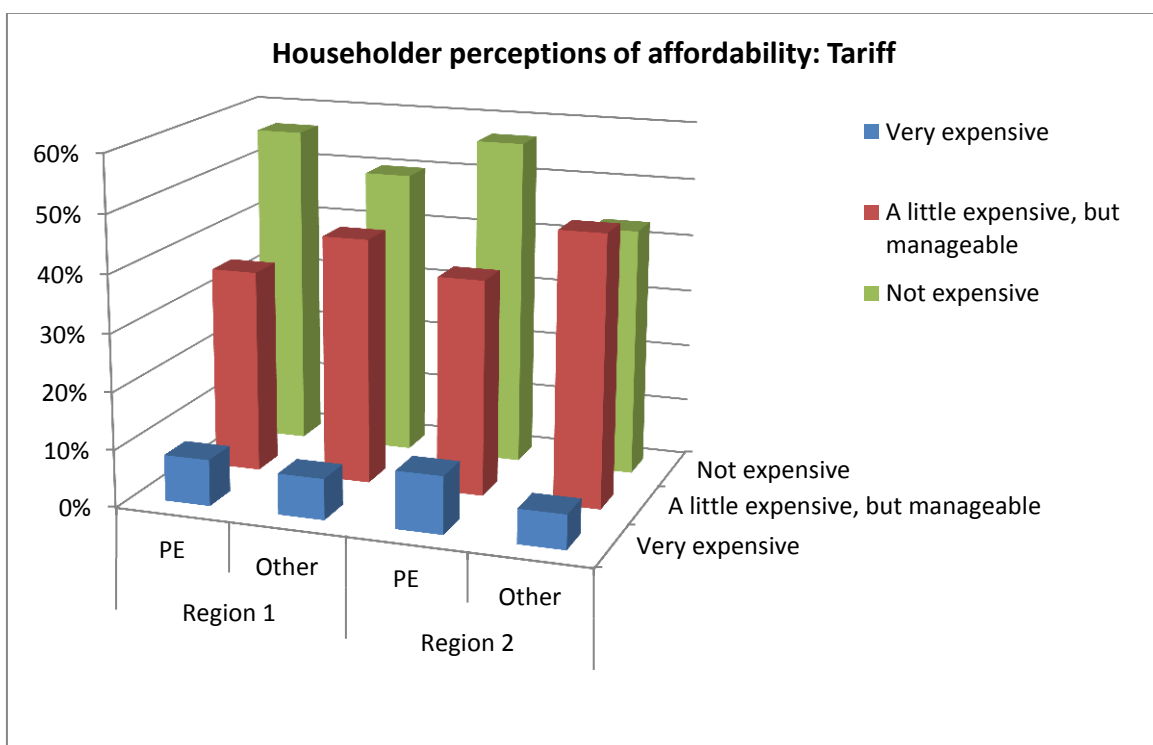


Figure 26. Perceptions of how expensive the monthly water bill/tariff was for those householders who were connected to a piped water service across the two regions, and two service provider types.

4.4.9 Knowledge of costs and support mechanisms

In this section we look at the extent to which householders had knowledge of the cost to access a piped water service, and whether or not they were aware of support mechanisms that were available to them, such as subsidies/exemptions or instalment plans. We found that even when subsidies were offered by PEs, householders were not always aware of their existence or how to access them. In Region 1, in areas serviced by PEs, of those who were not connected and who were poor, and who reported that the service was not affordable (n=12), 11 thought that subsidies were not available, and only one reported that a subsidy was available when the scheme was set up to assist them to connect. Additionally,

awareness of subsidies and exemptions was sometimes inconsistent across the stakeholders interviewed.

As shown previously (Table 9), on the whole, poor people did not know whether or not there were subsidies available to them and/or said they were not available. One exception was householders in areas served by private enterprises in Region 1, where the majority of poor householders interviewed reported that a subsidy/exemption was available for poor households (15/17 = 88%) as summarised in Figure 27 below:

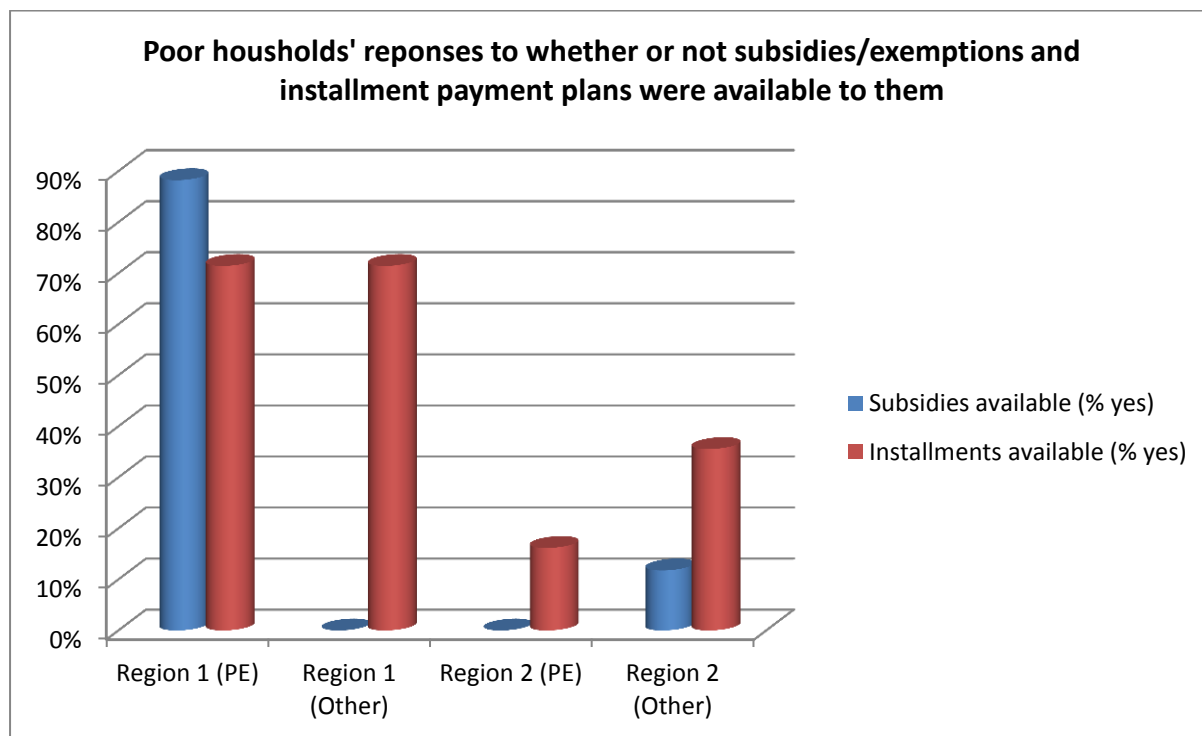


Figure 27. Poor households' responses when asked whether or not subsidies/exemptions and instalment payment plans were made available to them (number of yes responses)

'Safe water, clean water everyone wants to use; however, we are too poor to get access to a water connection. We hope there will be a preferential policy to allow poor people to access safe water'

Householder from Vinh Binh Commune, Ben Tre Province

Private enterprises provided case-by-case support for poor people in a number of ways including subsidies, exemptions and installment plans. In Region 1, most private enterprises (70%) reported that they offered subsidies for the tariff. Among the PEs who offered subsidies, targeting the poor was seen as the priority. However, when asked how the subsidies were managed, many referred to payment delays being offered as opposed to discounted rates. Therefore, instalment plans seem to have been conflated with subsidies by respondents in some cases. And yet, in Region 1 in areas served by PEs, 25 householders

stated that there was a subsidy or exemption to assist the poor to connect at their time of connection. Of these 25 households, 15 were poor.

In Region 1, approximately half of the other service providers offered discounts on monthly bills and allowed poor families to pay their bills late. The other half reported that the poor don't use much water anyway (which kept their bills down) and/or that they did not provide assistance to poor families. At the same time, subsidies or exemptions for the connection fee were not commonly offered by 'other types' of service providers, but when they were, they were targeted towards the poor.

In Region 2, approximately 40% of PEs reported that they offered subsidies or exemptions for the connection fee which was a higher proportion than for other service providers. Only a small proportion (19%) of PEs reported that they did not offer instalment plans, however, none of the other service providers in Region 2 reported that they offered instalment plans for the connection fee. For both PEs and other service providers, most householders therefore did not access subsidies. Interestingly, while other service providers in Region 2 did not report offering instalment plans for the connection fee, householders in these areas did report being able to access payment plans for the tariff.

4.5 COMPARING WATER SERVICE PROVIDER TYPES: KEY INFORMANT PERSPECTIVES ON WHICH MODEL IS BEST ABLE TO SERVE THE POOR.

The analysis presented thus far has shown that private enterprises have, on the whole, been more able to offer subsidies and flexible payment options than other service providers, which may mean that they are more able to reach poorer members of a community. At the same time, the median connection and tariff rates of PEs were often higher which could have adverse affordability implications. Additionally, it should be noted that the ability of private enterprises to offer subsidies and exemptions more often than other service providers may be due to their autonomous, flexible management arrangements, and also funding provided by donors such as East Meets West Foundation. Similarly, connection fees and tariffs may be higher as a result of more recent policy requirements, and/or conditions required by the donor.

4.5.1 Perceptions about which water service provider type is better able to serve the poor.

In order to obtain a broader understanding of which type of service provider is best able to serve the poor, commune leaders and service providers (both PE and other types) were asked to rate which type of entity was best able to reach poorer and more disadvantaged members of the community. The perspectives described below are based on their opinions only, which may or may not be substantiated by evidence, and in many cases their views would have been based on impressions rather than evidence. Nonetheless, the analysis does give an insight into current overall perspectives on serving the poor.

The following analysis shows that there were regional differences, one of them being that in the Mekong Delta (Region 1) private enterprises were consistently rated as most the

effective at serving the poor. In Region 2, water services managed by pCERWASS were considered to be the most effective at reaching the poor. Reasons for these perceptions are discussed below.

Region 1: Views from stakeholders in areas served by PEs

PEs and commune leaders believed that PEs were better able to serve the poor than other types of management in PE-serviced areas of Region 1. Respondents often felt this was because the PE could decide whom to serve, and because the other models did not have the human and financial resources to reach the poor. A range of reasons were also provided by commune leaders including the view that PEs had faster response rates (to leaks), and better management of late payments as a result of self-governance.

Some views given by commune leaders (in areas served by PEs) included:

Private enterprises are better at reaching the poor because:

- PEs have decision-making power.
- PEs are flexible and care.
- There are requirements in place for PEs to support the poor.
- Other models are inefficient.
- CPC is lacking in human resources.
- Other types of service providers find it hard to collect fees.

Other models are better at reaching the poor because;

- pCERWASS has budget support.

Some views provided by private enterprise owners included:

Private enterprises are better at reaching the poor because:

- PE owners can decide all their policies – decision-making power.
- PEs can repair a leak or broken pipe faster than WUAs and therefore provide better service than WUAs.
- PEs can regulate late payments better than WUAs.
- The WUA did not operated well so the region was transferred to this PE.

Other models are better at reaching the poor because:

- pCERWASS can do better because they receive funds from government.
- pCERWASS have a large budget from government, so they can provide infrastructure (drill wells, build stations) without collecting money from villagers.

Region 1: Views from stakeholders in areas served by other service providers

Other service providers see water user associations as being best able to serve the poor, with private enterprises being ranked second. This is interesting given that the judgement is made by other types (not PEs themselves). A reason provided by one respondent was that the PEs and pCERWASS have capital to put towards supporting the poor, whereas the other models have no funds for such endeavours. In contrast to this view, commune leaders

indicated that community-managed schemes were most able to serve the poor. Reasons for this included the flexibility offered by the service provider, and better quality and management.

Providing services to low-income households or ethnic households was not considered a high priority for other service providers. While these were the views expressed by interviewees, it is interesting to note that most schemes developed by other service providers were funded either by the national government under the National Target Program (NTP) or Program 135, as well as by donors whose aim was to serve the poor/ethnic minorities. The distance from the water supply source, density and customers demand were reported to be the critical issues related to deciding who is served by the water system.

Some views given by commune leaders (in areas served by Other Service Providers) included:

Private enterprises are better at reaching the poor because:

- The PE has a bigger pipe so it receives fewer complaints than the other models.

Other models are better at reaching the poor because:

- The cooperative and the water association have flexible policies that fit the needs of the poor, and if there is any problem such as broken pipes or no water, they fix these problems immediately.
- The community is flexible in providing the service for the poor. They can let the poor make late payments or they can reduce the tariff.
- The water provided by pCERWASS is cheaper and of good quality.
- The cooperative needs to pay tax but they manage [the service] better. The community[-managed system] does not need to pay tax and they do not manage it as well.

Some views given by other service provider representatives included:

- pCERWASS (Dong Thap) connected 20/180 households for free and these were the poor households on the list approved by the CPC.
- At the meeting of the board of managers, the local leaders decide whether or not the poor will be supported to connect to a piped water scheme.

Figure 28 below provides an overview of the different views provided by each stakeholder group when asked which service provider type was best able to serve the poor. ‘Much better able to serve the poor’ responses are shown, indicating that private enterprises and commune leaders thought that PEs were best placed to serve the poor. Commune leaders in areas served by PEs also indicated that cooperatives were effective in serving the poor.

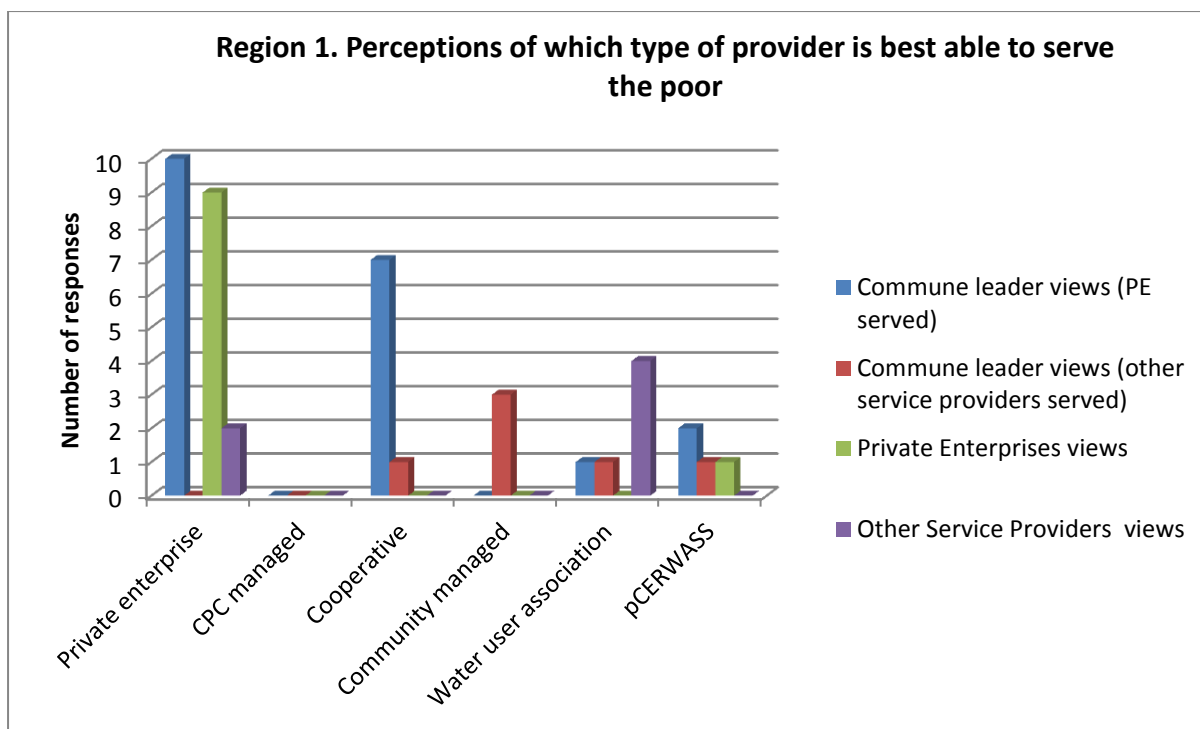


Figure 28. Region 1: Other service providers, private enterprises and commune leader perspectives on ability to serve the poor: ‘Much better able to serve the poor’ responses provided.

Region 2: Views from stakeholders in areas served by PEs

In Region 2, PEs believed they were much better able to serve the poor, but this view was not shared by commune leaders, who had mixed views on who was better. Their views were evenly spread across many provider types, suggesting a lot of variability between providers. PEs believed they were better because they could make their own decisions about who they served, because other provider types (e.g. CPC and community) were badly managed, and other types had made poor investments so they didn’t provide good quality water.

Some views given by commune leaders (in areas served by PEs) included:

Private enterprises are better at reaching the poor because:

- PEs invest in water services and their technology is better.

Other models are better at reaching the poor because:

- CPC has more reasonable prices for the poor, PEs have high connection fees for the poor.
- PEs have a focus on profits, whereas state enterprises (pCERWASS) focus on the customers’ needs for water.

Some views given by PEs include:

Private enterprises are better at reaching the poor because:

- PEs understand the demands of the local people.

- PE owners can make their own decisions on which poor households to give subsidies.
- The community is not good at managing the water service.
- PEs need to make a profit so they serve better.
- The community does not have enough capital invested so its technology is not good.
- CPC and other associations are badly managed. They also do not invest in the infrastructure or pipe system so that the water quality is very bad.

‘The PE and PCERWASS have money but their responsibility is not serving the poor people – they have to get as much [financial] benefit as possible. Other types of service providers want to support the poor but they don't have enough money.’

pCERWASS managed water service provider representative, Thuan My Commune.

Region 2: Views from stakeholders in areas served by other service providers

In areas served by other types of service providers, both the providers and commune leaders believed that pCERWASS was most able to serve the poor. This was usually because they believed pCERWASS had the financial resources to be able to invest in infrastructure and support the poor. They were focused on customers’ needs for water and the effectiveness of the service instead of on making a profit. A CPC-managed provider thought that PEs asked for higher fees. The two joint stock companies (partially private) that answered the question considered that PEs were better able to serve the poor because the quality of their water was good.

Some views given by commune leaders (in areas served by other service providers) included:

Other models are better at reaching the poor because:

- pCERWASS has money to build infrastructure.
- PEs have a focus on profits, whereas state enterprises (pCERWASS) focus on the customers’ need for water.
- Because the station belongs to the commune, they do not focus much on profit but rather on the effectiveness of the service.

Some views given by the other service providers included:

Private enterprises are better at reaching the poor because:

- PE is better because the quality of the water is good and its tariffs are reasonable so it serves the poor well.
- PEs provide higher levels of investment so the quality of their water is good.

Other models are better at reaching the poor because:

- PEs ask for higher fees so are not as good at serving the poor.
- pCERWASS has a budget to support the poor and build infrastructure.

Figure 29 shows the range of views on which type of service provider was best able to serve the poor according to other service providers, commune leaders and private enterprises in Region 2.

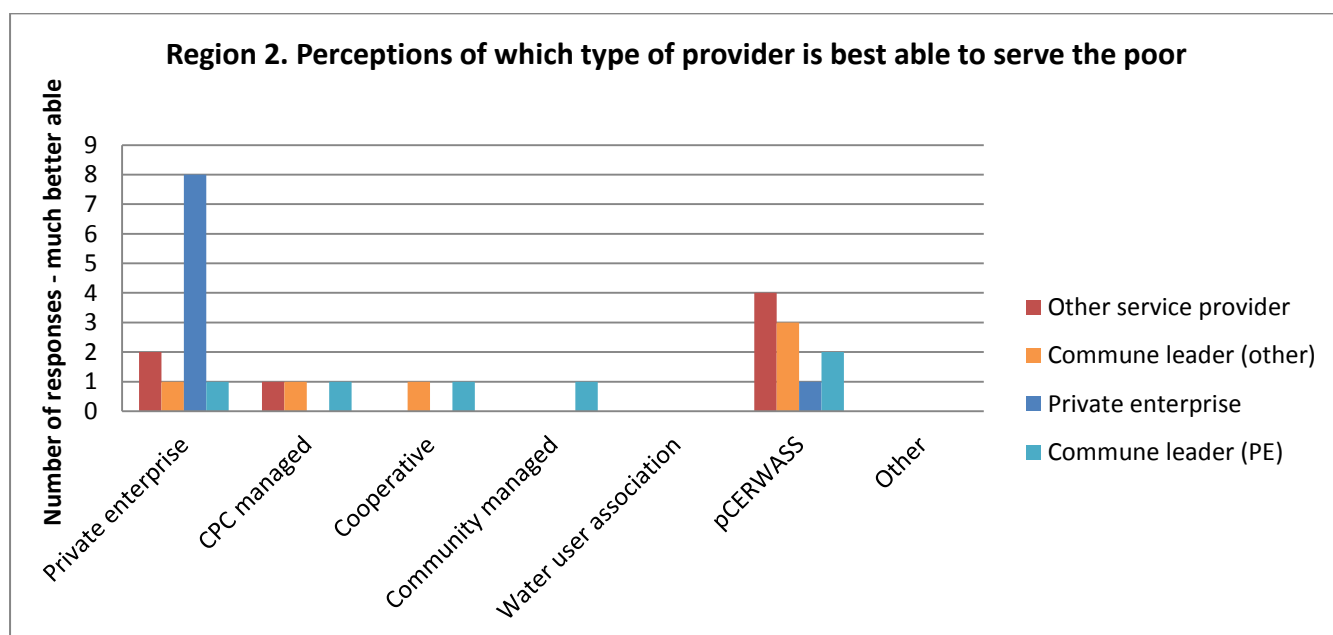


Figure 29. Region 2: Other service providers, private enterprises and commune leaders’ perspectives on ability to serve the poor

It should be noted that there is a long and widespread history of private enterprise involvement in supplying water in the Mekong Region (Region 1), and a more limited history in other parts of the country. Therefore, commune officials and others in Region 1 have witnessed private enterprise involvement and performance for a longer period of time, and this may influence their perceptions of the contribution that this sector is making to servicing piped water in selected communities.

4.6 PERSPECTIVES OF GENDER INFLUENCES ON SERVING THE POOR

This research tried to determine whether or not gender was a barrier to households accessing piped water services. Just over 50% of householders interviewed in Phase 1 were female, and 40% were female-headed households. Interviewees were asked whether or not female-headed households were treated in the same way as male-headed households. The research did not identify significant gender discrimination issues through responses to these questions. Analysis of householders who were not connected to a piped water service were not disproportionately headed by women. However, it should be noted that views on gender and gender discrimination were sought in a very ‘light’ manner, so these indications should be taken as such.

Viet Nam has a Social Institutions and Gender Index (SIGI) value of 0.1865 (2014) which is rated 'medium' in terms of the levels of discrimination that women experience.³² Nevertheless, despite being raised in interviews, issues related to gender discrimination were not discussed by participants in this research.

4.6.1 Serving Female-headed Households

In Region 1, in areas served by both PEs and other service providers, householders did not identify any gender discrimination issues when asked if female-headed householders were treated the same as male-headed households with respect to accessing piped water connections. Most reported either that they did not know, or that they were treated the same or 'good/well' as shown in Figure 30.

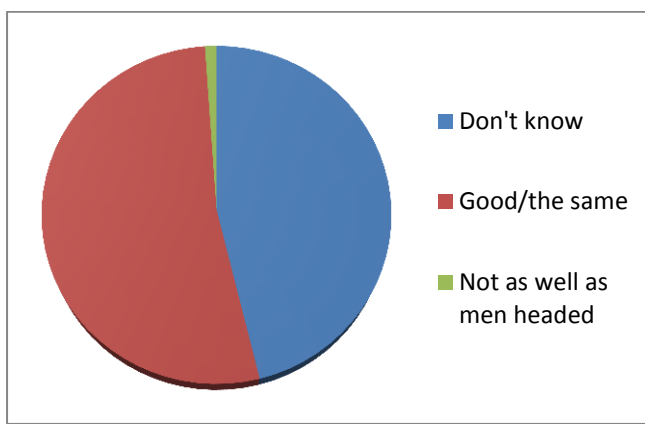


Figure 30. Region 1. Householder views on how female-headed householders were treated in comparison to male households (Private Enterprise served areas).

In Region 2, households served by both PEs and other service providers did not identify gender discrimination issues. Approximately 80% of respondents felt that female-headed households were served well or no differently to male-headed households (Figure 31 and Figure 32). In both cases approximately 15% of households reported they didn't know. Interestingly, approximately 6% of respondents from households served by PEs reported that they believed female-headed households would be served the same if they could afford to be connected. This again suggests that perceived affordability is an issue for private enterprises in Region 2.

'Now women can do all the work the man can do'

Leader of a Private Enterprise

³² Social Institutions and Gender Index (2014) URL: <http://www.genderindex.org/country/viet-nam>

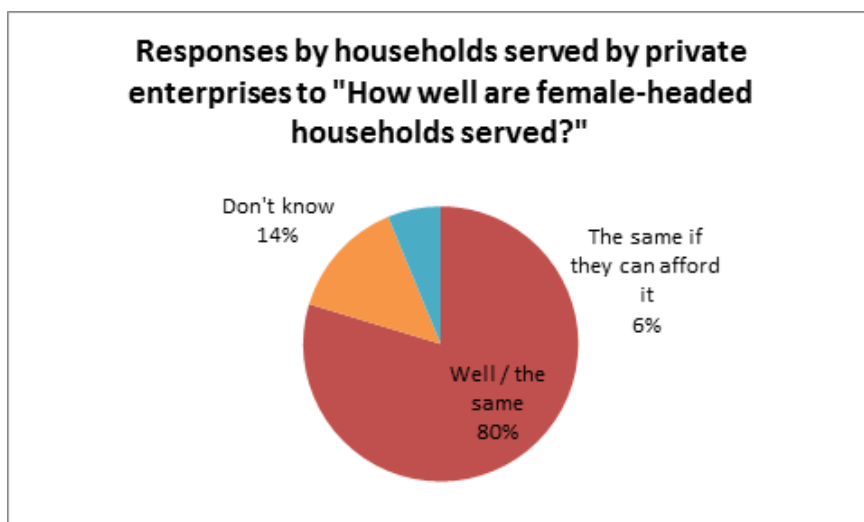


Figure 31. Perceptions of how well female householders are served (households served by PE)

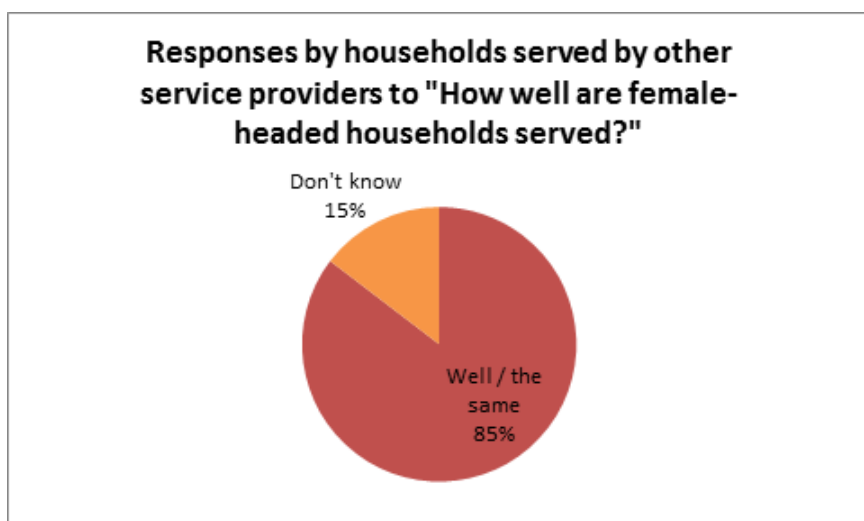


Figure 32. Perceptions of how well female householders are served (households served by SP)

4.6.2 Gender perspectives on whether males/females can better serve the poor

In Region 1, when other service providers were asked, ‘Do you think water service providers managed by women are more or less likely to serve the poor well as compared to those managed by men?’ almost all reported that they didn’t know (n=11). One reported that they would be a lot more likely to serve the poor if they were female-headed, and this respondent was a man.

In Region 1, when PEs were asked if a male- or female-owned PE would be best able to serve the poor, responses were mixed, but most said that a female-headed PE would be more likely to serve the poor. At the same time, there seemed to be no difference in the

acceptance of late payments by female- and male-headed PEs. For other service providers, no information related to sex of the service provider representative/owner and their willingness to accept late payments was obtained.

In Region 2, when other service providers were asked if female-headed service providers would be better to serve the poor, all responded that they did not know. One-quarter of respondents (n=3) commented that women had more sympathy, were more flexible and better at raising funds, but they were unsure if they would serve the poor better as they may not have the necessary technical knowledge. One of these respondents was female. We could not determine if there was any difference between female- and male-headed service providers in offering subsidies or exemptions, shared connections or late payments as there was only female-headed service provider (who also did not respond to these questions).

In Region 2, when private enterprises were asked the same question, all male PEs said they did not know, or that gender was not important. Of the two female respondents, one answered the same way, and one responded that female-headed enterprises were a lot more likely to serve the poor, stating 'We pay attention to the poor and women are much better than men in considering poor people's demands'. We could not determine if there was any difference between female- and male-headed private enterprises in offering subsidies or exemptions. One of the two female-headed enterprises offered subsidies for the tariff and connection fee, and allowed shared connections and late payments, but the other did not (the respondent said she paid attention to the poor but had only just bought the water company).

Box 6 describes an example of a female-headed private enterprise which believed that it was better able to serve the poor due to a greater awareness of the needs of the poor.

Box 6: Female-headed Private Enterprise: wishing to expand

In Xuan Khe Commune the water system was built by government and managed by the commune people's committee until it was sold to Huu Khuyen Limited Liability Company in early 2015. According to the PE leader, the station was badly managed and the quality of the water was poor. *'CPC has sold the water station to our company because the management is so bad, the quality of water is also terrible.'*

The leader of this PE is a woman, who feels that as a female-headed PE she is better able to serve the poor as *'We pay attention to the poor and women are much better than men in considering poor people's demands'*. However, they have not yet undertaken any activities to serve the poor since taking over the station.

The PE leader sees that the best way to help the poor is to invest in the station to improve water quality. She would like to improve the system but would like investment from the state. *'The state should help company by investing in providing water so that the company can give some priority to poor people. Capital is our really big problem in providing a water service. We need at least VND30 billion to build a good water station. That is a big amount.'*

4.7 SUMMARY AND CONCLUSIONS (PHASE 1)

Drawing from the above evidence base, the Phase 1 research supports the following key findings and conclusions:

1. **Access to piped water services for the poor was not the key driver for private enterprises' (PEs) decision-making.** PEs did not on the whole keep records of who was poor (or where they lived) in their service areas, and most PEs did not view providing services to low income households as an important factor in determining where a system was placed.
2. **The poor sometimes pay more than non-poor for connection to piped water services** and this could be further entrenching poverty and inequality in some communes. This was not specific to any particular type of service provider, given that in Region 1, in areas served by other service providers, poor and near-poor householders reported having to pay higher median connection fees than non-poor households. In Region 2, however, poor householders served by private enterprises had the highest reported median connection fees.
3. **While connecting poor people to a piped water service didn't drive PEs' decision-making, it often featured in how they ran their businesses.** Private enterprises were found to offer subsidies and exemptions more often than other service providers in both regions (with the reported rate of offering subsidies higher in Region 1 than in Region 2). At the same time, private enterprises were found to offer subsidies and exemptions more often than other service providers in both regions, and yet, private enterprises in Region 2 had median connection fees that were higher than the fees charged by other types of service providers (the median was almost double) which has obvious implications for affordability. In Region 1, private enterprises had lower median connection fees than other service providers, which could be as a result of a higher proportion of free connections, and subsidised connections. These subsidised connections are likely the result of output based aid programs delivered in the Mekong Region (Region 1) for private enterprises.
4. **Poverty remains a barrier** for people to access piped water with 'not affordable' cited by householders as the primary reason for not connecting to a piped water system in areas serviced by private enterprises (in Region 1 and 2) and by households in areas served by other service providers (in Region 1).
5. **Service coverage is piecemeal** and services have often been developed organically in response to demand from community members as opposed to long-term master planning. This has implications for reaching householders who are far away from the main pipe network, and for equitable cost-sharing across communities.
6. **Uneven application of support mechanisms** offered to private enterprises via development agencies and government incentives has resulted in prices paid by

householders varying from commune to commune and from province to province, which has ramifications for poor households.

7. **Private enterprises play a significant role in decision-making about service areas, particularly in the Mekong region.** In Region 1, private enterprises had a high degree of autonomy with regards to where a system was placed, and who it served. They needed to keep the CPC informed, but in essence the PEs determined the critical aspects of their services themselves. In Region 2, government entities (PPC, CPC and pCERWASS) played a much larger role in managing water service provision areas, however, the service provider (private enterprise or other) also played a significant role. Understanding who makes the decisions is important for identifying pro-poor mechanisms (and whom to target) to ensure the poor are reached. This finding means approaches need to be contextualised as different approaches might be needed for different regions.
8. **Private enterprises are one type of non-government service provider that is offering water services to fill gaps left by limitations in the coverage of government-built systems.** It is not known if this is the most efficient way to provide water services to these communities, particularly in the face of the reported lack of higher level water management planning in rural Viet Nam.
9. **A range of mechanisms have the potential to support better access to services for the poor,** Respondents from private enterprises, other service providers and government identified a range of possibilities. These ideas included government-funded subsidies for the poor (directed to the poor themselves, or to service providers), donor funding, communication and engagement activities to increase consumer demand, augmenting systems so they can reach more people, and pro-poor fee structures.
10. **Perceptions about which type of service provider was best able to serve the poor varied across different respondents in both regions.** However, the factors identified by private enterprises and commune leaders that led to service providers being better able to serve the poor included having:
 - financial resources to be able to invest in infrastructure
 - autonomy about deciding whom to serve
 - human and financial resources to reach the poor
 - fast response rates (to leaks)
 - better management of late payments
 - flexibility offered by the service provider
 - good management
 - high water quality.

Therefore, any type of water service provider able to fulfil these criteria may be better able to serve poor householders than those without these qualities or standards.

5 PHASE 2: QUANTITATIVE AND CASE STUDY RESEARCH

‘The poor cannot access piped water because they live in remote areas and are not concentrated, so the pipes cannot reach them’

Commune Leader from Co To Commune

Case study research formed the second phase of the study of outcomes for the poor associated with different models of water service provision. The primary focus of the research was on private enterprises. Exploring the characteristics of different models allowed us to situate private enterprises within the wider context of water service delivery in rural Viet Nam. The following sections present the methodology, the regional water service context, and the provincial policy contexts, followed by six case studies and a summary of findings across the case studies.

5.1 METHODOLOGY

We undertook the case study research in six communes in three provinces across Viet Nam’s Red River Delta and Mekong River Delta, as summarised in Table . The objective of this phase of the work was to undertake quantitative and spatial analysis of the links between water service delivery and poverty.

Table 12 Case study communes

Region	Province	Case study communes
Red River Delta (Region 2)	Ha Nam	Thanh Hai
		Hoa Hau
	Thai Binh	Dong Phu
Mekong River Delta (Region 1)	Tien Giang	Luong Hoa Lac
		Tan Phong
		Thien Trung



Figure 33. Research team in Hanoi

5.1.1 Research questions

This phase of the research addressed two primary questions and related sub-questions:

1. Are poor households less likely than non-poor households to be within a water service area?
2. For those households within a water service area, are poor households less likely to be connected?
 - c. Does this vary depending on the service provider type (private, government etc.)?
 - d. Why are poor households within the service area not connected?

As mentioned earlier, for this research, we defined a *water service area (WSA)* as the area geographically close to a service provider's piped network. Households in the water service area would typically have the option to connect to the piped network.

5.1.2 Fieldwork and sampling

Two teams of researchers conducted the fieldwork during July 2015. One team conducted its research in the Mekong Delta in Tien Giang province, and one conducted its research in the Red River Delta in Ha Nam and Thai Binh provinces. Teams included researchers from the Institute for Sustainable Futures at the University of Technology Sydney (ISF-UTS), the Centre for Natural Resource and Environmental Studies at Viet Nam National University and East Meets West Foundation (EMWF).

We selected case study communes based on preliminary data received from the Institute for Water Resource Economics and Management (IWEM), the National Centre for Rural Water Supply and Sanitation (NCERWASS) and relevant Provincial Centres for Rural Water Supply and Sanitation (pCERWASS).

In selecting case study communes, we sought to include: a mix of communes in the north and the south; communes where both PEs and other types of service providers were operating (to facilitate comparison); and a mix of sites where service providers have made particular efforts to include poor households, and sites where they have not. Ultimately, we selected four of our six case study communes through this process. We included two others while the fieldwork was underway for pragmatic reasons, as some of our original choices became unavailable. We based our choices on advice from the relevant pCERWASS.

In each province, researchers met with representatives from the pCERWASS, who provided information about the policy context for private sector participation in rural water supply, and coordinated visits with commune officials and service providers. In each commune, researchers conducted interviews with commune officials and with representatives from all water service providers currently operating in the commune. The teams collected data for all households identified as poor according to the official government categorisation based on an income threshold (<VND400,000/person/month).³³ In one commune (Dong Phu in Thai Binh) we also included 'near poor' households with an income slightly higher than the 'poor' threshold (VND560,000 /person/month).³⁴

In each case study commune, officials provided information about the commune context and history and lists of registered poor households. Water service providers shared information about the history and operation of their water system and worked with researchers to define the boundaries of their water service area with reference to the location of primary and secondary pipelines and the locations of households across relevant areas. Both commune officials and water service providers also shared their views and experiences related to the provision of piped water services to poor households.

Researchers visited each household, captured location data using GPS devices and conducted short interviews which covered connection status, reasons for non-connection (for households not connected), and the use of alternative sources of water.



Figure 34. Research team in the Mekong Delta

³³ Decision No. 09/2011/QĐ-TTg of January 30, 2011, setting norms on poor households and households in danger of falling into poverty for the 2011-2015 period.

³⁴ The official threshold is up to VND520,000 but advice provided by partners for this research was to include households up to VND560,000.

5.2 ANALYSIS METHODOLOGY

5.2.1 Overview

Household data collected in the field described the connection status of poor households (collected as a binary outcome), and GPS positioning verified through interview responses defined each household's position relative to a water service area (hereafter referred to in this section as 'service area inclusion'). We combined this data with commune-wide figures provided by commune officials and water service providers which described the total number of non-poor households, and the total number of water connections across the commune. This was the final data set used for answering the posed research questions.

The statistical methods we used on the collected data to answer the posed research questions followed typical null hypothesis significance testing methods, whereby a hypothetical population for which a null hypothesis holds true is proposed, and repeated samples are taken from this population. These samples yield a distribution of predictions from the null hypothesis to which real data can be compared. If the real data set falls in the extreme tails of this distribution, then the null hypothesis can be rejected, as the probability of getting an extreme result from the null hypothesis distribution is small (equivalent to a p -value of less than 0.05 at the 95% significance level).

Methods used to test the null hypothesis for each research question differed, due to the nature of the questions and the data being analysed. These methods are described in detail below.

5.2.2 Research Question 1

For each research question, we devised a null hypothesis. For the first research question ('Are poor households less likely than non-poor households to be within a water service area?'), the null hypothesis tested was as follows:

Research Question 1: $H_0 =$ Poverty status and service area inclusion are independent

To be more consistent with the posed research question, H_0 for Research Question 1 can also be stated as predicting that the values of one variable will be unaffected by the values of the second variable; i.e., there will be no difference between poor and non-poor for inclusion in a water service area. The alternative hypothesis for H_0 (H_1) then, is that there is a relationship between economic status and service area inclusion, described by a statistically significant difference between the proportions of poor and non-poor inside a service area.

To test H_0 for Research Question 1, the Chi-squared test of independence was performed on the data set, arranged into 2×2 contingency tables for each commune (see Figure 35). The Chi-squared test of independence determines whether two categorical variables in a single sample are independent from or associated with each other, and is suitable for testing H_0 for Research Question 1. This is a common method used in research across many fields for determining if there are observable differences between two (or more) groups.

	In a service area	Not in a service area
Poor Households	A	b
Non-poor Households	C	d

Figure 35: Example contingency table of observed frequencies for service area inclusion by economic status.

The Chi-squared test compares the observed categorical frequencies found in the contingency table to a model that distributes the data according to the expectation that the variables are independent and share no association. The likelihood that the variables are associated is the resulting Chi-square statistic.

To determine if H_0 can be rejected, the Chi-squared statistic is further compared to a table of critical values given by a Chi-squared distribution. If the resulting p -value is less than 0.05 (using a confidence level of 95%), then the alternate hypothesis can be accepted.

In addition to this test, odds ratios were also computed. Odds ratios are a measure of the association between a group and an outcome. For Research Question 1, odds ratios computed describe the odds of non-poor household being inside a service area compared to the odds of poor households being inside the same service area (e.g., for a given commune, non-poor households are x times more likely to be in a water service area compared to the poor).

5.2.3 Research Question 2

Research Question 2 asks if there is a difference between poor and non-poor connection rates within commune service areas. While this question is relatively straightforward on its own, the sub-question asking if differences exist between poor and non-poor connection rates *for different service providers* needs to be considered *before* determining whether differences can be detected across the whole commune. This is because, if differences are detected between the different service areas, then the service areas must be heterogeneous, and combining heterogeneous groups to determine a ‘common’ difference would be misleading; therefore, applying a similar approach to Research Question 1 would be inappropriate.

Odds ratios are a measure of association between a group and an outcome. For Research Question 1, odds ratios computed describe the odds of non-poor household being inside a service area compared to poor households (e.g., for a given commune, non-poor households are x times more likely to be in a water service area compared to the poor). It is important to note that an odds ratio differs from a risk ratio. A risk ratio gives a likelihood of an event occurring, whereas the odds ratio used in this study communicates a measure of observed association.

To overcome this issue, and to see if an association between economic status and connection status exists within and across service providers, we devised a method which is shown diagrammatically in Figure 36. Household data was arranged into stratified contingency tables, with separate contingency tables arranged for data within each service area. For example, for a commune with three service providers, three contingency tables were produced describing economic status and connection status frequencies, one for each water service provider.

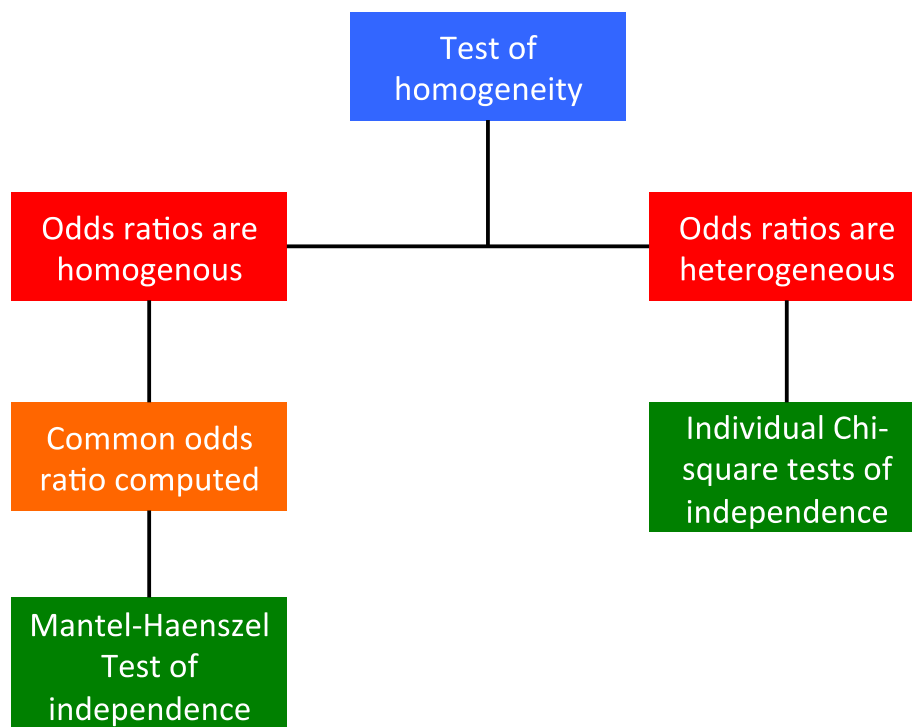


Figure 36: Process flow-chart for Research Question 2 analysis

The first step for Research Question 2 was testing for the homogeneity of odds ratios for poverty status and connection status across the water service providers. This is analogous to testing for statistical interaction between an additional variable and those tested in Research Question 1 (in this case, the additional variable being water service provider). Homogeneity of odds ratios are tested using a Mantel-Haenszel Chi-square test, which computes individual odds ratios for each service provider to produce a weighted average, weighing each odds ratios inversely proportional to their variance to correct for odds ratios with high variability, and comparing these computed values across service areas.

If the above test yields a p -value of above 0.05, then the null hypothesis is accepted, as there is no evidence for heterogeneity. In this scenario, as it was determined there was no difference between the rates of connection of poor and non-poor households to the different service providers, a common odds ratio can be computed by weighted average for

the entire commune, and the hypothesis that there is no difference between poor and non-poor and their rates of connection can be tested.

To test if there is a significant difference between poor and non-poor connection rates in this scenario, the null hypothesis that the common odds ratio is equal to 1 (i.e., that there is no significant difference between the odds ratios because there is no difference between different service providers) was tested. This was done using a Mantel-Haenszel Chi-square test, which controls for bias across the service providers by weighting the estimates by total observations in each service area.

If odds ratios are heterogeneous (i.e., odds ratios are significantly different across service providers), then it is determined that there is a significant difference between service provider and economic status/connection status association, and individual tests for independence need to be done for each service area. These tests were conducted by service area as per the method described for Research Question 1. The results determine whether there are significant differences between poor and non-poor connection rates for each service provider.

5.2.4 Limitations

Limitations related to the research approach include issues with defining the ‘poor households’ which formed the core of our sample (discussed in the introduction), challenges with case study selection, uncertainties in determining the boundaries of water service areas, and uncertainties about the numbers of total households (and connected households) within water service areas in some communes.

As described above, case study selection was informed by preliminary data and was based on a set of criteria. In some instances, preliminary data was found to be out of date or unreliable when the research team arrived in the commune. Further, it was ultimately not possible to include two of our originally selected communes due to issues with logistics or approvals processes, meaning that two of the six case studies were selected during fieldwork. While we were still able to consider our original criteria in choosing between backup options, the choices were in part pragmatic. The main impacts of this limitation were (i) We included one northern commune (Dong Phu in Thai Binh) which had no private enterprise provider operating, so although we gained valuable insight into other models including a state-owned enterprise, we were unable to compare the influence of provincial private sector support policies across provinces. (ii) All three Mekong communes were within the same province, namely Tien Giang, and this also limited our capacity to compare and assess the situation across multiple provinces with different private sector support policies.

Uncertainties in some defining parameters for the study resulted in a further limitation. In one commune (Luong Hoa Lac) it was difficult to identify clear WSA boundaries given significant overlaps between service areas. Researchers worked with service providers and GPS units to define as clearly as possible the reach of each network, though some uncertainty remained. Across all communes, there were a few WSAs where service providers and/or commune officials had difficulty accurately reporting total numbers of

households in the area, and the numbers of households that were connected. While the research team sampled the entire population of poor households, we were reliant on officials and service providers to report total numbers of households. In instances where accuracy was uncertain, we included sensitivity testing in the analysis process to ensure findings were robust within a reasonable margin of error.

The principal limitation to the statistical approach taken for this study was that there were instances of observations of connection or non-connection status below 5 in some case study commune water service areas. As a general rule, the results of Chi-square tests of independence generally degrade with *expected* cell values of less than 5, and as expected cell values are computed based on observable frequencies, this became a consideration in the statistical methods used. Typically, Fisher's exactness test is useful for cases where expected cell frequencies are less than 5, however the accuracy of Fisher's exactness test degrades with sample sizes as large as those collected during the case study. To correct for this issue, several methods were trialled including Monte-Carlo simulation of *p*-values, and a Bayesian alternative to the Chi-square test. A correction factor (Yate's continuity correction) was used to correct for small expected cell frequencies. This is a common method used to improve the accuracy of Chi-square tests in such circumstances.

5.3 REGIONAL WATER SERVICE CONTEXT

In the two case study regions – Red River Delta and Mekong River Delta – rates of rural access to improved water (according to JMP definitions) are 99% and 86% respectively³⁵. In the Red River Delta, there is very little variation in access across wealth quintiles, with 98% of the poorest quintile accessing improved water (Figure 37). In the Mekong River Delta there is greater variation, with 76% of the poorest quintile accessing improved water compared with 100% for the wealthiest quintile. It is important to note (as described previously) that these JMP figures are much higher than nationally defined rates of access to 'clean' water according to Ministry of Health water quality standards.

³⁵ An "improved" drinking-water source is one that, by the nature of its construction and when properly used, adequately protects the source from outside contamination, particularly faecal matter. Source: JMP, URL: <http://www.wssinfo.org/definitions-methods/watsan-categories/>

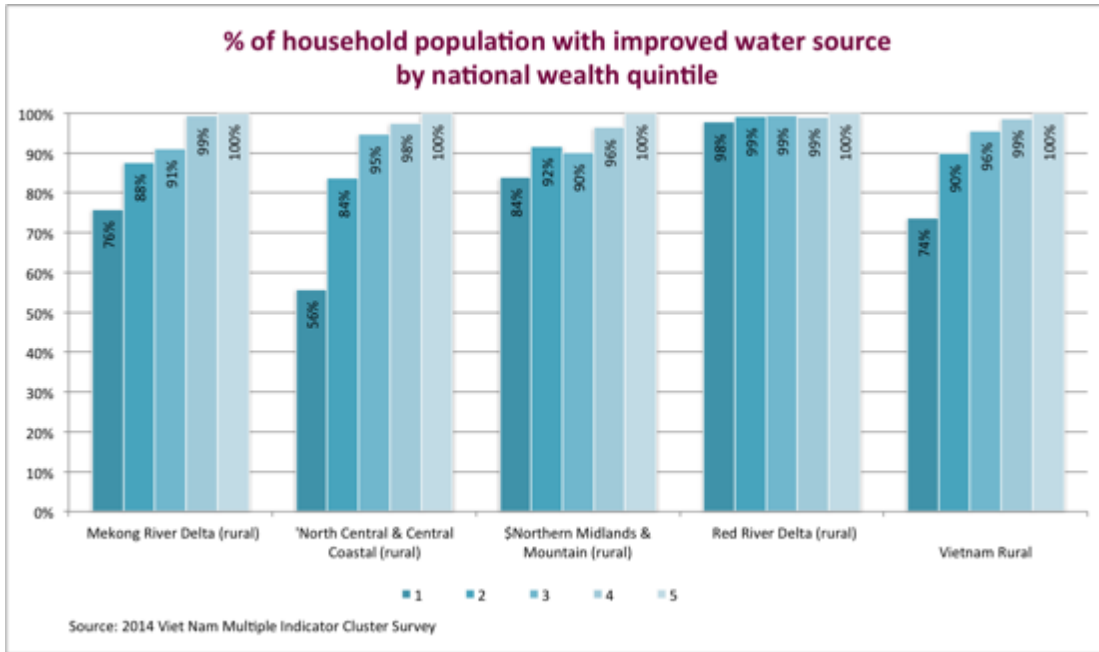


Figure 37: Rural access to improved water by wealth quintile

Considering piped water specifically, figures of the poorest wealth quintile are much lower, with only 7% of the poorest quintile in the Red River Delta and 10% of the poorest in the Mekong River Delta accessing piped water (Figure 38 below). These rates are higher than the national average of 5%, yet still markedly lower than rates of access to piped water for the wealthiest quintile.

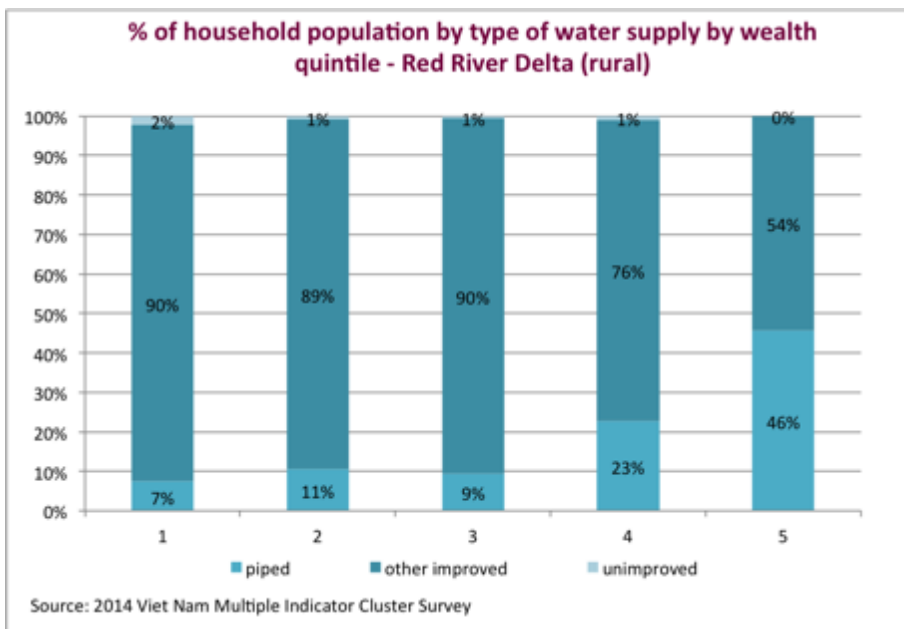


Figure 38. Water sources by wealth quintile Red River Delta

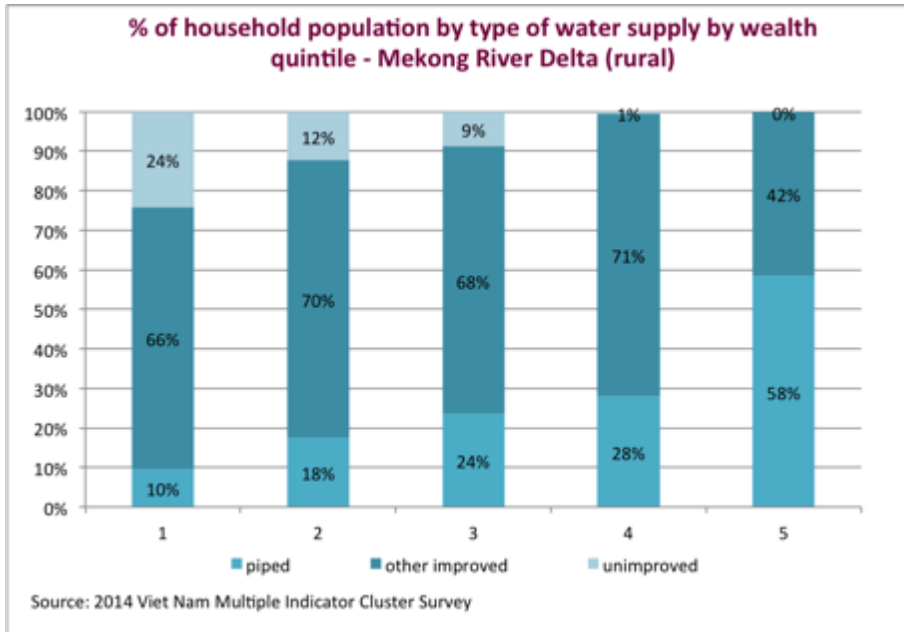


Figure 39. Water source by wealth quintile Mekong River Delta

5.4 PROVINCIAL POLICY AND REGULATORY CONTEXT

The following sections describe the provincial policy and regulatory contexts for the three provinces in which the six case studies are located.

5.4.1 Ha Nam Province

Ha Nam is located in the Red River Delta in northern Viet Nam, approximately 60 km from Hanoi. Since 2011, the National Target Program has provided significant support for improving rural water supply and sanitation in Ha Nam, investing more than VND600 billion for building or upgrading more than 20 water facilities. This has increased the total number of water schemes in the province to more than 60, though anecdotal reports indicate only half are fully functional. Most water service providers in Ha Nam source water from rivers, with a few drawing on deep groundwater aquifers (which are reported to contain arsenic).

As part of the drive to improve access to water, Ha Nam has mobilised private investment to the value of approximately VND205 billion between 2006 and 2015, representing 18% of total water infrastructure investments.³⁶ There are 10 private enterprises currently working in rural water supply in Ha Nam. Most of these are medium-sized enterprises (each serving approximately 4000 households) with the largest (Vietcom) serving 9000 households across 5 communes.

Increasing private sector investment reflects policy support for private operators to enter the rural water market. In line with Decision 131, Ha Nam offers incentives to encourage private sector investment by allocating land and providing direct financial support. Under the financial support policy, the government provides 60% of the cost of capital investment for a water scheme, provided on completion of the construction phase.

These investment drives, combined with a current World Bank program, mean that the pCERWASS is currently very busy with approximately 30 projects. They are planning to temporarily recruit seven staff, representing an almost doubling of their current resource base. According to the pCERWASS, demand for piped water is high in Ha Nam, with affordability being the main barrier to increasing connections. As one respondent said, *'demand is there, people want water, but they cannot afford it'*. However there is no provincial mechanism for supporting poor households to connect, with any support comes from commune or service provider initiatives. Additionally, while the research did confirm that affordability is a barrier to connecting, it did not find evidence of strong demand for piped systems, with households typically preferring rainwater when available.

Connection fees in Ha Nam (according to the pCERWASS) ranged from VND700,000 to VND2 million, though in one case study the research identified reports of extremely high

³⁶ Institute for Water Resources Economics and Management (2015) *Assessment of the Engagement of the Private Sector in Building, Operation Management and Exploitation of the Rural Water Supply System Ha Nam Province*, August 2015.

connection fees for more remote households of approximately VND4 million. The mandated provincial water tariff is VND5,700 /m³ plus Value Added Tax (VAT).

5.4.2 Thai Binh Province

Thai Binh is located in the Red River Delta in northern Viet Nam, approximately 100km from Hanoi. Recent efforts to improve rural water access include total investments of approximately VND 1 trillion in approximately 40 water supply projects (including both new constructions and upgrades). Of this, Thai Binh has mobilised private investment to the value of approximately VND400 billion, representing 40% of total investments.³⁷

Private enterprise activity in Thai Binh’s rural water sector grew rapidly after 2012 when support mechanisms (in line with Decree 131) came into effect. The support mechanisms in Thai Binh are detailed in provincial Decision 12/2012 UBND and they include the provision that for every 1m³ of design capacity for a private water system, the government will contribute VND3 million (or VND2.5m for an upgrade or expansion), and a commitment that the Provincial People’s Committee will cover half the interest rate for any loans a PE takes out for the first three years (after which time the PE is responsible for paying the full interest rate). According to the pCERWASS, on average under this arrangement the government pays approximately 50% of total capital costs for water schemes.

Connection fees in Thai Binh are typically about VND2.5 million, though the pCERWASS reported this is often framed as a pre-construction ‘contribution fee’ from households to enable a scheme to be built within the reach of participating households. Private providers often encourage households to contribute early by threatening an increase in connection fees post-construction. They also sometimes offer small discounts of VND200–300,000, but they are not targeted at poor households.

In contrast to Ha Nam, the pCERWASS in Thai Binh reports that low demand is a big challenge for the rural water sector. People tend to prefer rainwater when available. Often, they don’t trust the treatment processes associated with piped water, and the service is often partial (for example every second day). These factors combine to stifle demand, making it challenging to operate a viable water supply business.



Figure 40. Research team defining water service boundaries in Region 2.

³⁷ Institute for Water Resources Economics and Management (2015) *Assessment of the Engagement of the Private Sector in Building, Operation Management and Exploitation of the Rural Water Supply System Thai Binh Province*, August 2015.

5.4.3 Tien Giang Province

pCERWASS reported that there were 380,000 rural households in Tien Giang Province, and of these, 23,300 were poor (approximately 6%). It was reported that 90% of these poor households were connected to a piped water service. Ninety-six per cent of people in the Province have access to an improved water source, and of these 84% have a meter. From the data provided by government officials, this means that a higher proportion of poor people have access to improved water sources than other householders, which is a unique and impressive result for Tien Giang.

In Tien Giang Province, a local law was passed in November 2014 which effectively prohibits the charging of connection fees. This is in accordance with the People's Provincial Council (PPC) Decision 28, effective from 1 October 2014. In this Decision, costs are outlined in the Appendix and include: the connection fee (VND868,470), electricity costs, staff costs, depreciation, insurance and other expenses. As such, the tariff covers the connection fee so a service provider cannot double charge for the connection fee. When visiting communes in Tien Giang we found that the application and/or knowledge of this decision did not appear to be universal.

In Tien Giang Province there were 633 rural piped water schemes, and 161 schemes had been funded by a donor/sponsor which may in part account for the high number of poor people who were reported to be connected to a piped water scheme.

The four critical water supply issues that the Province faces include:

1. irrigation water management
2. domestic water balance – in the dry season there is not enough water to meet demand
3. flood control and erosion
4. salt water intrusion – a dyke has been built to stop the sea water; and intrusion as well as pumping stations to push the water back out to sea.

The provincial government authority pCERWASS carries out the following key roles in Tien Giang Province:

1. advice to the PPC and CPC regarding water management. This includes advice re: tariffs and investment and all activities that the providers undertake; and
2. review the water supply projects in the province and providing technical assistance as needed.

The Department (pCERWASS) has a program for encouraging and advising on meter installation. The Department is concerned that the high levels of connection to improved water sources will be difficult to maintain due to insufficient operation and maintenance funds being generated by service providers.

6 CASE STUDY 1 – DONG PHU

6.1 COMMUNE PROFILE

Dong Phu Commune (Table , Figure 41) is located in Dong Hung district in Thai Binh province in the Red River Delta, approximately 9 km from the provincial capital Thai Binh. Dong Phu is located next to the Tra Ly River.

Employment in Dong Phu is predominantly agricultural. In this commune, we were able to sample all registered poor households and those classified as near-poor (with an income threshold of <VND560,000/person/month).

Table 13 Key figures Dong Phu commune

Total number of households	1600
Number of registered poor households	38
Number of near-poor households	30
Proportion of households that are poor or near-poor	4%

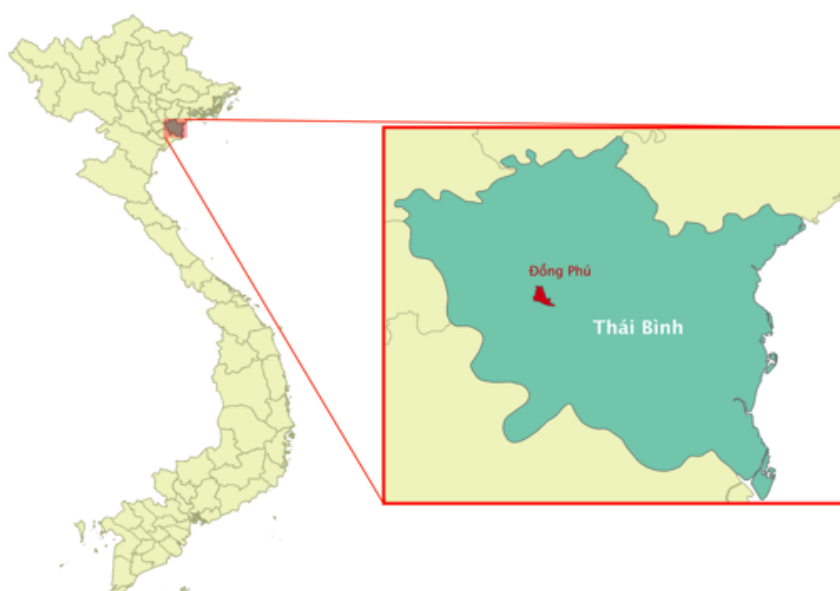


Figure 41 Dong Phu Commune in Thai Binh province

6.1.1 Water service context

Approximately 40% of households in Dong Phu are connected to a piped water network, which is low compared with the overall rate of 58% in rural Red River Delta (MICS 2011). This is attributable (according to commune officials) to high rates of access to non-piped improved sources, mostly due to well construction programs completed more than 10 years ago, supported by UNICEF and the Danish Red Cross. Under these programs, households received VND 1 million to install a well, and approximately 500 wells were constructed.

There are two service providers operating in Dong Phu: a state-owned enterprise (SOE) and a community-managed scheme. In Dong Phu and more widely across Thai Binh (according to the pCERWASS), water operators face challenges securing sufficient demand from customers to make water businesses viable over time. As in other case study communes, householders preferred to drink rainwater when available, and they often did not trust water treatment processes. Service quality is variable with intermittent supply common.

A private enterprise seeking to establish a scheme in Dong Phu would be eligible for Thai Binh's private sector support policies whereby the government invests VND 3 million for each 1m³ of designed system capacity (or VND2.5 million in the case of upgrades or expansions) and covers 50% of interest repayments for capital loans for 3 years. Currently there are no PEs seeking to establish schemes in Dong Phu, though the provincial government would like to privatise the SOE.

Connection fees in Dong Phu range from VND400,000 to VND2 million. The water tariff (for both service providers) is VND5,000/m³. The province recently increased the tariff ceiling price to VND7,100 /m³, though it is not yet clear whether service providers in Dong Phu will take the opportunity to increase their tariffs.

6.1.2 Water service providers

The SOE serves two of the three hamlets in Dong Phu, and the community scheme serves the other (Figure 42). As such, the whole commune is within the service area of the one of two service providers.

Household interviews indicated a level of dissatisfaction with the quality of the water supplied by both service providers, and with their intermittent service. Across all households, the preferred drinking water source was rainwater.

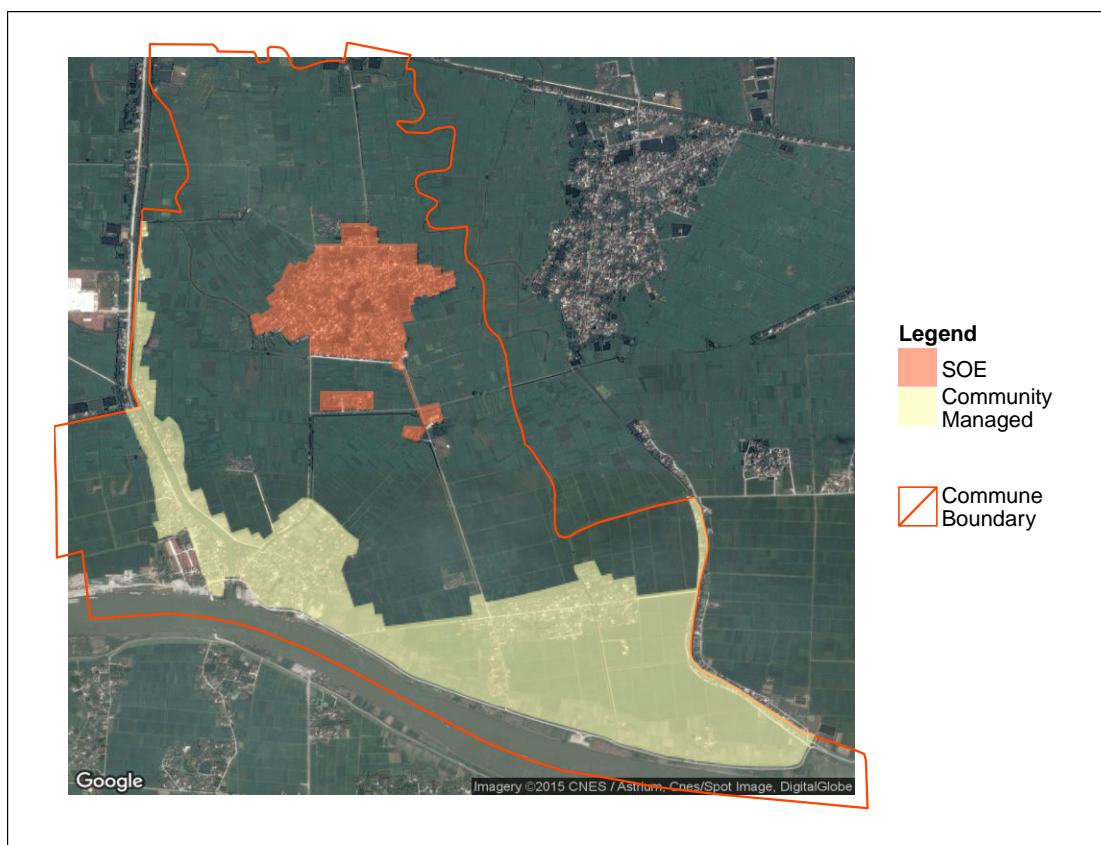


Figure 42 Water service areas in Dong Phu

6.1.3 WSA 1: State-owned enterprise

The SOE is a 100% government-owned joint stock company belonging to the Thai Binh Department of Agriculture and Rural Development (DARD). The SOE has no relationship with the pCERWASS, and works directly under DARD.

The scheme was established in 2010, with water supplied from various local surface water sources. The scheme operated three water stations across multiple communes. The stations that supplied treated water to Dong Phu were located in a neighbouring commune. Dong Phu received water roughly every second day due to system pressure constraints. The supply of water was also quite inefficient, with reported water losses of 20–25%.

The SOE scheme was financed in part by the World Bank, with participating households each contributing a VND1 million connection fee. The government wanted to to privatise the scheme (to a ‘more flexible’ model), but acknowledged the difficulty in doing so as households tended to trust government companies more than private enterprises.

The minimum water use threshold for this service provider is 5m³/month, which is quite high compared to other communes where private enterprises operate (typically 3m³). Average monthly demand is 8m³, however this is highly variable across households (1–45m³/month). It is difficult to determine the actual number of water connections for this provider, as meter sharing is common.

Current connection fees for the system are approximately VND 2.5–3m. The SOE offers discounts for poor households, however in Dong Phu, households interviewed were not aware of potential support mechanisms. One householder claimed they had contacted the operator about support, but had not received a response.

6.1.4 WSA 2: Community-managed scheme

The community-managed scheme (Phu Vinh) was constructed in 2008, and has been serving a single hamlet in Dong Phu since 2010. The system was built by the pCERWASS using capital from commune households and the National Target Program. Each household in the scheme contributed VND300,000 to purchase a meter, which was the only form of connection fee charged.

The community-managed scheme is small, with a capacity of less than 200m³/day. The scheme is managed by the hamlet leader, with technical work carried out by one employee. The manager (hamlet leader) and CPC expressed concerns about the sustainability of the system, as water quality was poor, demand was low, and there was insufficient finance for upgrades. Due to the absence of a minimum threshold for water consumption, revenue for the scheme is quite low.

Due to these operational issues, the CPC hopes to connect the hamlet to the SOE scheme when upgrades to that system are completed. However the current manager of the community scheme feels that the connection fee (VND3 million) will be unaffordable for households in this hamlet. The manager also noted challenges with laying new pipes as new roads have recently been constructed, so any construction to install new pipes will require road replacement and would be costly.

6.2 RESEARCH FINDINGS

6.2.1 Who lives in the water service areas?

For Dong Phu, all households were within one of the two water service areas, indicating that all households in the commune had the potential to access piped water.

Table shows the contingency table of observed frequencies of collected household data relating to Research Question 1 (concerning whether poor households are less likely to live in a water service area). Figure 43 below shows the location of poor households within and outside of the three water service areas.

Table 14 Contingency table for Research Question 1

	In a service area	Not in a service area
Poor Households	63	0
Non-poor Households	1,537	0

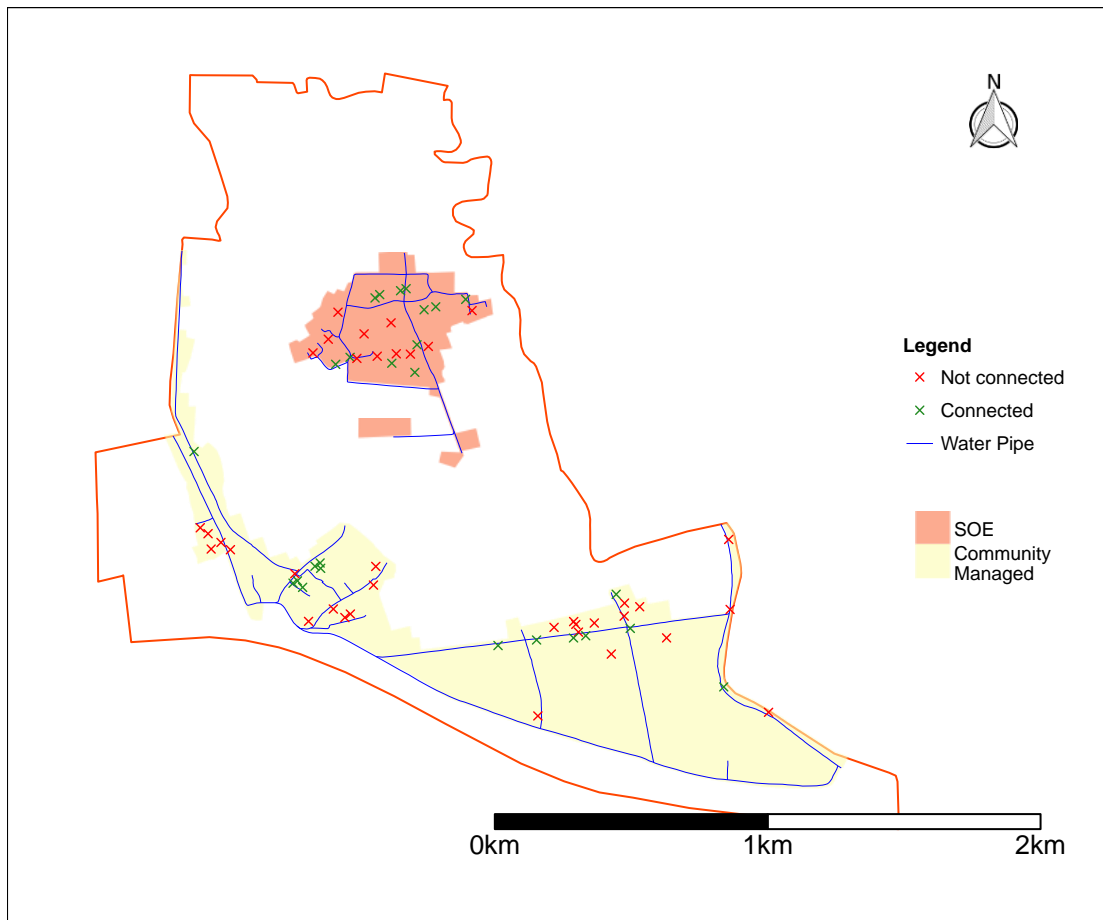


Figure 43 Poor households, connection status and water service area locations

A visual inspection revealed that households across Dong Phu are more clustered than random, with dense pockets in each of the three hamlets. Within these settlements, poor households appeared to be evenly distributed.

6.2.2 Who is served within water service areas? Are there differences between providers?

Table below shows the contingency table of observed frequencies of collected household data relating to Research Question 2 (concerning whether poor households are less likely to be connected within water service areas).

Table 15: Contingency table for Research Question 2

	Connected	Not connected
Poor Households	26	37
Non-poor Households	650	950

The analysis found that there was insufficient evidence to suggest that the different water service providers (SOE and community managed), had significantly different ratios of poor to non-poor household connections. This indicates there were no substantial differences in their efforts and success rates in connecting poor households.

6.2.3 Are the poor less likely to be connected?

The analysis did not find evidence to suggest a significant difference between the rates of connection for poor and non-poor households. It is difficult to identify an explanation for this given a lack of data from non-poor households, though given (i) the overall relatively low rates of connection in the commune (40%); (ii) the reportedly poor quality of both water and service in both water service areas; (iii) a widespread preference for rainwater when available; and (iv) the fact that a previous scheme assisted households to install protected wells, it is likely that households do not prioritise connecting to piped systems, particularly when connection fees are perceived to be high.

6.2.4 Reasons for non-connection and alternative water use

As in other communes, the dominant reason poor households chose not to connect to the piped water service was the connection fee, as shown in Figure 44. This finding holds across both of the water service areas, with 64% of non-connected households in the SOE area and 76% in the community-managed area citing connection fees as prohibitive (despite reports that the only fee charged at time of construction was VND300,000). Interestingly, despite commune officials citing the existence of household wells as a reason for low connection rates, less than 5% of poor households interviewed cited 'happy with existing source' as their reason for not connecting to the piped system, though these responses were only for poor households, and asking this question of non-poor households may have produced a different response.

'Connection fees' may also be broadly interpreted by households as comprising all costs associated with accessing the piped system. For example, one householder said that she had been connected, but had not been able to afford to build a mandatory storage tank (required to cope with intermittent and variable water pressure) and so she was cut off.

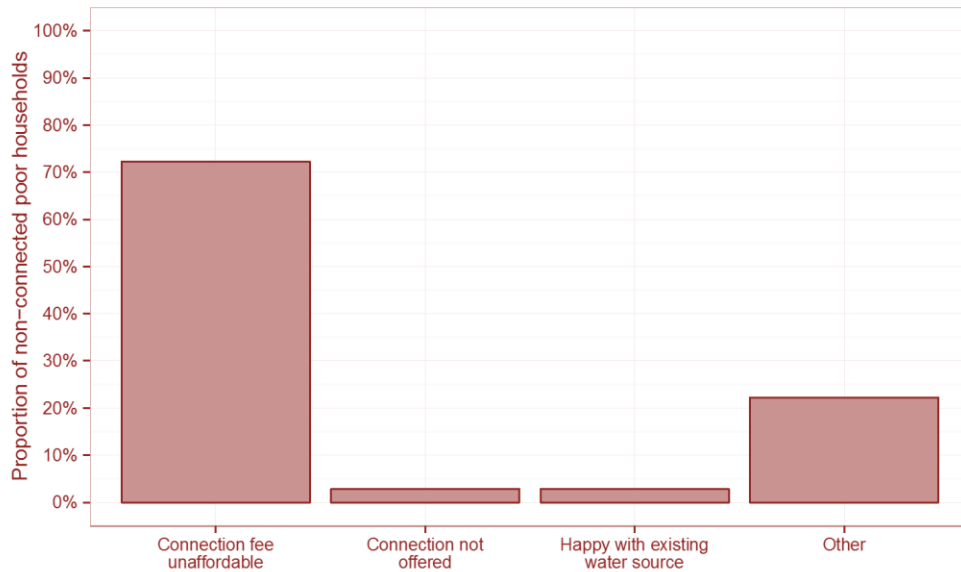


Figure 44. Reasons poor households were not connected to the piped water service

Most households without a piped water connection used rainwater as their primary source for drinking and cooking when it was available (Figure 45). Approximately 25% also used piped water from a neighbour’s connection, 15% used groundwater from a borehole, and just over 10% used water from an unprotected well (viewed as an unimproved source according to global monitoring). Interestingly, all those using water from an unprotected well were in the SOE service area.

Interviews across both service areas indicated that households with piped connections also used rainwater as their primary source, mainly because of the widely held perception that rainwater was higher quality than the other alternatives to piped water (Figure 45).

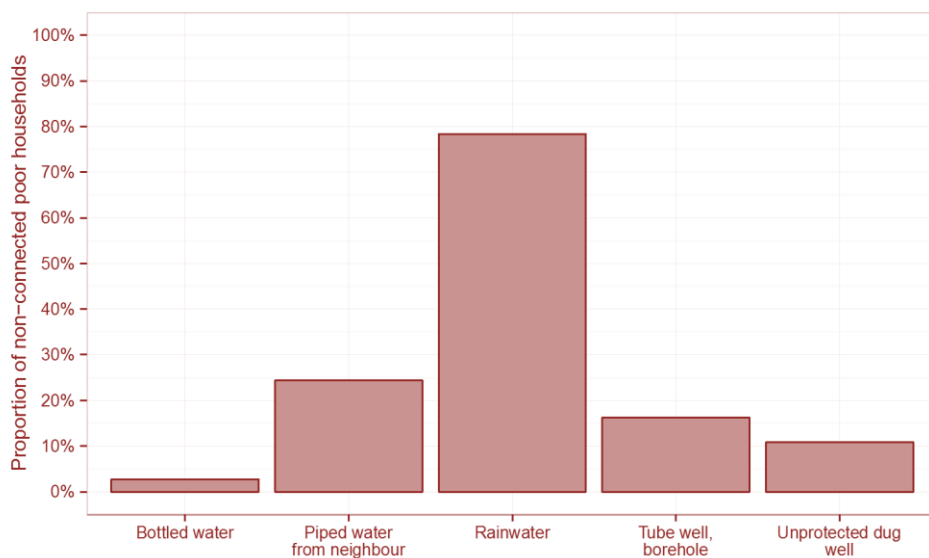


Figure 45. Alternative water sources used (for non-connected poor households)

7 CASE STUDY 2 – HOA HAU

7.1 COMMUNE PROFILE

Hoa Hau Commune (Table , Figure 46) is located in Ly Nhan district in Ha Nam province in the Red River Delta, approximately 35 km from the provincial capital Phu Ly. Hoa Hau is located next to the Hong (Red) River and one of its tributaries, the Chau Giang River. Sources of employment in the commune include the textile industry and agriculture. Hoa Hau is currently classed as a rural commune, but many of its 22 hamlets are relatively high density compared with surrounding rural communes, and are likely to be reclassified as urban in the near future.

Many of the poor households in Hoa Hau were made up of elderly people, and the majority were female-headed. These households were reliant on the support of families or the charity of neighbours. Interviews also revealed a high incidence of serious health issues and people living with a disability (PLWD) in the commune. These disabilities included paralysis, birth abnormalities and mental illnesses.

Table 16 Key figures Hoa Hau Commune

Total number of households	4430
Number of registered poor households	230
Proportion of households that are poor	5%

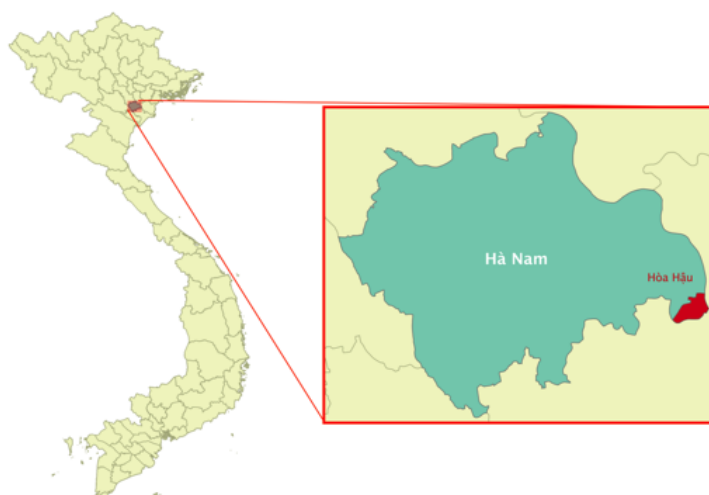


Figure 46 Hoa Hau Commune in Ha Nam province

7.1.1 Water service context

Rates of access to piped water across the commune at the time of the fieldwork for this study were estimated (by commune authorities) to be 70%. Overall, 98% of commune households accessed some form of 'hygienic' water according to Ministry of Health standards. Sources included piped water, rain-tanks and protected wells.

Whether connected to a piped system or not, the preferred source of water for households was rainwater. Households interviewed (those that were registered poor) typically used rainwater for drinking and cooking and piped water or groundwater for other purposes such as bathing. A few households also used surface water (ponds) when rainwater or groundwater supplies were unavailable, such as during the dry season.

The preference for rainwater was due in part to a widely held perception that the piped water was of inferior quality. Many households interviewed in Hoa Hau were suspicious of the quality of the piped water, and a number speculated about a link between water pollution and rates of cancer in the commune. The research was not able to assess whether perceived water quality concerns were well founded, however the Ha Nam pCERWASS reportedly undertook water quality testing every three months, and had not found reason for concern.

In addition to the perceived quality issues related to the piped water, household interviews in some parts of the commune revealed poor service quality, with intermittent service and low pressures.

Hoa Hau Commune is subject to Ha Nam's provincial policies supporting private sector participation in rural water supply, whereby the state contributes 60% of capital construction costs for a private enterprise scheme following satisfactory completion of works. The private enterprise (PE) operating in Hoa Hau was eligible for this support.

Government support for households was also evident in Hoa Hau, in the form of low-interest loans from the Bank for Social Policy.³⁸ Under the scheme, households can access a loan (at a rate of 0.6% interest for a 5-year loan) to support them in paying water connection fees and/or undertaking 'water-related building' such as building bathrooms, pipes, and filtration systems. Each month the bank visits the commune and deals with applications. In 2015, commune officials reported that by July around 300 households had received a loan of approximately VND8,000,000.

Connection fees in Hoa Hau range from VND1 million to more than VND4 million and tariffs are either VND4000/m³ (for the community scheme) or VND6000/m³ (for the PE).

7.1.2 Water service providers

There are two service providers operating in Hoa Hau: one private enterprise and one community-managed scheme. The private enterprise piped network covers a substantial portion of the land area in Hoa Hau, with the community-managed scheme serving a much

³⁸ Loans from the Vietnam Bank for Social Policy (VBSP) are more widely available in rural Vietnam, including for water related infrastructure, however this was the only case study commune where VBSP support was noted.

smaller area in the south-west corner of the commune, as shown in Figure 47. These two service areas cover all the inhabited land in the commune, with the north-eastern area (not indicated as within a service area) used for industrial or agricultural activities.

There is a small area of overlap between the two service providers (approximately 20 households), where households can connect to either or both service providers.³⁹ Interviews revealed that households in this area tended to prefer the community-managed scheme, as the tariff is lower. However, they used water from the private scheme when the community water was not available due to capacity constraints. Neither water provider in Hoa Hau noted any sense of competition for household connections and water use in this overlapping service area. The private enterprise was happy to connect any household that wanted piped water, and the managers of the community scheme recognised the capacity constraints of their system and supported households connecting to the PE system to secure a more reliable service.

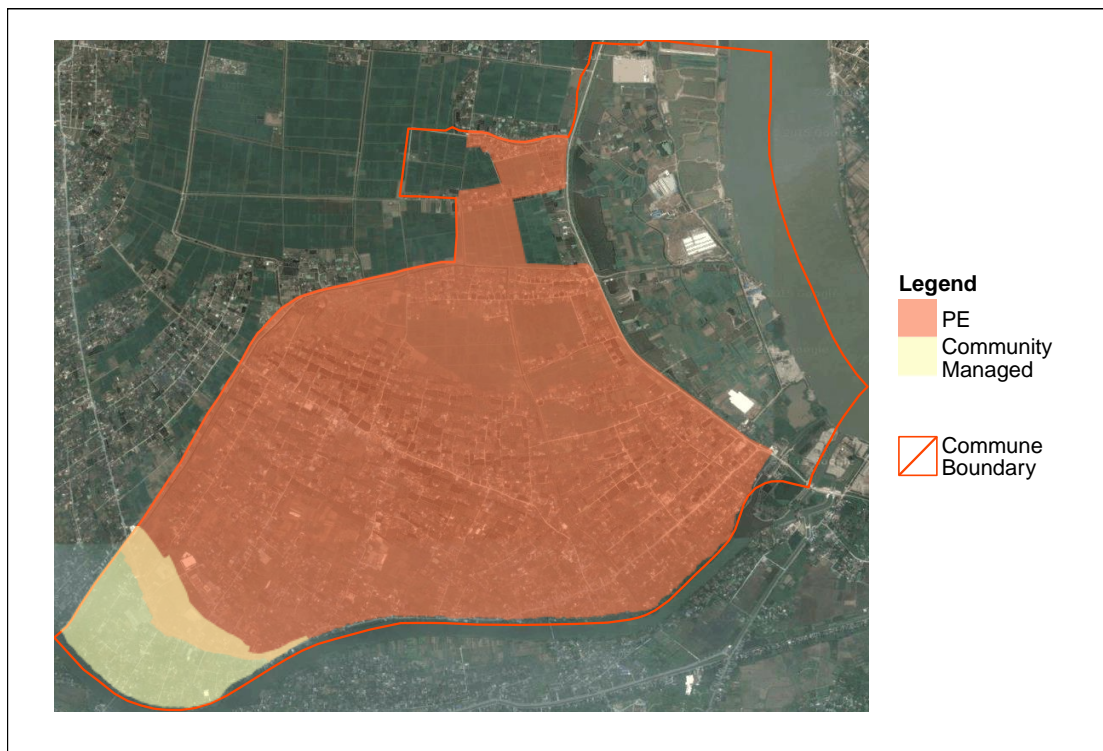


Figure 47 Service areas in Hoa Hau

7.1.3 WSA 1: Private enterprise

The Tung Anh Limited Company PE has been in operation since 2010. The total capital investment for the scheme was VND13 billion, with 60% of this provided (post-construction) by the provincial government under Ha Nam's private sector support mechanism. Commune

³⁹ This area was excluded from the statistical analysis, as described in the methodology.

authorities also provided support for the scheme by arranging the rezoning of land and assisting with administrative processes.

As noted above, the PE service area covers 20 of the 22 hamlets in Hoa Hau. Water for the scheme is sourced from the Chau Giang River, which is a tributary of the larger Hong (Red) River on which Hoa Hau is also situated. Another scheme was considered which would have extracted water from the Hong River. This scheme was not selected due to constraints related to land zoning, however there was also some indication from interviews that mechanisms for selecting and approving schemes were not always be clear.

Revenue generated from tariffs was sufficient for the PE to make a profit month to month, but overall the scheme was still currently operating at a loss due to capital repayments. The typical connection fee for the scheme was approximately VND2.5 million plus the costs associated with laying pipe from the main pipeline to the household (VND7,500 per metre of pipe and VND500,000 for the water meter). As such, the connection fee varies depending on the distance of the household from the main pipe, with some households reporting connection fees of more than VND4 million. The connection fee has increased over time, with initial fees considerably lower to stimulate demand for connections. More than 70% of household connections were made before 2013, after which time connection fees stabilised to the current level.

The current water use tariff is VND6,000/m³ (including VAT), which is the province-mandated tariff. Average water use of connected households is 10m³/month. It is common practice for groups of households to share a meter, and divide the tariff payments amongst themselves. While this does mean more people potentially have access to piped water, it also makes it difficult for the PE to determine the precise number of households using their service.

The PE in Hoa Hau provides support for households in two ways: (i) Households experiencing financial difficulty can pay their connection fee in instalments; and (ii) Poor households are exempt from the minimum contracted water use of 4m³/month. However household interviews revealed that these support mechanisms were not well known across the commune. Further, while the PE owner suggested that it was easier to connect poor households because wealthy households were able to construct large tanks to ensure a supply of rainwater year-round (and thus lower demand for piped water), this was not supported by analysis of the numbers of connected poor households (as described below).

7.1.4 WSA 2: Community-managed scheme

The community-managed scheme covers two of the 22 hamlets in Hoa Hau, with a few households in neighbouring hamlets (within the overlapping service area) also connected. The scheme has been in operation since 2001, and was built with government support through the National Target Program (through the CPC) and investment from participating households. Like the PE scheme, the community system sources water from the Chau Giang River.

Initially, the connection fee was a flat VND1 million, and the current fee at the time of the fieldwork was VND1 million plus costs associated with laying pipe from the main pipeline to the connecting household. The current tariff is VND4,000/m³. The tariff had increased over time from the initial price (in 2001) of VND1,500 /m³. Households connected to the scheme typically used between 12 and 15 m³ each month.

Revenue from tariffs covered system electricity costs, a small stipend for the management board consisting of five members, and minor maintenance expenses. However, with only 270 water meters connected, there was a lack of funds for any more significant maintenance or upgrades. The board of managers noted that any investment at this scale would require developing a plan with the agreement of all member households, then seeking external financial support.

The community-managed scheme did not offer any particular support for poor households. The board of managers viewed the scheme as ‘for the community’ as a whole and said there was a resultant imperative to treat all households similarly. Additionally, managers reported that the scheme lacked the funds that would be needed to provide support for poor households.

Overall, prospects for this scheme were not strong. The system was already over capacity, and without finance for major repairs and upgrades the network was expected to continue to degrade over time. Officials noted the possibility that the scheme may at some stage be superseded by the PE, given its proximity and the fact it was already providing services to some households within the community-managed scheme.

7.2 RESEARCH FINDINGS

7.2.1 Who lives in the water service areas?

In Hoa Hau, there were no households outside of a water service area, indicating that all households in the commune had the potential to access a piped water network.

Table shows the contingency table of observed frequencies of collected household data relating to Research Question 1 (concerning whether poor households are less likely to live in a water service area). Figure 48 shows the location of poor households within and outside of the two water service areas.

Table 17: Contingency table for Research Question 1

	In a service area	Not in a service area
Poor Households	230	0
Non-poor Households	4,200	0

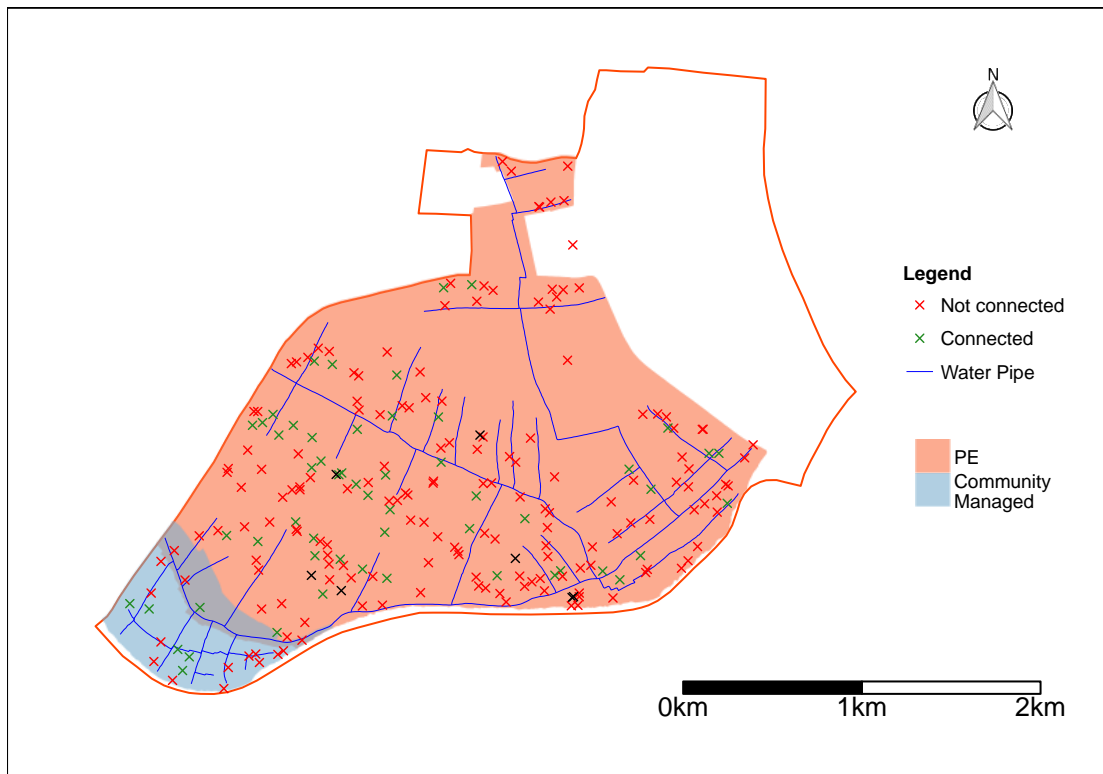


Figure 48. Poor households, connection status and water service area locations

A visual inspection revealed that poor households were fairly evenly dispersed across the commune, with no obvious visual clusters detected. Compared with other case study communes, Hoa Hau households were relatively high density, which reflected the more urban nature of this commune.

7.2.2 Who is served within water service areas? Are there differences between providers?

Table shows the contingency table for the observed frequencies of collected household data relating to Research Question 2 (concerning whether poor households are less likely to be connected within water service areas).

Table 19: Contingency table for Research Question 2

	Connected	Not connected
Poor Households	54	164
Non-poor Households	2,966	1,246

The analysis found sufficient evidence to suggest that there was a significant difference between the two water service providers in Hoa Hau in terms of the rates at which poor households were connected to piped water. This suggests differences in the ways in which service providers sought (or did not seek) to connect households, including those that are poor. The results concerning the ratios of poor and non-poor household connections are described below for each service provider.

7.2.3 Are the poor less likely to be connected?

In both water service areas, there was a significant difference between the rates of poor and non-poor connections to the water networks.

In the PE service area, non-poor households were approximately 6.5 times more likely to be connected to the water network than poor households.

In the community-managed water service area, non-poor households are approximately 50 times more likely to be connected to the piped water network than poor households. Upon initial examination, this ratio appeared abnormally large, but on further evaluation of the data no underlying anomalies were found, and sensitivity analysis was undertaken which confirmed this finding as it related to the overall low number of connected households in this WSA. This suggests an extreme discrepancy in this water service area between service to poor and non-poor households.

7.2.4 Reasons for non-connection and alternative water use

The dominant reason poor households gave for choosing not to connect to the piped water service was the expense of the connection fee, as shown in Figure 49. This finding held across both of the water service areas, with 84% of non-connected households in the PE area and 73% in the community-managed area citing connection fees as prohibitive. The higher figure in the PE area aligns with the finding (noted above) that although the PE offered households the opportunity to pay their connection fee in instalments, this was not widely known among the households interviewed. Only one interviewed household said that they were in debt to the PE, with others unaware of the potential to defer payment. Interviews also revealed instances where connection costs would have been very high. For example two elderly women noted they would have been charged VND6 or 7 million to connect, because they were located far (400–500m) from the main pipeline.

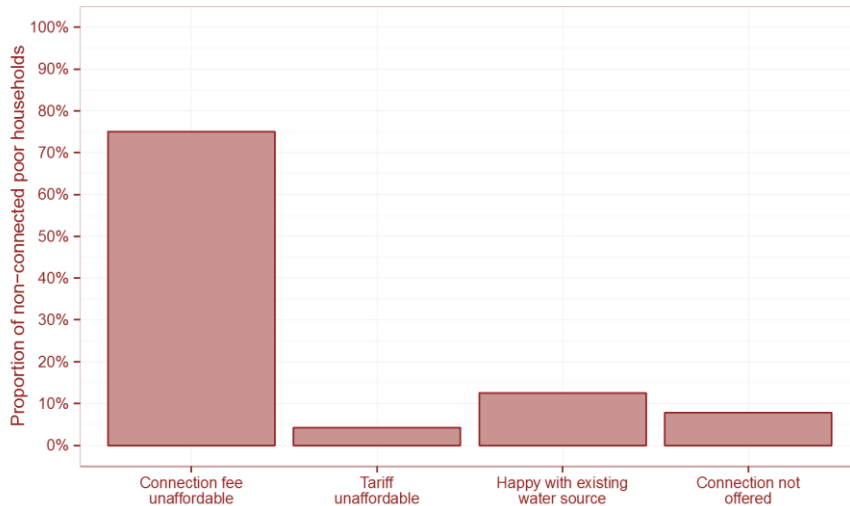


Figure 49. Reasons poor households were not connected to the piped water service

Households without a piped water connections preferred to use rainwater as their primary source for drinking and cooking when available (Figure 50). Around 20% also used piped water from a neighbour’s connection, 15% used surface water, and 10% used groundwater from a borehole. There were some differences between the two water service areas in the alternative sources used, with only 33% of non-connected households in the community-managed area using rainwater, compared to 74% in the PE area. It was difficult to determine reasons for this, other than that the community scheme had been operating for a decade longer than the PE scheme, so households in this area may have had lower motivation to construct rain tanks.

Interviews across both service areas indicated that households with piped connections also preferred to use rainwater, primarily because of the widely held perception that rainwater was higher quality, and likely also to save on water tariffs.

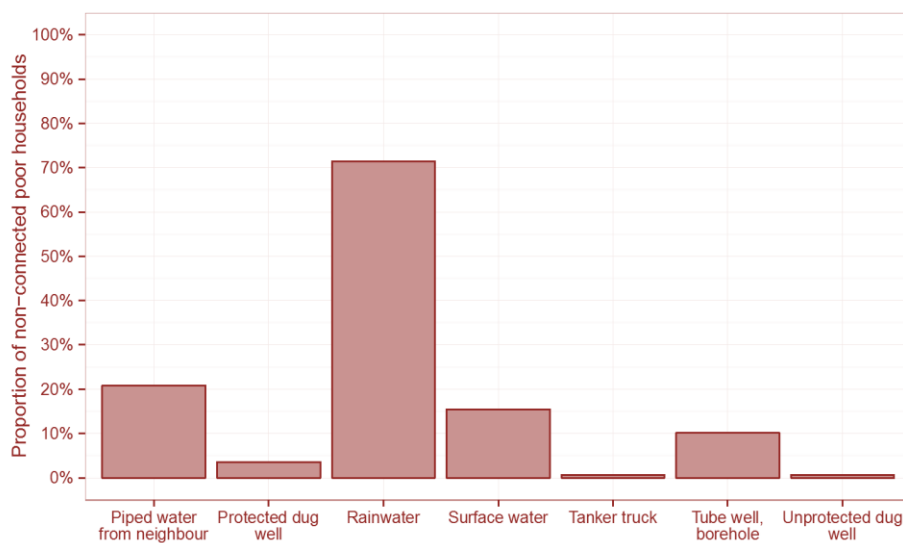


Figure 50. Alternative water sources used (for non-connected poor households)

8 CASE STUDY 3 – THANH HAI

8.1 COMMUNE PROFILE

Thanh Hai Commune (Table 0, Figure 51) is located in Thanh Liem district in Ha Nam province in the Red River Delta, approximately 20 km from the provincial capital Phu Ly. The commune is divided through the centre by the Day River, with no road access across the river (access is via driving through a neighbouring commune). Sources of employment in the commune included agriculture and nearby limestone quarries.

Table 18. Key figures for Thanh Hai Commune

Total number of households	3670
Number of registered poor households	142
Proportion of households that are poor	4%

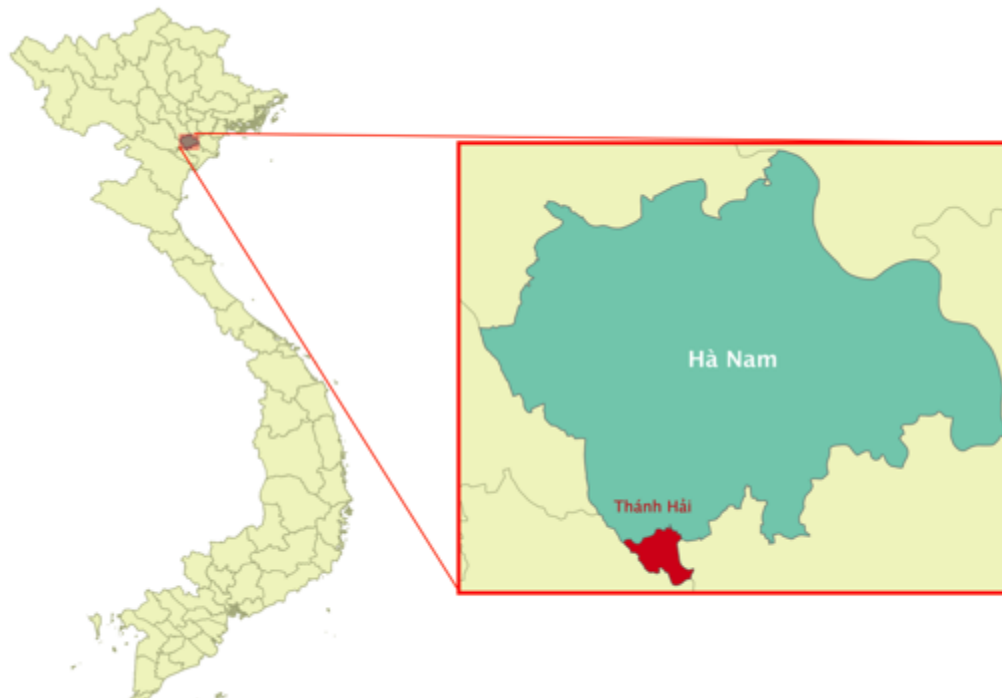


Figure 51 Thanh Hai Commune within Ha Nam Province

8.1.1 Water service context

Rates of access to piped water across the commune at the time of the field work for this study were estimated (by commune authorities) to be 90% of households on the east side of the Đáy River (the area served by the private enterprise) and 70% of households on the west side (served by two smaller providers).

All three service providers in Thanh Hai sourced their water from the Đáy River. Water service providers expressed concerns about the quality of water extracted from the river due to industrial and agricultural pollution, particularly during the dry season. Quality concerns were also raised by interviewed householders, who noted both the poor quality of surface water near their homes and a perception that current treatment processes are insufficient to deal with pollutants.

This research was not able to assess whether perceptions about water pollution were well founded, however we did find that perceived quality issues affected household water use practices. Households interviewed expressed a strong preference for using rainwater for drinking and cooking, even when they had a piped connection. This preference was attributed primarily to views of rainwater being cleaner and better tasting, with the potential to save on water tariffs of lower priority.

Thanh Hai Commune is subject to Ha Nam's provincial policies supporting private sector participation in rural water supply, whereby the state contributes 60% of capital construction costs for a private enterprise scheme following satisfactory completion of works. The private enterprise operating in Thanh Hai was eligible for this contribution, however the smaller household-managed business was not.

Water tariffs in Thanh Hai were typically VND6,000/ m³, and connection fees across the three service providers ranged from approximately VND400,000 to VND2 million.

8.1.2 Water service providers

There were three water service providers operating in Thanh Hai: one private enterprise (servicing by far the largest area in the commune), one household business and one cooperative. Figure 52 shows the Thanh Hai Commune boundary and the locations of individual water service areas across the commune, and details of providers are described below.

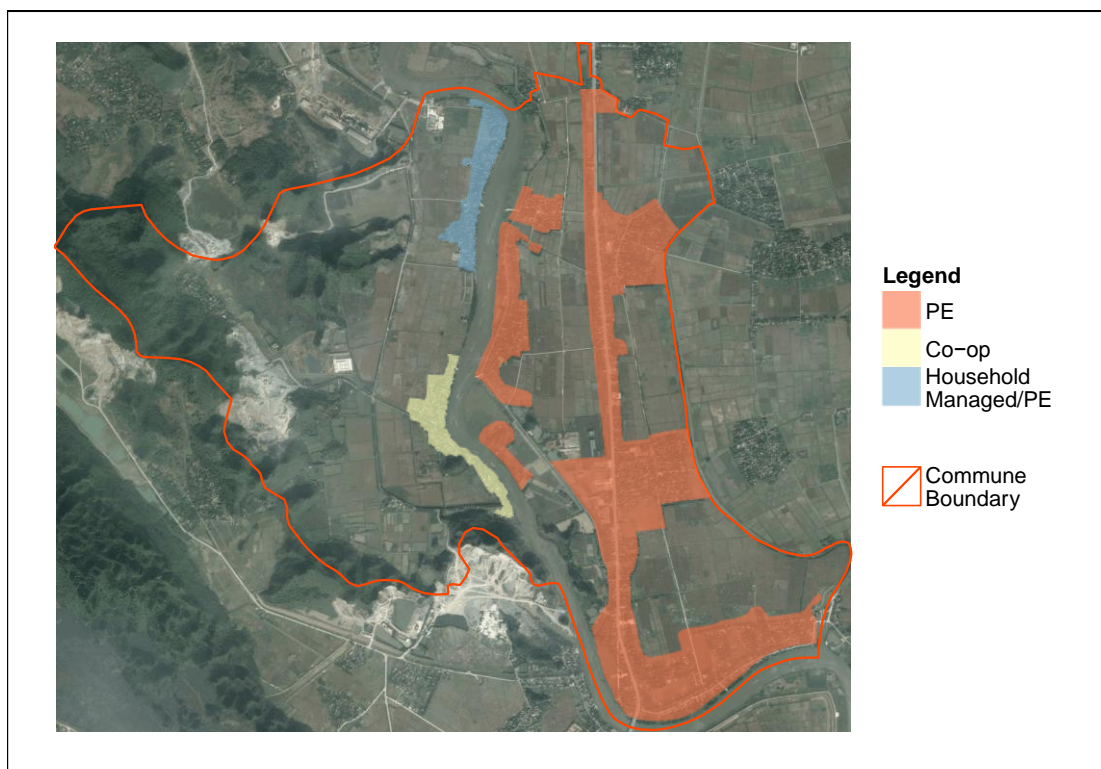


Figure 52. Thanh Hai Commune and water service area boundaries

8.1.3 WSA 1: Private enterprise

The PE (Ha Nam House Construction and Trading Company) is a large construction company, which entered the water supply market in response to incentives offered under the Vietnamese Government's National Target Program for Rural Water Supply and Sanitation (NTP). The PE financed the water supply system in Thanh Hai, and then received a government subsidy of 60% of the capital cost on satisfactory completion of construction.

The PE operated on the eastern side of the Đáy River where the majority of households in Thanh Hai were located. The provider served 2,989 households in Thanh Hai, in addition to supplying water to a neighbouring commune. The water source for this provider was the Đáy River, which was, anecdotally, very polluted, as noted above.

Connection fees in the PE service area ranged from VND600,000 to VND1.5 million, with approximately 3% of serviced households paying the maximum figure. Water connection fees are charged based principally on distance of the household from the primary water pipe. The tariff for water usage was VND6,270 /m³, which was the province mandated water tariff of VND5,700 /m³ plus the VAT.

The PE offered no payment instalment options, and did not have any policies that targeted poor households in the commune directly. Household interviews suggested some mistrust of the PE due to perceived excessively high connection fees (as evident from the quotes below). Despite this, the PE advertised to households directly, and noted constant growth in new connections. The PE said that if the current trajectory of increasing demand continued, it planned to extend its water service scheme outside of the current area. So despite

mistrust from some (poor) households, there was demand in the commune for the PE service.

'How could they charge so much when they just pump water from the river?'

'They are making a fortune and not helping us at all.'

Householders in Thanh Hai Commune

However only a small number of households relied entirely on piped water all year round (n=4), with most using rainwater for drinking/cooking and well water for other purposes such as washing. Unsurprisingly, households used more piped water in the dry season than in the wet season (around 50% more).

8.1.4 WSA2: Cooperative

The water service cooperative (a part of Thanh Hai Agricultural Cooperative) operates on the south-west bank of the Đáy River. Construction for this water system began in 2009, and it operated with just a water tower and no piped network. It sources water from the Đáy River. The government stepped in to fund the construction of a piped water network (to the value of VND250 million), which became operational in 2012.

At the time of our fieldwork, the provider served 160 of the 320 households in the area. Connection fees for the service ranged from VND400,000–VND2 million, with an average connection fee of VND1 million. The water tariff was VND6,000/m³, which covered the operating costs of the system including salaries, chemicals and maintenance. Average household water use amongst customers was 4m³/month.

According to the service provider, even for connected households actual use of the piped water service was low. The service provider attributed this to the costs of the tariff combined with a lack of knowledge about the better quality of water offered by the piped scheme compared with other sources.

No particular assistance for poor households was offered in this water service area, and interviews with the service provider and local officials revealed some scepticism about whether poor households were truly in hardship and deserving of support.

8.1.5 WSA 3: Household business

The third water service provider in Thanh Hai was a household-managed business. The water scheme, which served an area where the population was 50% Catholic, was initially constructed in 2009 with capital investment from the international non-government aid organisation Compassion and Mercy Associates (CAMA). CAMA funded 70% of the capital costs (VND700,000,000) with hamlet households and CPC providing the remainder (VND300,000,000). According to the business owner, households were too poor to invest the required amount, so to save the scheme the current owner invested his own funds (in coordination with the CPC) and took on management of the service.

The service area for this business was on the north-western bank of the Đáy River, with the provider serving 258 of the 287 households. The system had a maximum capacity of 150m³, and sourced its water from the Đáy River. Connection rates were low at first, but had continually risen as the quality of untreated river water (the primary alternative water source) deteriorated. It was not possible to ascertain clear connection fees, as they had changed over time and were initially parcelled in with household investment costs (of VND380,000). However households interviewed reported paying approximately VND1 million.

Households with a connection did not always receive a quality service. There were water shortages during the dry season and the system struggled with inadequate pressure. Connected households reported that at times water was unavailable due to insufficient pressure. The business manager claimed 70% of connected households received water, however reports from households suggested only 30% of connected households received a consistent water supply.

The business was non-profitable, with 60% water losses, and there was insufficient capital to rehabilitate the degrading system. Ongoing system costs (e.g. electricity) were difficult for the business owner to meet. Demand for water was low (with the biggest user of 10m³/month an anomaly), and at the current tariff of VND6,000/m³, revenue was insufficient to keep the business running successfully. Additionally, the owner struggled to keep track of actual water use and amounts owing, as meters were located inside households with water use self-reported. The owner attributed at least part of the system's 60% water losses to under-reporting of water used.

The business owner did not have any specific mechanisms for supporting poor households, however he was sympathetic to households that could not pay their bills and kept these connections live (instead of cutting them off) in the hope that they might be able to pay sometime in the future. Overall, the owner expressed willingness to institute poor-supportive mechanisms, but only if external support was available, and only in a situation where business profitability was first strongly established.

8.2 RESEARCH FINDINGS

8.2.1 Who lives in the water service areas?

In Thanh Hai, the analysis found that there was a statistically significant difference between the number of poor and non-poor households who were located within water service areas, with non-poor households approximately 2.75 times more likely than poor households to be in a water service area.

Table 1 shows the contingency table of observed frequencies of collected household data relating to Research Question 1 (concerning whether poor households were less likely to live in a water service area). Figure 53 shows the location of poor households within and outside the three water service areas.

Table 19: Contingency table for Research Question 1

	In a service area	Not in a service area
Poor Households	130	7
Non-poor Households	3,466	68

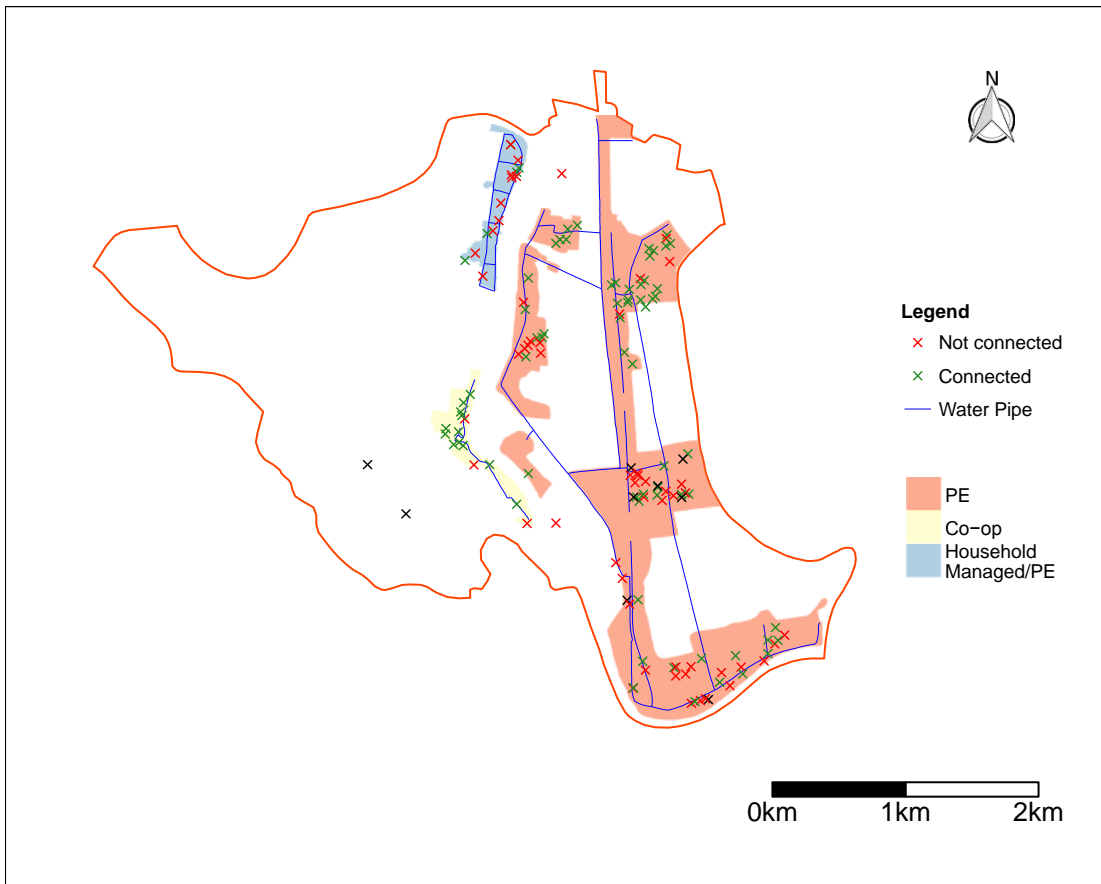


Figure 53. Poor households, connection status and water service area locations

Poor households that were not within reach of the piped network tended to be situated directly adjacent to the river and slightly away from other clusters of houses. In one instance a poor household was in an informal location with their official address in a resettlement area across the commune. The piped network went past this informal area but did not serve it.

8.2.2 Who is served within water service areas? Are there differences between providers?

Table 2 shows the contingency table of observed frequencies of collected household data relating to Research Question 2 (concerning whether poor households within water service areas were less likely to be connected than non-poor households were).

Table 20: Contingency table for Research Question 2

	Connected	Not connected
Poor Households	72	51
Non-poor Households	2,346	1,127

The analysis found that there was not sufficient evidence to indicate a significant difference *between* the different water service providers (PE, cooperative and household business) in regard to rates of poor versus non-poor household connections. This was not surprising in Thanh Hai, where none of the service providers had made efforts to connect poor households.

While there was no significant difference between rates connection for poor households across the different service providers, the analysis did find a significant difference across the commune in the rates of connection for poor versus non-poor households. It is estimated that non-poor households were approximately 1.5 times more likely to be connected to piped water than poor households. Presenting the figures in a different way, within the sample of poor households it was found that they were approximately 1.4 times more likely to be connected than not. In comparison, non-poor households are approximately 2.1 times more likely to be connected than not.

8.2.3 Reasons for non-connection and alternative water use

The dominant reason poor households provided for choosing not to connect to the piped water service was the expense of the connection fee, as shown in Figure 54. This finding holds across all three of the water service areas, with even more households in the cooperative (100%) and household business (88%) areas citing connection fees as prohibitive compared with those in the PE service area (65%). None of the service providers in Thanh Hai offered any support mechanisms to assist poor households with paying the connection fee, such as offering payment by instalment or discounts.

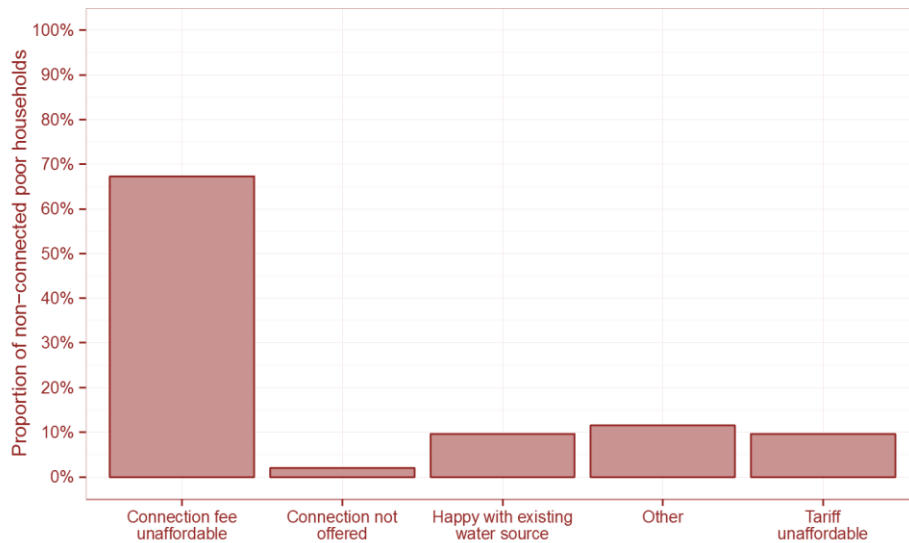


Figure 54. Reasons poor households were not connected to the piped water service

Households without a piped water connections preferred rainwater as their primary source for drinking and cooking when available (Figure 55). A substantial number also used piped water from a neighbour’s connection or groundwater from a protected well. Just over 10% of non-connected poor households used surface water, most commonly in the dry season when rainwater was not available. The findings for the use of alternative sources by non-connected households are also true for connected households, which reported using multiple sources according to availability, for example using rainwater for drinking/cooking during the wet season and piped water during the dry season.

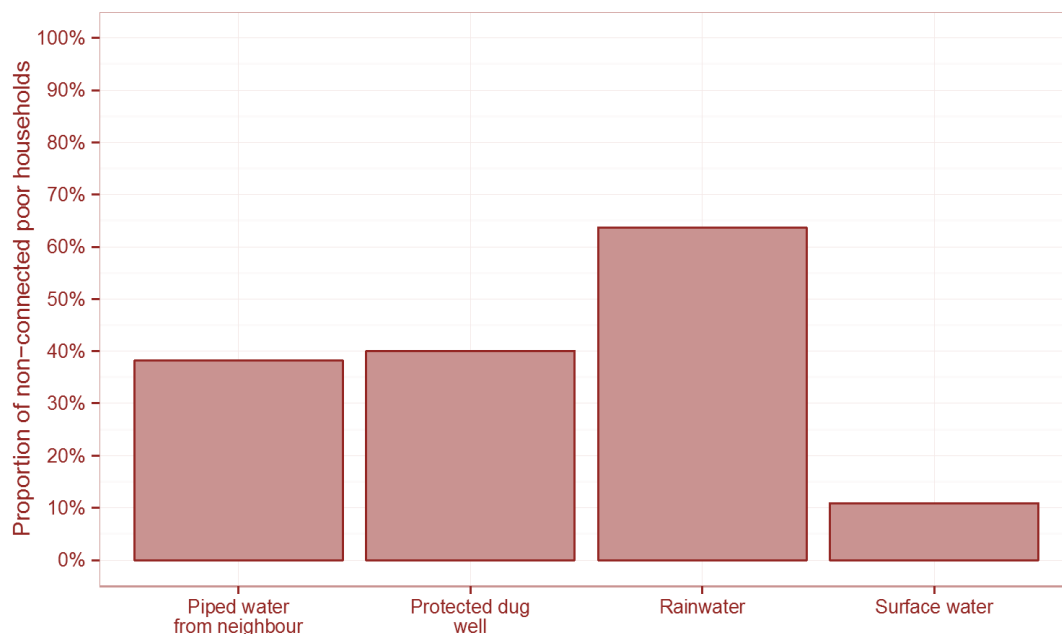


Figure 55. Alternative water sources used (for non-connected poor households)

9 CASE STUDY 4 – THIÊN TRUNG

9.1.1 Commune profile

Thiên Trung Commune (Table 3, Figure 56) is located in Cái Bè district in Tien Giang Province in the Mekong Delta, approximately 45 km from My Tho – the provincial capital, and approximately 85 km from Ho Chi Minh City. One of the main sources of employment in the commune is agriculture (rice farming). The population of the commune is 9800. The Commune contains three hamlets: My Luoc (797 households); My Trinh (789 households); My Tuong (662 hh).

Table 21. Key figures Thien Trung Commune

Population (number of people)	9800
Total number of households	2247
Number of registered poor households	186 = 8.2% (and 212 near poor = 9.4%)
Number of households connected to a piped water service (Commune Leader information)	2089

Figure 56. Map of Thiên Trung



9.1.2 Water service context

There were two water service providers in the commune: one private enterprise (PE), and one state-owned enterprise (SOE). We identified another PE during field research, but it served a very small number of households on the border of this commune, and its name was unknown. Table 24 below provides basic information about connected households in Thien Trung at the time of the field research. It shows that 38% of households in the private enterprise water service area were connected, and 56% of people in the state-owned enterprise service area were connected.

Table 22. Basic Water Service Information for Thiện Trung Commune

Name of Service Provider	Tam Tuan	Water Provider One Member Ltd Company
Type of service provider	Private Enterprise (PE)	State-owned enterprise
Number of served / unserved		
Number of households connected to the service	450	584
Number of households in the service area	1187	1014
Estimated percentage of households connected (within service area)	38%	56%
Connection Fee	Was VND500,000 but now it is reported to be free	Unknown
Tariff	VND 6700	VND 6700

There were discrepancies in the reported numbers of connections in this commune. Case study research revealed that approximately 46% of households were connected to a piped water service (1034 households out of the total population of 2247 households). However, during research conducted in this commune a few months earlier, a commune leader reported that 93% of people were connected to piped water. These figures are obtained by the CPC annually, and updated at the monthly meeting that is held with hamlet and commune leaders.

A commune leader reported that the reason that some people were not served was primarily because they were far away from the main pipe. Differences in supply quality between the two water service operators were also noted by this commune leader:

'Tam Tuan has a bigger pipe and fewer complaints than the Tien Giang Water supply company LTD which is a State-owned enterprise.'

While commune leaders identified poor water quality as an issue in Tien Trung Commune, the CPC's power to have this addressed appears limited to requesting that service providers clean their systems. Piped water is obtained from bores which are more than 400 m deep, and managed with a pressurised pump system and a small tower to regulate flow. The quality of the water provided by both service providers (PE and SOE) was reported by the commune leader to be poor – it smelled and was murky. The murky water problem was exacerbated when the electricity was cut off and sediment built up. If the CPC received multiple complaints about water quality, the service provider could be asked to address the problem, in which case they might increase the pressure, or clean out the tank.

The new requirement in Tien Giang Province to provide free connections was not well known by community members. A recent policy supported the inclusion of connection fees in water tariffs rather than their being charged as a separate lump sum. Local people were not aware that there was no connection fee, and a commune leader reported that the water tariff was *'quite high to local people, so they use other sources such as surface water from the channel but it is quite polluted'*. The commune leader reported that there was no financial support from the CPC to poor people for the water tariff, and that all that the CPC could do was to encourage enterprises to support the poor.

Water quality issues were of great concern to many householders in Thien Trung Commune. Some households commented on the quality of private well water, saying that was contaminated with sulphate, so they used bottle or rain water for tea; that it tasted salty; or that after using it for a while the water turned black. Some households commented on the quality of river water, stating it was very polluted and they used alum to treat it (n=2). One household reported that the pollution was caused by people throwing animal waste into the water (including waste from ducks, cows and pigs). One household reported the river was especially polluted after a breeder threw dead animals into the water after an epidemic.

9.1.3 Water service providers

There areas of operation of the two water service providers operating in Thiệu Trung (one private enterprise and one state-owned corporation) were defined by the river that ran through the commune as shown in Figure 57.

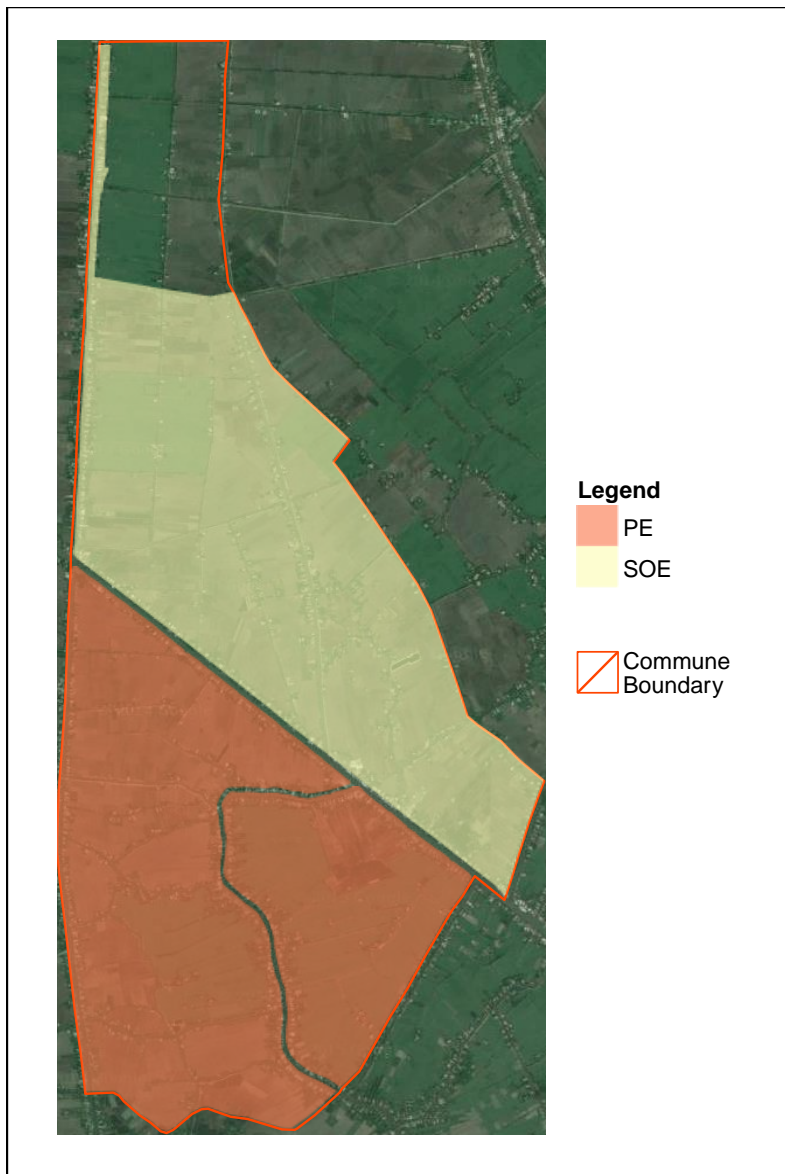


Figure 57. Map of Thiện Trung: water service areas

9.1.4 WSA 1: Private enterprise 1

Tam Tuan PE operated in the southern section of the commune, south of the river, and served 450 households. The system was established in 1997 by the owner who was previously a goldsmith. While the owner of this PE had significant physical disabilities which made walking difficult for him, he was able to manage his business successfully, and had received several awards from the community for his contribution to the community, as shown in Figure 58. Despite having difficulty walking, the owner was known to be an expert at fixing water infrastructure and meters. Prior to 1997 he and his neighbours had been without an improved water supply, so the owner sought a bank loan (initially VND30 million) and started the enterprise with 20 households. This owner reported that over the last five years the business had been stable.

The private enterprise included eleven water stations and altogether it had 2800 connections across the entire service area, which is located across a number of communes. There were two bores in this commune, and Tam Tuan served 450 households. The owner reported that approximately 99 households were not connected as a result of being outside of the service area (the main pipe did not reach them). The owner did not know how many of these people outside the service area were poor.



Figure 58. Tam Tuan Private Enterprise owner showing certificates given to him by the community.

The recent ‘no-connection fee’ policy issued by Tien Giang Province was seen as a disincentive for the PE to connect new customers to the service. In this instance, the PE had decided not to extend its pipeline because he was concerned that he would be unable to recoup the costs given that customers used a small amount of water. This is an interesting impact of the new policy and one worthy of monitoring and closer attention by government.

Support is provided to poor people in this service area on a case-by-case basis. Over 100 households were supported by East Meets West Foundation (EMWF). EMWF began supporting them prior to the introduction of the ‘no-connection fee’ policy and had paid half the cost of their connections. In addition, the PE owner had offered case-by-case support to poor people in the form of free connections and reduced tariffs. He also gave people 50% off their bills if their supply was interrupted.

Water quality issues were managed through responses to testing results, and when customers complained. Historically, water quality testing was conducted every six months, and the owner reported they were now conducted every three months. Occasionally the government authority would ask him to clean the system to reduce turbidity in response to water quality test results. The owner reported that if he received complaints about turbidity, he sometimes gave the householders who complained a discount on their monthly bills. This happened on a case-by-case basis, and demonstrated that people needed to complain in order to receive any discount rather than there being a proactive commitment to a particular service level by the provider. Non-revenue water (water that is lost through leaks, or unauthorised connections) was reported by Mr Tuan as 30%. Two households

commented on water quality, one stating that the colour was yellow with a bad smell, and one reporting the presence of sediment.

9.1.5 WSA2: State-Owned Enterprise

Water Provider One Member Ltd operates in the northern section of the commune, and at the time of the fieldwork for this study it served 814 households, with 200 households reported to be unserved.⁴⁰ The current tariff was VND 6700 /m³. Subsidies and exemptions were not reported to be available, but there was no connection fee (as a result of the recent requirement in Tien Giang). Shared connections were not allowed, and the limited capacity of the system was reported to be the most influential factor in expanding the network to more households.

This water system operated from 5am–8pm, and the operator reported that the pressure was adequate because one of the pumps had recently been replaced. Non-revenue water was reported to be approximately 30% of total consumption which is around the national average.

The SOE representatives reported that key factors determining the location of the water service included the location of key community institutions (e.g. the market), distance from the water supply source, customers' ability to pay, and customers' need for water.

9.2 RESEARCH FINDINGS

9.2.1 Who lives in the water service areas?

Table shows the contingency table of observed frequencies of collected household data relating to Research Question 1.

Table 23: Contingency table for Research Question 1

	In a service area	Not in a service area
Poor Households	162	15
Non-poor Households	2,039	31

For Thiện Trung, the analysis found there was a statistically significant difference between the proportions of poor and non-poor households that were in a water service area, with non-poor households approximately six times more likely to be in a service area than poor households. This was probably a result of the number of poor people living in the

⁴⁰ Please note that Phase 1 information was used to inform this case study due to the SOE representative not being able to provide an interview during Phase 2 research.

predominantly agricultural area at the northern tip of the commune, just outside of the area served by the state-owned enterprise (see Figure 59).

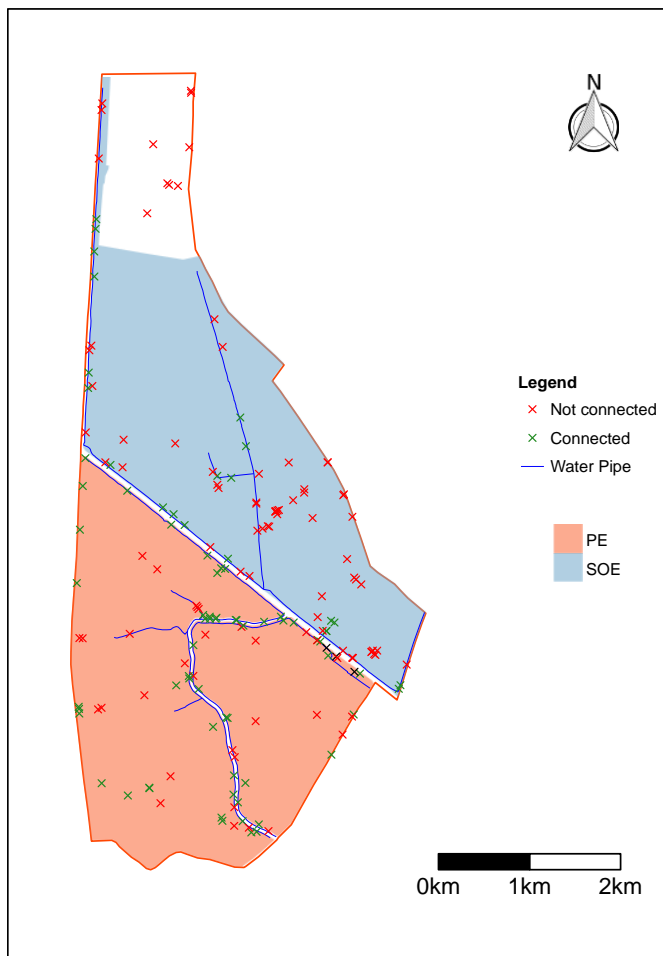


Figure 59. Map of Thien Trung showing poor households connected and not connected to a piped water supply

A visual inspection revealed that poor households were relatively dispersed across the commune. A cluster of households outside the service area was located in the northern tip of the commune, with this area not being serviced by either water service provider.

9.2.2 Who is served within water service areas? Are there differences between providers?

Table is a contingency table of observed frequencies of collected household data *across the commune* relating to Research Question 2.

Table 24 Contingency table for Research Question 2

	Connected	Not connected
Poor Households	70	90
Non-poor Households	1,114	1,087

The analysis found that there was sufficient evidence to suggest there was a significant difference between the rates at which poor households in the areas served by the two providers were connected to piped water. This may have been due to the varying approaches by the two water service providers in supporting poor householders. The PE offered case-by-case subsidies, while the SOE did not.

The PE offered support mechanisms to poor people, for example no connection fee and reduced tariffs (on a case-by-case basis – prior to the no-connection fee policy being enacted) and some households also received discounts through EMWF’s support. This pro-poor approach is likely the reason that poor people were found to be 2.78 more likely to be connected than non-poor people in this service area.

The state-owned enterprise was not reported to offer subsidies, and this is likely to be one of the reasons that non-poor are more likely (4.26 times) to be connected to the service than poor people. Interviews with poor households also revealed that many had applied for a service, but had not yet been connected, even after waiting a significant period of time.

9.2.3 Reasons for non-connection and alternative water use

Non-connected households said that the connection fee was a key barrier to their being connected to a piped water service, with approximately 40% of people not connected identifying this as the reason. Interestingly, this is much lower than other communes where sometimes over 90% of people not connected said that connection fees were the key barrier.

Almost 30% of non-connected households stated that they were not connected as a result of ‘other’ reasons (Figure 60). These were found to be largely due to the fact that householders had applied for a connection but no-one had come to connect them to the service (n=8). One householder within the SOE service area reported that they had been waiting seven months for a connection, while their neighbour paid VND1,300,000 and was connected immediately.

Some households shared a connection with family or other neighbours in the state-owned enterprise service area (n=4). One household used rain water for drinking in the wet season, but in the dry season they used water from their neighbour.

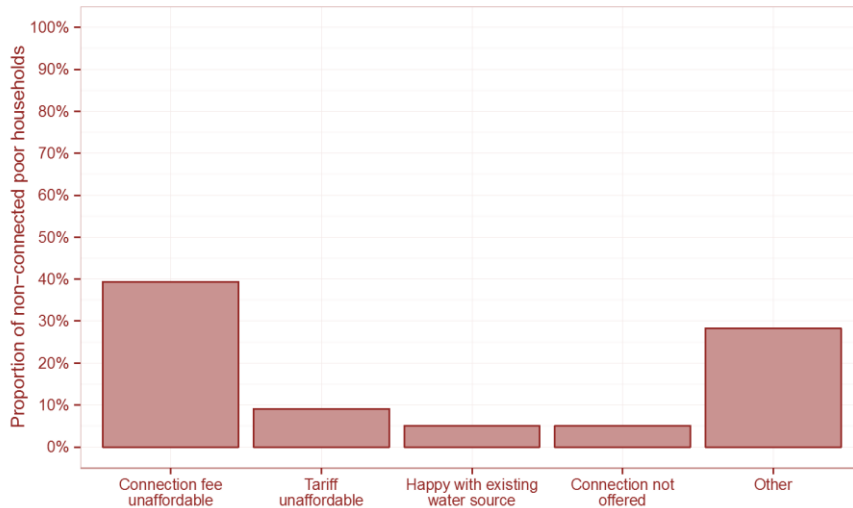


Figure 60. Reasons why poor households were not connected to the piped water service

In the Tam Tuan PE service area, some households did identify affordability as the key issue for not being connected. One connected household reported not being able to afford the tariff, for the water said that they used river water instead. One household reported that they had no money to pay the previous month's bill (for 80m³).

Households who were not connected reported using well water, rainwater, river water and bottled water, but some did not have a safe water source (Figure 61).

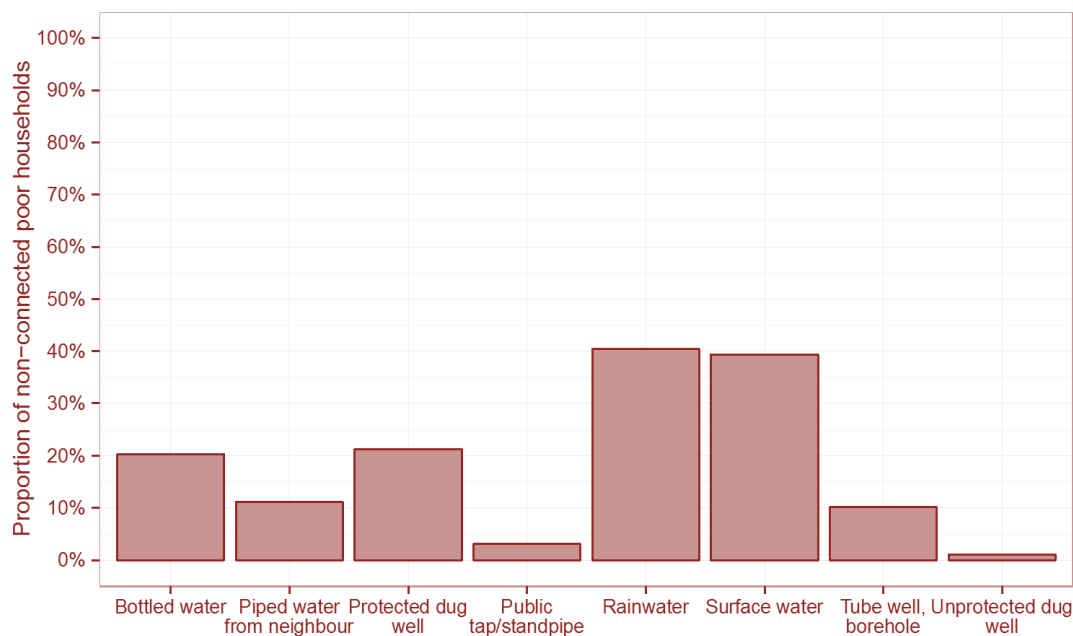


Figure 61. Sources of water used by poor households not connected to a piped water source

10. CASE STUDY 5 – LUONG HOA LAC

10.1 COMMUNE PROFILE

Luong Hoa Lac Commune (Table , Figure 62) is located in Cho Gao district, Tien Giang Province in the Mekong Delta, approximately 3 km from the provincial capital My Tho, and approximately 53 km from Ho Chi Minh City in south Viet Nam.

Table 25 Key figures Luong Hoa Lac Commune

Population (number of people)	10,265
Total number of households	2862
Number of registered poor households	186
Proportion of registered poor households	6%



Figure 62. Location of Luong Hoa Lac Commune from My Tho town

Sources of employment in the commune included agriculture (especially dragon fruit farming) and animal husbandry. The population of the commune was 2,862 households (10,265 people)

10.1.1 Water service context

The Commune People's Committee (CPC) of Luong Hoa Lac was acutely aware of the need to support poor households to access piped water services, and had implemented pro-poor policies. The CPC said that all people in the commune were connected to a piped water service, and that people with poverty certificates had been provided connections for free. This was not upheld through subsequent investigations documented below, however the strong focus of the CPC on the inclusion of the poor had increased their access relative to that seen in other communes.



Figure 63. Researchers meeting with water service providers in Luong Hoa Lac

The key issues identified in Luong Hoa Lac related to water pressure, possibly as a result of insufficient height of the water towers. Some householders reported storing water in their own tanks to address the pressure issues. Householders also reported that at 7pm the water pressure improved, and that if they wanted to use a washing machine, they typically waited until 10 pm. It was found that many people had their own bores and that the cost of establishing a private bore was VND2.1 million and the depth was 40 meters.

Five service providers provided piped water within the commune: two private enterprises, one water user association, one cooperative and one state-owned corporation). Connection fees ranged from free to VND600,000, and tariffs were between VND3,500/m³ and 6700VND/m³ (see Table).

Table 26. Water Service Context Summary Information

Service provider name	WUA no 1 Doan Van Cao	Tien Phat	Truong Ba Diem	Water provider – 1 member limited company	Hai Dong
Type of service provider	Water user association (WUA)	Private Enterprise (PE)	Cooperative	State-owned enterprise (SOE)	Private Enterprise (PE)
Number of water meters in each service area					
	70	650	150	Unknown	200
Connection fees					
What is/was the connection fee?	The connection fee was set a long time ago (in 1989) and was set at VND500.000. In the past 10 years there had been no new connections .	VND 500,000 (Didn't mention free connection policy)	Fee for labour to set up the pipe. Farmers paid for water meter and pipe	VND600,000 (Didn't mention free connection policy)	Free (current)
Tariffs					
What is the current tariff?	VND3,500/m ³	6000/m ³	VND5,000/m ³	VND4700 /m ³ (NB. They are going to increase to VND6700 m ³)	VND6700 / m ³

10.1.2 Water service providers

The five service providers operated in different areas, covering the entire commune (Figure 64).

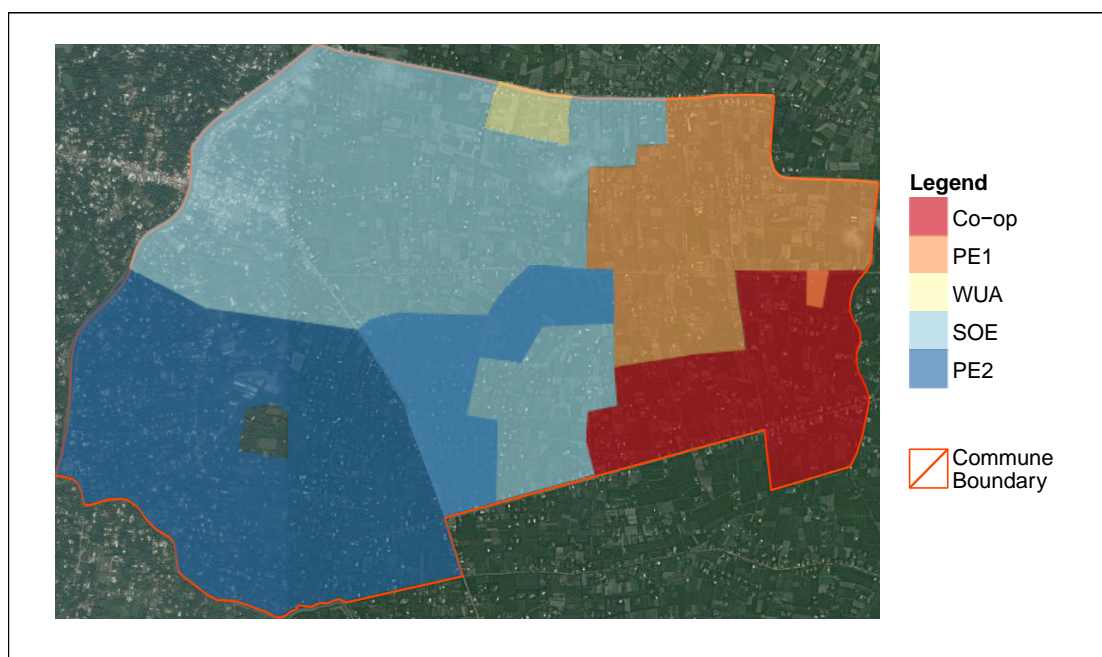


Figure 64. Map of Luong Hoa Lac Commune showing water service areas

Legend	Name of Service Provider	Type of service provider
WUA	WUA no 1 Doan Van Cao	Water user association
PE 1	Tien Phat	Private enterprise
PE 2	Hai Dong	Private enterprise
Co-op	Truong Ba Diem	Cooperative
SOE	Water provider : 1 member limited company	State-owned enterprise

Both private enterprises had been supported by sponsors (donors): one by EMWF sponsorship and the other by UNICEF investment (when the scheme was established, prior to the PE taking over ownership).

10.1.3WSA 1: Private enterprise 1: Tien Phat

Tien Phat serves approximately 650 households, each with its own meter.

This PE owner had a background in the water industry having previously worked in a water company, and had studied water management in technical college. Her staff consisted of herself and her husband, and two maintenance workers. The water service was at times interrupted due to electricity cut outs, and the annual dry season which had resulted in this PE being close to running out of water from the bore.

Connection fee: VND500,000 (NB: No mention of that new no-connection fee law)

Tariff: VND6,000

Number of connections: 650 water meters

Tien Phat's owner claimed that all poor households who wished to be connected were connected:

'All the poor in this commune are connected. If someone is not connected, it's not because they are poor, but because they are rich, and can afford to dig their own well. Some of these rich even serve their neighbours.'

Tien Phat started operations in 2010 with 400 customers, and at the time of the fieldwork for this research, it served approximately 2,000 households (including 200 currently being connected in a new housing development area). This new settlement was being developed by an investor who purchased the land from local people and then approached the PE to service it. Tien Phat was supported by East Meets West Foundation (EMWF) – VND1.8bn for two schemes in 2010 and 2011. The owner reported that a rigorous process was employed prior to this PE being selected for financial support. This PE also reported receiving more support from an Australian donor in 2012 (approximately VND0.5 billion).

Pro-poor policies were evident for this private enterprise, possibly due to funding from EMWF. In this PE area the poor households had mostly been connected for free, although some who could pay 20% of the usual connection fee did so (it is assumed this was voluntary and on a case-by-case basis). The PE owner explained that a poor household could make a request to the hamlet leader for a free connection, and if this was approved, the hamlet leader would ask the PE who, she reported, always agreed. When asked how many poor people were given free connections, the PE owner could not remember.

Water quality issues drove piped water demand in Luong Hoa Lac. As a result of most people in Luong Hoa Lac working in areas of farming and animal husbandry, water quality issues were of concern to inhabitants, so piped water was essential. Those who were not connected to a piped water service were sometimes non-poor households who were able to have a private bore.

10.1.4 WSA 2: Private enterprise: Hai Dong

Hai Dong had 200 water meters within its water service area in Luong Hoa Lac. The owner of Hai Dong had previously been a farmer (cows, rice, dragon fruit).

Connection fee: free

Tariff: reported by PE owner to be VND3000/ m³

Number of connections: 200 water meters

Funding from an NGO has supported the financial viability of this scheme. The PE owner assumed ownership of the system in 2012 from a cooperative, and agreed to pay VND400 million (through an honour system) for it. The owner reported that he had invested in network expansion, and that only 100 million of this original loan (which was the share paid by the farmers) has been paid off. The remaining VND300 million had not been paid back as this was understood to have been donated by UNICEF.⁴¹ Land for the water station was rented for VND1 million per month.

Quality of the water resource was of concern to the PE owner, but measures to remedy this appeared to be unavailable. The water was drawn from a 420 m bore, and while satisfied with the quantity of water, the PE owner wished for better water quality. He reported that his system was better than the community system, but not as good as the government system.

The owner said that he wished for modern technology but didn't have enough capital to upgrade the system. Most people used the piped water from his scheme for cooking, he reported, and some used rainwater for tea.

10.1.5 WSA3: Cooperative: Truong Ba Diem

Truong Ba Diem served 150 households (150 water meters) and operated in the south-east section of the commune. A formal interview was not conducted for this PE and hence the available information is limited to the details below.

Connection fee: Fee for labour to set up the pipe. Farmers paid for water meter and pipe

Tariff: 5,000VND m³

Number of connections: 150 water meters

10.1.6 WSA4: Water User Association (WUA no.1 Doan Van Cao)

This network was established with UNICEF support in the 1980s by the father of the current manager. At the time of the fieldwork for this study, WUA no.1 Doan Van Cao served approximately 70 households, each with its own water meter. When the original manager retired, his son took over (more than 20 years ago). The piped water was reportedly used for household drinking and for people to water their animals – chickens, cows, pigs.

⁴¹ It is understood that this investment is not expected to be paid back to UNICEF by this PE owner as reported by the owner.

This association had expanded slightly over time to maintain a service to all households in its area. All households in the hamlet contributed to set up the system (n= 50) and it served 70 households. This operator hadn't extended the network, but new connections had been added (e.g. when a son or daughter married and moved in next door to their original household). In this case, the new occupants applied for a new connection. All households were connected in the hamlet. Over the last 2–3 years there had been no new connections, and there were no opportunities for expansion as other areas were already served by other providers.

Connection fee: VND500.000 during system establishment from 1989–1990. No new connections over the last 10 years

Tariff: VND3,500/m³

Number of connections: 70

Support mechanisms were offered to householders as needed. Late payments were allowed, and on a case-by-case basis, exemptions were offered. For example, one householder had a kidney problem and it was agreed by householders not to charge her the tariff.

Funding for a system upgrade was of concern to the system manager. The scheme was old, and the manager reported that it would be difficult to get people to pay for an upgrade. It was reported that a primary cost was electricity, and if the price of electricity rose then it put pressure on the water tariff.

Water quality was also of concern, with recent water quality tests revealing unacceptable levels of iron and aluminate. In the dry season, there was insufficient water to meet needs, and there were plans to create a new source with a new bore, but the WUA was waiting for CPC support. Approximate costs were VND70–80million for a new bore, but a WUA representative did not think that householders would be happy to pay the cost of this new source. Current income from the scheme was VND200,000/month and this had to cover all operations and maintenance costs.

10.1.7 WSA5: State-Owned Corporation (Water provider – 1 member limited company)

'Water Provider – 1 Member Limited' was set up in 1993, and at the time of the fieldwork for this study it had more than 200 employees. Company representatives were not able to report how many customers there were in Luong Hoa Lac Commune because the state-owned enterprise (SOE) covered five communes. An EMWF representative reported that 1140 households were served in this water service area in this commune, with 20 km of pipeline. Monthly turnover was VND70 million.

Connection fee: VND 600,000

Tariff

Tariff was currently VND4700/m³ but it was to go up to VND 6700/ m³ soon as the CPC had ruled for this to be the case (September 2015). State-owned enterprise employees reported that when the tariff goes up, connection will be free.

Within this water service area a different tariff price was paid by businesses, with ice-makers paying the higher rates of 8700VND/m³. State-owned enterprise employees reported that they thought that having a fixed price for the tariff was beneficial because if it wasn't fixed it could result in a race to the lowest price and quality would fall.

Some water quality and reliability issues affected the service. The service provider reported issues with sediment building up in pipes given that the water was pumped directly from the groundwater source. Customer complaints were being received by the service provider, usually in relation to service interruptions, for example when the service was stopped to fix a leak. Water quality testing was reported by the service provider to be conducted on a quarterly basis.



Figure 65. First step of identifying water service boundaries in Luong Hoa Lac

10.2 RESEARCH FINDINGS

10.2.1 Who lives in the water service areas?

All households were within a water service area in Luong Hoa Lac Commune and had access to a piped water network. Table shows the contingency table of observed frequencies of collected household data relating to Research Question 1.

Table 29: Contingency table for Research Question 1

	In a service area	Not in a service area
Poor Households	83	0
Non-poor Households	2,779	0

Our visual inspection revealed that poor households were somewhat dispersed across the commune, though the majority were located towards the western boundary of the commune, as shown in Figure 66.

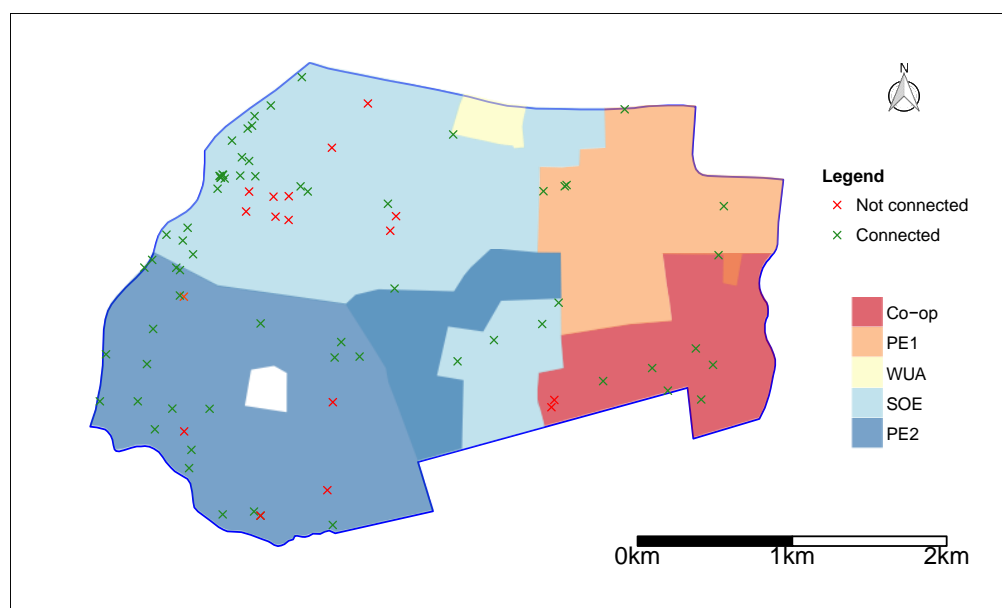


Figure 66. Poor households in Luong Hoa Lac – connected and not connected to piped water service

10.2.2 Who is served within water service areas? Are there differences between providers?

In Luong Hoa Lac, comparison between providers was not possible due to insufficient data. This limitation to the research was in part because one of the service providers did not know how many householders were served in their water service area. Additionally, the water service areas crossed hamlet boundaries, which were the key point of reference for determining total numbers of householders within a service area.

Based on field data collected on poor households, it was not possible to determine if there was a significant difference in the rates of connection for poor households, both across the commune and between the water service providers.

Commune leaders reported that a policy was in place to require water service providers operating in Luong Hoa Lac to provide connections to poor households for free. They reported that 100% of poor people were connected. However, field research showed that approximately 77% of poor people were connected to a piped water service. Most poor households who were not connected were located in the WSA served by the state-owned enterprise (n= 10). More poor people were connected to this system than to the other networks due to its size and geographical features such as higher density dwellings around community infrastructure such as markets.

10.2.3 Reasons for non-connection and alternative water use

The most common reason that householders gave for not being connected to a piped water service in Luong Hoa Lac was that the connection fee was unaffordable (n=19). Interestingly, researchers were told (by the CPC) that 100% of the commune was served (had access to a service), however, six householders stated that they were not connected because a connection was not offered, as shown in Figure 67 below. The tariff being unaffordable, and being happy with an existing source also featured amongst the responses.

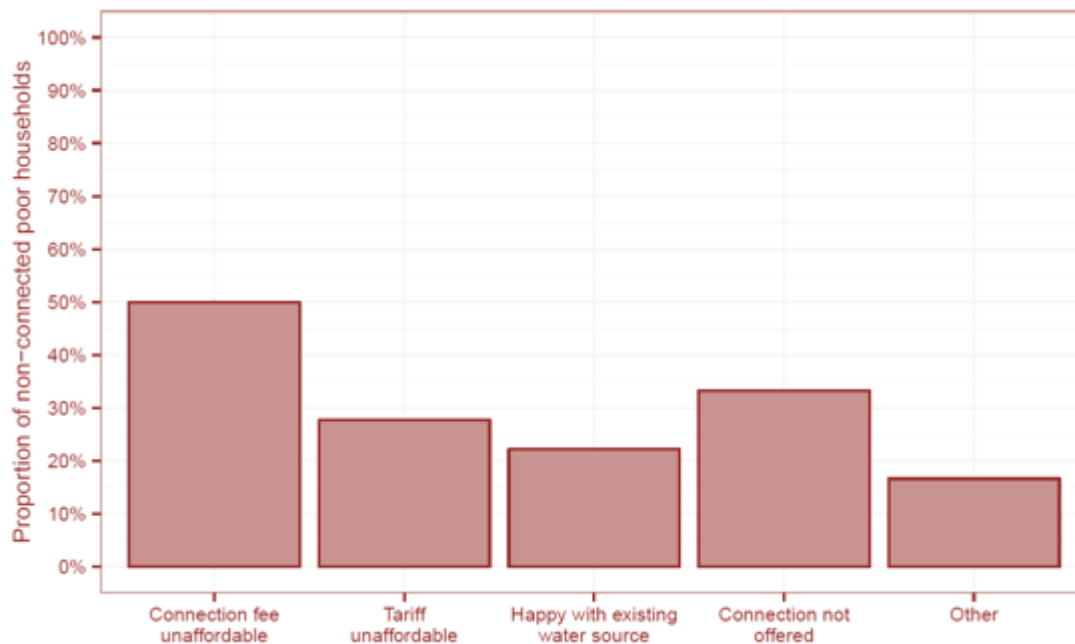


Figure 67. Reasons poor householders were not connected to the piped water system

Households tended to use rainwater or bore water, but rainwater was not available all year round. Some households shared a meter with family or neighbours (including for free). The SOE had offered free connections and PE2 offered a discount, however, even with the discount there was still a household which cannot afford to connect and instead relied on the charity of neighbours.

11 CASE STUDY 6 – TAN PHONG

11.1 COMMUNE PROFILE

Tan Phong Commune (Table , Figure 68) is located in Cai Lay District, Tiền Giang Province in the Mekong Delta Region of South Viet Nam. Tan Phong is an island commune, and comprises one main island, and two smaller islands connected by small bridges to the main island. Tan Phong is just over 30 km away from the capital city of Tien Giang – Mỹ Tho city, and just over 80 km away from the centre of Ho Chi Minh City.

Sources of employment in the commune includes agriculture and aquaculture, with a large number of gardeners (farmers) producing Rambutan fruit. Tan Phong attracts tourists who bicycle around the island and learn to cook Vietnamese cuisine. The population of the commune is 13,461 people.

Table 27. Basic information about Tan Phong Commune

Tan Phong Commune	Information
Population	13,461 people
Total households in commune	3304 households
Number of registered poor households	219 registered poor households (6.6% poor) Approximately 318 near-poor households (9.6% near-poor)

Figure 68. Location of Tan Phong Commune, Tien Giang Province



Tan Phong has seven hamlets. The number of households per hamlet ranges from 254 to 682. Poor households are concentrated in two hamlets (Tan Buong A, and Tan Thein). A commune leader of Tan Phong reported a trend of increasing coverage of piped water services for the poor over the last five years.

11.1.1 Water service context

Tan Phong was served by three water service providers: two private enterprises (PEs), and one water user association (WUA). Maps provided by the provincial government showed that the majority of the commune was covered by a backbone main pipeline. While the majority of people were connected to a piped water service, issues of quality and pressure and flow were reported by householders, community leaders and service providers. It was reported that pressure was low for people in more remote areas in the Nam Anh PE area in particular. Water was drawn from bores across the island, and were reported to be over 400 meters deep.

In total it was reported by the CPC that there were 2,570 households connected to a piped water service, which is approximately 78% of households in the commune. A summary of water service providers, the number households in their water service areas, and number of households served is shown in Table .

Table 28. Summary information of water service providers in Tan Phong Commune

Name of Service Provider	Nam Anh	Song Thu	Tan An
Type of service provider	Private enterprise (PE)	Private enterprise (PE)	Water user association (WUA)

Number of served / unserved			
How many meters do you have connected?	1700	270	600
How many households in total in your service area?	2270	315	719
Estimated percentage of households connected (within service area)	75%	86%	83%

Water in Tan Phong was drawn from deep bores from which the water was pumped directly to the piped system. A pumping station was used to deliver water to households as shown in Figure 69 and Figure 70.

Figure 69. Inside the Song Thu pumping station



Figure 70 Song Thu pumping station



Water prices varied across the three service providers, and in part, reflect the history of the systems and their governance structures. The WUA scheme was set up fifteen years ago and community members contributed to establishing the system, whereas the Song Thu private enterprise was established with funding from East Meets West Foundation in 2011. As is typical for community-managed systems, the tariff for the WUA scheme was very low. The

Nam Anh Scheme reported the highest tariffs, and was established in 2001. Table provides a summary of the features of the three schemes.



Figure 69. Example of a tank used by householders to store piped water to manage water pressure issues (Song Thu PE service area, Tan Phong Commune)

Table 29. Summary information - water costs

Service provider name	Nam Anh	Song Thu	Tan An
Type of service provider	PE	PE	WUA
Year established	2001	2011	2000
Connection fees			
What is/was the connection fee?	Currently no connection fee due to Tien Giang policy. Not known what the previous connection fee was.	System established for 200 households with EMWF support. For new houses that requested connection the first 200 were connected, it costs VND450,000 to connect.	Based on distance from the main pipe network. Ranges from VND50,000–150,000. Was VND920,000 15 years ago from each household in order to establish the system.
Tariffs			
What is the current tariff? (VND/m ³)	VND6,700	VND6,000	VND2,000

The WUA service provider reported that it needed to increase tariffs to be sustainable, and that transfer of the system to a PE for more efficient management appeared to be unlikely due to perceived unfavourable conditions for the PE. Provincial authorities were concerned about the low tariff charged by the water user association (WUA) and a resultant lack of funds for operation and maintenance (O&M). A representative of the Provincial Water Management Authority (pCERWASS), suggested that there was a need to hold a community meeting to discuss the tariff and explain that the tariff is made up of a number of elements: electricity, environmental duty, O&M and labour costs. The representative said there was a need to keep people informed of how the tariff worked – and raise the tariff, otherwise the system would be in jeopardy. Representatives who had taken over the management of the scheme reported that there were no forward planning processes in place for capital works or O&M. When the local PE representatives were asked if they would consider taking over the WUA, their key concern was that they would need to pay back the investment that householders had made to the scheme (total VND1 billion – approximately US\$44,800).⁴² The PE representatives also said they would also need to raise tariffs risking a negative community response.

11.1.2 Water service providers

The locations of the three water service providers operating in the commune (two PEs, and one water user association) are shown in Figure 71 below.

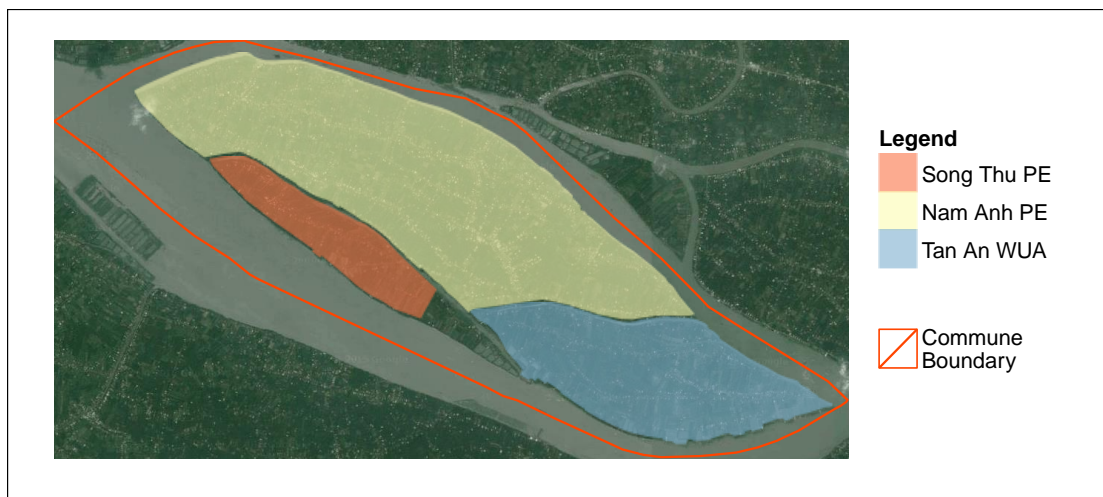


Figure 70. Water service areas in Tan Phong Commune

⁴² Note that there was no mention of the concept of depreciation which could impact on the options analysis for this particular water service area.

11.1.3 Private enterprise 1: Song Thu PE

Established in 2011, Song Thu PE operates in the south-western section of Tan Phong commune, and at the time of the fieldwork, it served 270 households. There were 52 unconnected households in the service area. Two were about to be connected, giving an 86% connection rate. The three registered poor customers were scattered rather than clustered.

Funding and support from a donor and provincial government enabled PE Song Thu to rapidly serve most of the service area (86%) within four years of commencing operations. The owner/manager of Song Thu PE had been the manager of the water user association (WUA) in Tan An for 10 years. The owner received advice from government authorities and sought funding from East Meets West Foundation (EMWF) to establish the PE in an unserved hamlet of approximately 315 households. The output-based funding totalled VND320 million, with VND1.6 million per water meter provided by EMWF paid after connection of 200 water meters. This PE also received a no-interest loan for pipes from the Department of Agriculture. At the time of establishing the scheme, the owner estimated that there would be 200 connections needed, and did not realise that another 70 more would be needed. For these extra households, it cost VND450,000 for them to connect, and the householders also needed to pay for the pipe from the meter to their door. The sharing of water meters is not allowed.

Affordability of tariffs is considered important by the PE owner, and processes were in place to inform householders. Song Thu PE charged VND6000 /m³ for water, and the owner believed this was fair and had not raised it to VND6700 /m³ (which was the upper limit permitted by the province) because he was '*concerned about the poor*'. The owner kept the community informed of tariff increases by posting the CPC decision approving the new price in a public place. Before applying tariff increases he also sent notices to all customers with their bills, indicating that they would be the last bills at that rate. The owner reported that he only received a small number of negative responses from householders with respect to tariff increases. He reported that he has not needed to provide payment plans to people to assist them to pay their bills, nor had he experienced any non-payment issues to date.

Connections were largely provided to households for free under the EMWF scheme. The owner's reports are consistent with this and with other case study results that indicate connection fees rather than tariffs are the most significant financial barrier for the poor.

Long-term planning had been considered by the Song Thu PE, and was informing its consideration of system expansion. The PE believed that another bore would be needed to serve all householders, and to accommodate population growth up to 2020, as otherwise water pressure would drop. However, he reported insufficient capital to cover the expenses at this stage, especially to reach very remote households at the far south-east tip of the islet.

The PE owner was aware of water quality testing requirements, and informed the community of water quality results. The PE owner reported that there was a lot of 'calcium carbonate' in the water, and that there had been E. coli found at a household point which

he believed was due to the condition of the pipes since the E. coli could not have originated from water drawn from the deep bore (over 400 meters). He also reported that he shared water quality results with the community.

Access to water quality testing at the household level did not seem to be known by householders, and was influenced by literacy levels. Testing was conducted three times a year: twice by the government, and once for households if they requested it. The PE owner reported that he provided free water testing if people wanted it – they just needed to ask for a bottle and take a sample and he would send it off to the government for testing. However, the PE owner explained that *‘only well-educated, literate people know about their right to get the water tested at their house.’* It was not known to what extent this service was taken up by community members.

Non-revenue water was reported to be lower than national averages, probably because the water system was a new one (built 4 years ago). The PE owner explained that EMWF required installation of one water meter in each segment to calculate non-revenue water (NRW). For this recently constructed scheme, non-revenue water (water lost to leakage or unauthorised connections) was reported to be 25% - lower than most other areas visited during this research phase, and the national average (which was 30–40% of total water use due to water lost through leaks).⁴³

Water supply stops at 8 pm to reduce electricity consumption. Figure 72 shows a water tank used by a householder to capture water in order to manage low water pressure and lack of services after 8 pm.

11.1.4 Private enterprise 2: Nam Anh

Nam Anh Private Enterprise operates on the north-central and western sections of Tan Phong Island, with 1700 connections. Approximately 75% of people who lived in this water service area were connected. The current connection fee was reported to be zero although this was not the case previously, and the tariff was VND6700 /m³.

The owner started this scheme with his own capital 14 years ago, and prior to this he was a farmer. Four years ago he reached the current level of households connected to the network. The owner reported that in some cases where people were not connected, this may have been due to land access issues, in that a pipe may have needed to go through a neighbour’s property and this required negotiation.

The PE owner said current levels of income from tariffs were not adequate to cover existing investments, or future capital works. He reported that there was VND2 billion worth of investment in the current scheme and that more customers were needed to recover the costs of existing infrastructure. The owner had tried to get more people to connect to the system by offering discounts, such as providing them with the first 5m³ of water free. He reported that some people who were not connected were well off and were in close proximity to the main pipe. This may have been due to their having access to a private bore. Pressure issues were significant in this PE according to a number of accounts. This problem

⁴³ World Health Organisation: http://www.wpro.who.int/topics/water_sanitation/wsp_case_study_vnm.pdf

was exacerbated when households stored extra water to use during times when the electricity was likely to be cut off. If householders all drew on the system at the same time for this reason, reduced pressure was likely to result. The PE offered support mechanisms to poor householders to enable them to connect, but they were possibly not well known or understood. The owner reported that he offered an arrangement to householders that if they bought the necessary pipes and materials for connection, then the PE would install it for free. The owner had a policy where poor people only needed to pay half price for materials, and the enterprise paid the other half, and the PE also provided free advice (e.g. for technical specifications). However, while subsidies and exemptions were available, many people may not have been aware of them or of how to access them. When asked if people are aware of this offer, the owner replied that *'some know, and some don't'*.

Water quality concerns were reported to be a result of custom and taste preferences, however this could not be verified against water quality tests. Stakeholders in Tan Phong, including the owner of Nam An PE reported that due to taste preferences many people still preferred to use river water for cooking rice, even if they had piped water. The owner reported that he publicised the water quality results by placing them in a public place. After exploration conducted for a new bore site, he decided not to go ahead with it due to poor water quality results.

Many households only use the piped water for certain purposes, and instead used other sources, including rainwater and bottled water for drinking and for cooking. Households often noted that the piped water was not suitable for making tea (n=5). Reasons included that the water was a yellow colour, that it made the tea too red and that the water was not clean enough with some turbidity. A few households reported that the water had a smell (n=4), which some described as 'muddy'. One household reported that because of the smell, each time they used the water, they first let it run until it had filled a basin. They discarded this water and used the water that followed. Another household reported they had created a filter for their tap using a piece of cloth. One householder said that that the piped water had a sour taste.

'If a father has too many children, no one will cry when he dies, if a temple has too many followers, no one will help close the door' – explanation provided by the owner of Song Thu private enterprise to illustrate why he believed small-scale private enterprises are the best model for water supply as opposed to collectively managed systems that can suffer from the 'tragedy of the commons'.

11.1.5 Water User Association: Tan An

Tan An Water User Association (WUA) operates in the south-east section of the island and served approximately 600 households. There were approximately 719 householders in Tan An water service area, and so the estimated connection rate was 83%. The scheme had been funded and built by the community 15 years previously with contributions of VND920,000 per household.

The water user association recently had new managers put in place, but the sustainability of the service remained in question. In 2010–11 the CPC initiated a bidding process for the job

of managing the WUA. A group of four men decided to take it over (at their own financial risk). It is understood that the four managers invested 150 million into the scheme to build a new bore. They have a contract to manage the scheme from 2014–2028. Of the four, two are responsible for day-to-day maintenance.

The scheme has two pumps and non-revenue (lost) water is high at 40%. The scheme is understood to be at the age of replacement. The system has reached an age when parts of it will need to be replaced. At the time of our fieldwork, the managers had not yet determined which pipes needed upgrading – but were basing their understanding on what previous managers had passed on. If the electricity is cut off then they only have three days of water supply available.

Tan An had the lowest connection fees and tariffs in Tan Phong Commune, and they were very low in comparison to other communes studied in this research. Recently it had cost VND150,000 for the most remote house to connect to the system, and if households were close, then VND50,000 was requested by the WUA. In a few cases, poor households had not been charged to connect.

The current tariff is VND2000 m³, and approximately 80 water meters have bills of less than VND10,000 a month. The tariff is very low, and several interviewees said that the scheme did not have enough income to cover operation and maintenance expenses. The four men who had taken over the scheme intended to ask the CPC in the coming months to raise the tariff. They wanted to put the tariff up to VND2500–3000 /m³. However, there had not yet been a community meeting to discuss the tariff or the required O&M.

The WUA managers' confidence in their ability to draw local people into the consultation process with regards to raising the tariff was low, and they were anticipating community resistance. The WUA managers reported that they had prepared letters to send to householders, but the CCP told them not to send the letters and instead organise a plenary meeting which had to be called by the party secretary of the commune.

There did not seem to be a high level of understanding of how the WUA could seek support from government or from donors to improve the scheme or put long-term planning in place. The WUA managers were interested in seeking financial support from a donor, but they were not sure how to go about this. One manager had previously been a gardener and reported that he felt that he didn't have any experience in seeking sponsorship.

11.2 RESEARCH FINDINGS

11.2.1 Who lives in the water service areas?

Table shows the contingency table of observed frequencies of collected household data relating to Research Question 1.

Table 30: Contingency table for Research Question 1

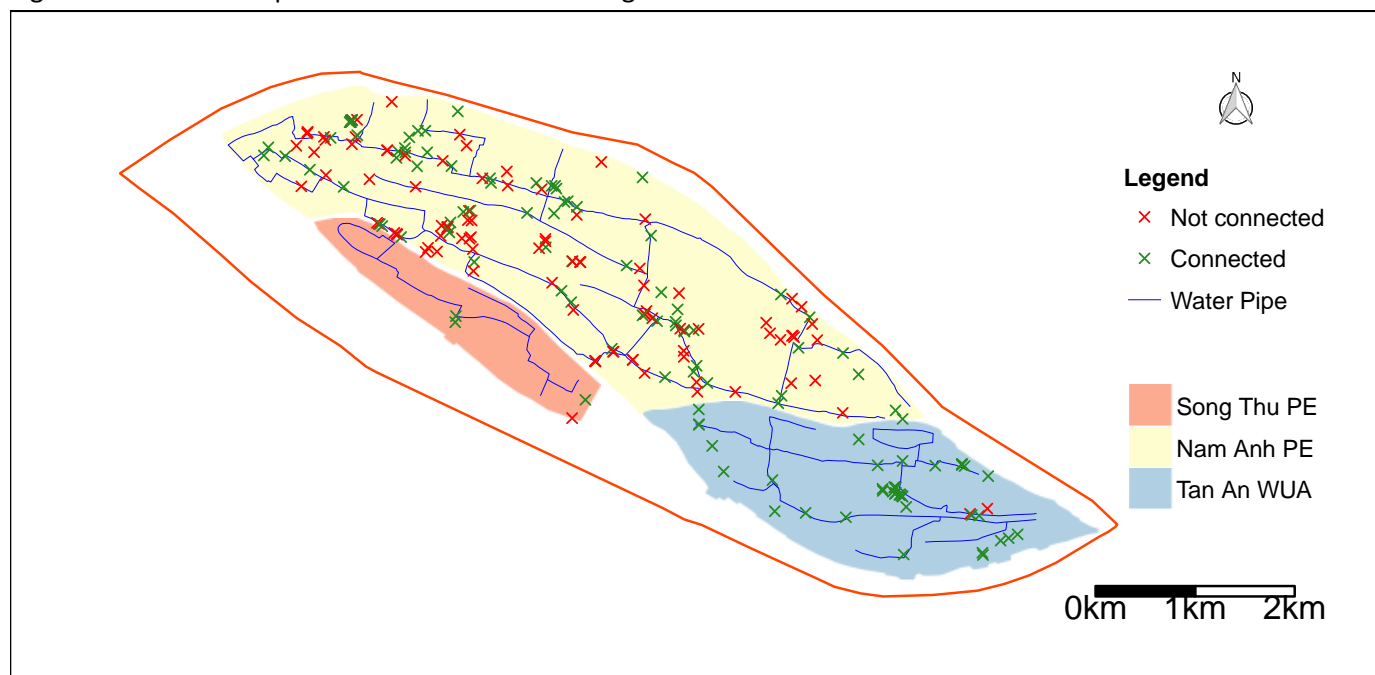
	In a service area	Not in a service area
Poor Households	213	0
Non-poor Households	3,091	6

For Tan Phong, the analysis did not detect a statistically significant difference between poor and non-poor households and service area inclusion. This suggests that water service providers in Tan Phong provided consistent service or connection to households within their areas irrespective of poverty status.

Decision-making was dominated by PE owners, but approval had to be sought from the Commune People’s Committee (CPC) to establish a new scheme. Extensions to existing schemes do not require CPC approval. According to a commune leader the most important factors when determining the location of a new system were profitability, density of houses and distance from the water supply source. The commune leader stated that the most important factor influencing decisions about who to serve was that there was no conflict between the boundaries chosen for the served areas and land use planning in the commune.

Providing services to poor or ethnic minorities was not very important at all in determining where a new system was placed, especially given that poor households were relatively dispersed across the commune as shown in Figure 71.

Figure 71. Location of poor households in Tan Phong Commune



11.2.2 Who is served within water service areas? Are there differences between providers?

Table is a contingency table of observed frequencies of collected household data *across the commune* relating to Research Question 2.

Table 31: Contingency table for Research Question 2

	Connected	Not connected
Poor Households	119	94
Non-poor Households	2,451	646

The analysis found that there was sufficient evidence to suggest that there was a significant correlation between the water service providers and the rates at which poor households were connected to piped water. This suggests that operating practices differed between the service providers, with such factors as water connection fees and water quality having an impact on rates of connection of poor households. This is likely to be a result of three key factors:

1. the different histories of the schemes
2. the different funding mechanisms of each of the schemes, with one PE being funded by EMWF
3. the different connection fees and tariffs for each of the services.

Table 35 presents an explanation of these points across the three service providers.

11.2.3 Are the poor less likely to be connected?

For the smaller privately owned enterprise (Song Thu) and the water users association (Tan An), there was no significant difference detected between the rates of connection of poor and non-poor households to the piped water network.

In contrast, a significant difference between the connection rates for poor and non-poor households was detected for the larger privately owned enterprise (Nam An). Non-poor households in this service area were approximately four times more likely to be connected than poor households (Table). Again, this could have been due to the three key factors mentioned above, especially given that Song Thu PE was funded by a donor, and the WUA had very low connection fees and tariffs and as a result was thought to be not financially viable.

Table 32. Context information for results

Service provider	Result	Possible reason for result
Water user association	No significant difference detected between poor and non-poor households rates of connection to the piped water network.	The WUA was an older scheme (15 years) and connection fees were very low (between VND50,000 and VND150,000) and tariffs were very low (VND2000 /m ³). Note that these connection fees were low in part because they were devised and implemented 15 years ago.
Song Thu PE	No significant difference detected between poor and non-poor households' rates of connection to the piped water network.	This PE was funded by EMWF four years ago and poor people should have been connected as part of this scheme (as per OBA donor conditions).
Nam Anh PE	Significant difference was detected – non-poor were 4.12 times more likely to be connected	This PE system was established 15 years ago with no donor funding, and it had the highest tariff on the island (VND6700). Connection fees were now zero in keeping with the Tien Giang directive, but this was very recent, and people still needed to pay for materials to connect (although a discount was sometimes provided to poor households if they knew about this subsidy). This PE owner spoke of access issues (through other people's property) as a reason that some people were not connected.

11.2.4 Reasons for non-connection and alternative water use

Connection fees were seen as the major barrier to accessing piped water services in Tan Phong Commune. Eighty per cent of poor respondents cited this as the reason that they were not connected to a water service. A small number of householders (~ 15%) also considered the tariff unaffordable as shown in Figure 74.

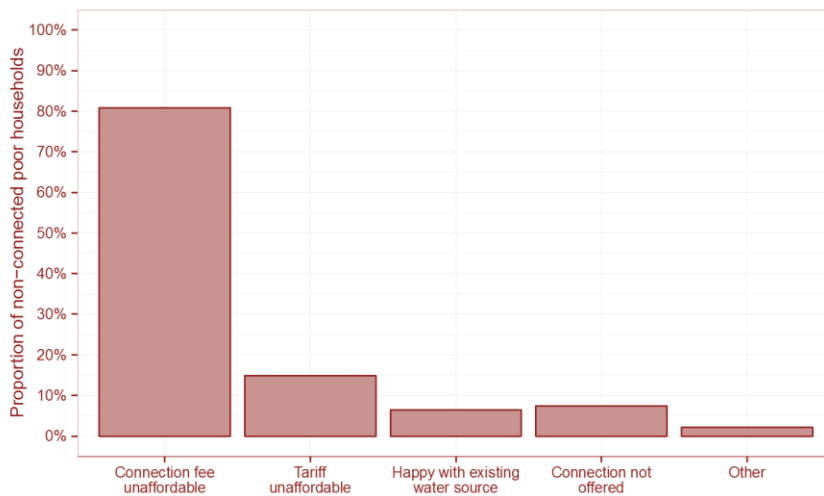


Figure 72. Reasons for not being connected to a piped water service – proportion of non-connected poor households in Tan Phong.

Households who were not connected to a piped water service predominantly used surface water for their household water needs (~65%). Tan Phong is an island and covered by a large number of channels and small waterways, so access to surface water was readily available, although many householders also noted their concerns with the quality, especially in relation to pesticide use across the commune. Interestingly, only approximately 15% of poor householders interviewed reported using rainwater as their primary source of water, and a similar number were connected to a neighbour’s piped water connection and/or a public tap/standpipe as shown in Figure 75.

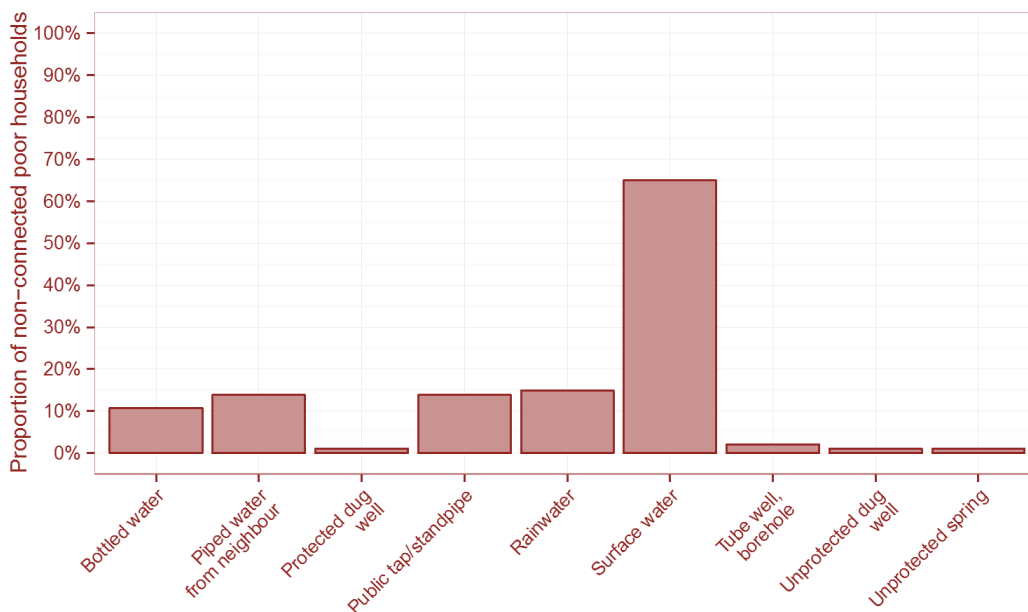


Figure 75. Primary water source for households not connected to piped water service in Tan Phong

12. CASE STUDIES: SUMMARY AND CONCLUSIONS

Across the six case study communes the following key findings and conclusions can be drawn from the Phase 2 research.

Location of poor households in relation to water service areas

The research found some evidence that piped water services were less likely to be constructed in areas where poor households were located, though this finding was not definitive as it was only possible to examine this question in two of the six case studies.

In two case study communes where portions of populated areas were not within water service areas, we found that households in these locations were statistically more likely to be poor. These included Thanh Hai (Ha Nam Province) where non-poor households were ~2.75 times more likely to be in a water service area, and Thien Trung (Tien Giang Province) where non-poor households were ~6.09 times more likely to be within a water service area. In both communes, households outside of the water service areas tended to be in more isolated or remote locations, so that extending the piped network to these areas would have been costly. The higher proportion of poor households in these areas also indicates a lower ability to pay for potentially very high connection fees in situations where fees were linked to the costs of extending the piped network (as was the case across most of the case study communes).

In the other four of the case study communes, it was not possible address this research question as piped networks were available across the commune such that no areas were classified as being outside a water service area (defined as an area within which households had the option to connect).

Access within water service areas

We found evidence that within water service areas, in the absence of support mechanisms, poor households were less likely to be connected. In Thanh Hai (Ha Nam) non-poor households were ~1.54 times more likely to be connected compared with poor households (across both water service areas). Similarly in Hoa Hau (Ha Nam) non-poor households were significantly more likely to have a piped water connection in both the PE and community-managed areas. In Tan Phong (Tien Giang) non-poor households were ~4.12 times more likely to be connected than poor households in one PE area and in Thien Trung (Tien Giang), within the water service area managed by an SOE, non-poor households were ~4.26 times more likely to be connected. Across all case study communes, the dominant reason for poor households not connecting was that they could not afford the connection fee.

In water service areas where particular efforts were made to support poor households, findings demonstrate a reversal of the situation, such that poor households were equally or more likely to connect than non-poor households. This was the case in Thien Trung (Tien Giang), where poor households were ~2.78 times more likely to be connected in one PE service area. In Tan Phong (Tien Giang) data in two service areas (one WUA and one PE) found no significant difference between the connection rates of poor and non-poor

households, due to particular support provided for poor connections in the case of the PE and much lower rates of required household investment in the case of the WUA. In Dong Phu the research also revealed no significant difference in the rates of connection of poor and non-poor households despite there being no particular efforts to reach the poor, yet both systems operating were of low service quality and overall rates of connection across the commune were low, indicating issues beyond poverty were at play in this location.

A related issue that emerged through the research was a gap in information sharing about available support for poor households. In at least two case study communes the research found that poor households were not aware of available support. This indicates there was both a need for improved information sharing on the part of water service providers and/or commune officials, and an opportunity to increase rates of access by poor households if available support mechanisms were more widely known.

Comparing service providers

This phase of the research did not reveal strong differences between service provider types in terms of their success in reaching poor households, with a stronger influence on the connection rates of poor and non-poor households being whether or not support mechanisms were in place to encourage poor households to connect. In Tien Trung and Tan Phong the private enterprises that were more successful in connecting poor households were the ones that were involved in the EMWF program, which had an explicit focus on poverty.

Perhaps counter-intuitively (given their constitution within community structures), WUA and community-managed schemes tended not to provide particular support to poor households. Reasons included the fact that these schemes typically relied on investment from participating households, and support for the poor would require cross-subsidisation in the form of additional investment from member households. Further, these schemes required often-complex processes of collective decision-making, which may have served as a barrier to the provision of poor support mechanisms if consensus on their appropriateness could not be reached. This was not a barrier for PEs, who could decide autonomously to offer pro-poor support.

Overall, in the absence of CSO or government policies driving a focus on the poor, water operators did not offer particular support. This indicates a need to be proactive in terms of policies requiring service providers to focus on reaching poor households, such that existing gaps between poor and non-poor access can be addressed in future water schemes.

Water use preferences and business viability

Across all communes the research found a householder preference for rainwater when available, which meant demand for piped water was seasonal and lower than might be required to run a viable water business. WUA and community-managed schemes in particular were struggling to remain viable in the context of both low demand and low tariffs. Many schemes included in the research had reached an age where capital maintenance or upgrading was required, yet revenue was insufficient to meet this need. In

addition, these schemes struggled to secure capital finance, particularly in a policy context where the focus of support had shifted to increasing private sector involvement.

In comparison, the PEs included in the research tended to be in a stronger position in terms of business viability. This could have been due to a number of factors including more efficient management, government support, and the fact that these organisations were more recently established and so they had not yet had to invest significant funds in system upgrades or capital maintenance.

Finally, water operators across all case study communes were focused on increasing customer demand for water as their strategy to increase revenue and remain viable. In this context, considering sustainable extraction rates (particularly in areas drawing from groundwater) was a critical need, and one that was not a focus at the time of our fieldwork.

Emerging issues and questions

In addition to the findings described above, case study research brought to light two additional areas requiring attention as part of efforts to increase rural piped water access. First, the research found significant variations in connection fees *within* communes, with a range from no connection fee up to approximately VND4 million. This presents a potential issue in terms of equity between locations within communes, given the natural monopoly of water schemes whereby households typically did not have a choice of which provider to connect to (except in a few overlapping service areas). Given that connection fees were the most important barrier to poor households connecting to piped water services, exploring ways to better regulate connection fees charged by different service providers is a priority. Efforts in this area are already underway in some provinces. For example Tien Giang Province (as described previously) had recently prohibited the charging of connection fees, with costs to be recouped through tariffs, though this policy had yet been fully implemented.

Finally, water quality emerged as an issue in all case study communes. Householders expressed significant concerns about the impacts of industrial and agricultural pollution on water quality, and they expressed scepticism about whether treatment processes were sufficient to deal with these pollutants. While this research was not able to verify the validity of these concerns, there was a clear need for greater attention on water quality including regulating contaminants at their source, ensuring piped water was meeting Ministry of Health standards, and making efforts to increase awareness of the actual quality of piped water such that rural householders gained trust and confidence in local suppliers.



Figure 73. Research team and water service providers defining the water service area boundary in the Mekong Delta.

13. APPENDIX 1. KEY POLICY INSTRUMENTS

Key policy	Explanation
<p>Decision No. 104/2000/QĐ-TTg dated 25/8/2000 on approving the national rural clean water supply and sanitation strategy up to year 2020</p>	<ul style="list-style-type: none"> • This policy targeted: <ul style="list-style-type: none"> ○ to 2020: all rural population use clean water that meets national standard with at least 60 litres/capita/day ○ to 2010: 85% of rural population use hygienic water with 60 litres/capita/day • The users decide the rural water supply and sanitation model that is suitable in terms of the relevant financial capacity, implementation arrangements and structural management. • Promoting rural clean water supply and sanitation is one of the main objectives of the strategy. • The responsibility of central level: making policy, mechanism and plans for rural water supply and sanitation. • The responsibility of localities: Provincial People’s Committee has the highest responsibility and authority to implement strategies at provincial level; establishing organisational structure, planning, annual plans and directing districts, sectors to implement.
<p>Decision No. 71/2000/QĐ-TTg dated 04/05/2001 of Prime Minister on The National target program in period of 2001-2005</p>	<p>This was the main policy for implementation of the National Target Program in the period 2001–2005 .</p> <p>Target to 2005: 62% of rural population use clean water that meets national standard with at least 60 litres/capita/day</p>
<p>Joint Circular No. 66/2003/TTLT/BTC-NN&PTNT issued by Ministry of Health, and MARD</p>	<p>Guidelines on management, subsidies and payment clearance of RWSS National target program budget.</p>
<p>Decree No. 170/2003/NĐ-CP</p>	<p>Regulation detailing the implementation of a number of articles of the Ordinance on Prices, of which the domestic water subjects to price determination by the state.</p>
<p>Decision No. 134/2004/QĐ-TTg of Prime Minister</p>	<p>On a number of policies to provide support in terms of production land, residential land, dwelling houses and domestic water to poor ethnic minority households meeting with difficulties.</p> <p>This policy specified one of the most important financial</p>

	sources to supplement funds for rural water supply for mountainous and difficult areas and poor ethnic minority people. The organisation of implementation did not belong to pCERWASS.
<p>Decision No. 277/2006/QĐ-TTg on approval the national target program on rural clean water supply and environmental sanitation in the period of 2006-2010</p>	<p>This was the main policy to implement strategy in the period 2006–2010. Goals:</p> <p>In water supply: 85% of rural population use hygienic domestic water, of which 50% use clean water that meets the standard 09/2005/QĐ-BYT on 11 March 2005 of Ministry of Health with 60 litres/capita/day (now replaced by Standard norm 02/2009/BYT)</p>
<p>Decree No. 117/2007/NĐ-CP on production and provision of clean water;</p>	<p>This key legislation on urban water supply demands that water supply companies operate on the basis of full cost recovery with a reasonable profit. A parallel Decree 88/2007/ND-CP37 for wastewater defines methods for the calculation of wastewater charges. These decrees combined provide the basis for setting realistic tariffs for water services. Supporting circulars provide implementation guidelines and specify water quality requirements.</p> <p>This decree facilitates:</p> <p style="padding-left: 40px;">‘[the] role of private sector in the delivery of water supply in urban areas, rural areas, industrial parks, export processing zones, hi-tech parks and economic zones by providing a legal and institutional basis for undertaking water supply contracts with water providers. The decree delineates the various roles of key institutional players in water supply planning and investment; espouses competition in contracting the services in the delivery of water supply services; encourages cost recovery, provision of investment incentives and ensures the participatory approach in drawing up water supply services contracts.’</p> <p>Article 30: Encouragement, incentives and investment support</p> <ul style="list-style-type: none"> • To encourage all economic sectors to invest in water supply development. • Water Revolving Fund: • The water supply construction investment project has been supported by state in investment in construction of infrastructure outside the fence as electricity and road. The cost of compensation and site clearance. Priority using of preferential financing. Priority support interest after investment. Exemption from land use

	<p>charge.</p> <ul style="list-style-type: none"> • 5. Support subsidise tariff of rural clean water if the selling price is lower than production costs
Circular No. 01/2008/TT-BXD	Guiding the implementation of Decree 117 which regulates the stakeholder consultation process and supervision in investment, construction and operation of rural piped water supply; the agreement form, the contract form of the water supply service; the detailed regulations on the implementation of water supply service and the clean water purchasing contract form.
Decree 131/2009/QĐ-TTg; Circular No. 37/2014/TT-BNN-BKHĐT	<p>Supporting private sector to invest in rural water supply</p> <p>Includes following incentives:</p> <ul style="list-style-type: none"> • allocation of land, no land rental and tax collection • enterprise income tax preferences and exemptions • central budget support and preferential credit • supports to management and operation; and • in the case that production costs are higher than the price, the PPC is to consider and apply price subsidies using the provincial budget (This part has been also regulated in Decree No. 117/2007)
Circular No. 05/2014/TT-BKHĐT on 30 September, 2014 of Ministry of Planning and Investment	<p>Policy encourages enterprises to invest in agriculture and rural development. Supporting fund to construct clean water structures:</p> <ul style="list-style-type: none"> • Support 2 million đ/1m³ to build tank using concrete materials, masonry cement, • Support 100,000đ/m pipeline (plastic, metal) with the diameter ≥ 30mm or more. • Support for purchasing water pumps 500.000 đ/1m³-hour pumping capacity.
Circular No. 75 /2012/TTLT-BTC-BXD-BNNPTNT	<p>Also includes acceptable levels of water losses: Water loss rate of 10 stations on average at 25.2% is reasonable in terms of the status of projects and the management level when compared with the provisions of Circular 75/2012 / BTC-BXD TTLT – BNNPTNT (Ha Nam Report, p.31)</p> <ul style="list-style-type: none"> • When calculating water tariff, the maximum water loss rate does not permit losses to exceed the regulated rate as follows: <ul style="list-style-type: none"> ○ For the entire water supply network for consumption that were taken into use under 10 yrs: 23%; ○ For the entire water supply network for consumption that were taken into use from 10

	<p>years or more: 32%;</p> <ul style="list-style-type: none"> ○ In case of water supply network to be consumed in use with interspersed time (including under 10-year water supply network and water supply network from 10 years or more): 27%; • The Government approved national program on prevention of water loss for each period: to 2015, the average water loss rate is: 25%; up to 2020: 18% and up to 2025 is 15%
Decision No. 366/QĐ-TTg on NTP 3 in the period of 2012 - 2015	<p>This is the main policy to implement strategy in the period 2011–2015 Aims to be achieved:</p> <ul style="list-style-type: none"> • In rural water supply: 85% of rural population use hygienic water, of which 45% use water meets standard QCVN 02-BYT with 60 litres/capita/day
Decision No 2570/QĐ-BNN-TCTL of Water Resources Directorate	<p>Approval and adjustment of the set of indicators and guideline documents for monitoring and assessment of rural water supply and environmental sanitation.</p>
Joint Circular No. 04/2013/TTLT-BNN&PTNT-BTC-KHĐT	<p>Guiding the usage regime and state fund management for NTP 3 in the period 2012–2015. The content of spending and spending level from state career budget source. The content of spending and spending level from development and investment sources;</p> <p>To clear the financial mechanism of NTP compared with Decision No. 366/QĐ-TTg for planning, estimation of cost of projects funded from NTP3</p>
Joint Circular No. 27/2013/TTLT-BNNPTNT-BYT-BGDĐT of MARD, MOH and Ministry of Education and Training	<p>Guiding task assignment and coordination among the agriculture and rural development, health and education sectors in the implementation of the national target program on rural clean water and environmental sanitation during 2012–2015.</p> <ul style="list-style-type: none"> • Bring out the policy on principles and coordination between three Ministries in : 1. Developing plans; 2. Deploying and implementing plans; supervising, assessing and verifying and reporting on the implementing results of rural water supply and sanitation program and communication education.
Decree 15/2015 / ND-CP	<p>Defines BOO and ‘O&M in term of PPP’</p> <p>Projects need to be approved by CPC (location of works). For < VND3 billion, DPD approval required. For > VND 3 billion, PPC approval required (<i>this is only case study in Long An province, for other provinces the decentralised level in investment are different from 3 billion VND</i>)</p>

<p>Decree No. 59/2015/NĐ-CP on 18/6/2015</p>	<p>The policy regulates the management of construction projects for water supply works. The projects were funded by the state (investment support from state budget) with 30% of total investment costs or more than the implementation follows regulations of basic construction management, bidding law</p>
<p>QCVN 01:2009 / BYT and QCVN 02:2009 / BYT issued by the Ministry of Health</p>	<p>QCVN 01:2009/BYT applied to the water supply stations with a capacity of 1000m³ / day and above.</p> <p>1) Require monitoring 109 indicators grouped into A level monitoring (15 indicators), B (16 indicators), C (78 targets)Frequency of testing samples of level A: at least 01 times / 01-week implementing by water provision units; at least 01 time / 01 month by the competent agencies. For indicators of the level B: at least 01 time / 06 months basis by water provision units; at least 01 time / 06 months by the competent agencies. For indicators of the level C: at least 01 time / 02 years by the water provision unit; at least 01 time / 02 years by the competent bodies. Unplanned monitoring: when water resources are at risk of contamination; when environmental incidents may affect the sanitary quality of water resources; when there are other special requirements.</p> <p>2) Ministry of Health and Department of Health Services of the provinces and cities directly under the central government have responsibility for guiding, inspecting and supervising the implementation of regulations.</p> <p>QCVN 01:2009/BYT applied to the water provision stations with a capacity of less than 1000m³ / day, and the forms of exploitation of individuals, households for domestic activities (not used for direct drinking and eating) as follows:</p> <p>1) Requirements for quality monitoring 14 indicators divided into supervisory level A (10/14 indicators) and B (4/14 indicators). Monitoring indicators levels A, water provision stations implement 1 time / 3 months; and the relevant authorities with frequency of once every 6 months. The indicators to monitor the level B, self-performed by water supply stations 1 time / 6 months; the relevant authorities with frequency of 1 time per year. Unplanned monitoring: when water resources are at risk of contamination; when environmental incidents may affect the sanitary quality of water resources; when there are other special requirements.</p> <p>2) Ministry of Health and Department of Health Services of</p>

	<p>the provinces and cities directly under the central government have responsibility for guiding, inspecting and supervising the implementation of regulations.</p>
<p>Decision No. 590/QĐ - BXD on 30 May, 2014 of Ministry of Construction</p>	<p>The norm for estimation of cost of clean water production and water supply network operation including:</p> <ul style="list-style-type: none"> • The norm for clean water production (headworks operation, consumption norm of materials for treatment and electricity usage norm) in 02 cases of input water sources are surface water and groundwater. • The norm for operation and management of water supply network; • The equipment maintenance norm on the water supply network and rinse and discharge of pipeline • The operation and maintenance norm for booster pumping station. • The depreciation norm of analysis sample for water quality management.
<p>Circular No. 54/2013/TT-BTC, on 4/5/2013</p>	<p>Regulation on management, use and exploitation of rural water supply works:</p> <ol style="list-style-type: none"> 1) Operation and management of rural water supply works as regulation, design to ensure quantity, quality of water supply to users and clients. 2) Permitting to transfer the job in sphere of organisation, state career unit), leasing the exploitation and transfer rights (in the form of auction if having more than one organisation participated) of structures to get higher efficiency. 3) The depreciation of works those have invested from different capital sources (principle, time and depreciation abstraction method, dealing with depreciation of state owned assets; management of depreciation spending belongs to state assets

14. APPENDIX 2: GOVERNING BODIES

Ministries and agencies that regulate the activities of the water and wastewater sector in Viet Nam.⁴⁴

Ministry/Agency	Role
The Ministry of Natural Resources and Environment (MoNRE)	<p>Has two relevant agencies:</p> <ul style="list-style-type: none"> The Agency of Water Resources Management (AWRM) is in charge of managing water resources at the country level, including revising the Law on Water Resources. The Viet Nam Environment Administration (VEA) is responsible for scientific studies on environmental issues, environmental impact assessments, violations of environmental laws, and the improvement of environmental laws and regulations.
Ministry of Construction (MoC)	In charge of urban water supply, wastewater services and drainage infrastructure.
The Ministry of Agriculture and Rural Development (MARD)	Conducts and coordinates rural water supply and sanitation projects and is responsible for irrigation and drainage, flood and disaster prevention.
The Ministry of Planning and Investment (MPI)	Is in charge of planning investment (including official development assistance (ODA) funds), regulations on investment conditions, procedures, incentives and procurement models.
The Provincial People's Committee (PPC)	Is responsible for policy implementation, urban water and wastewater projects.
The Ministry of Health (MoH)	Is in charge of water quality standards for drinking water and domestic use.
The Ministry of Finance (MoF)	Is responsible for fees and taxes related to the water and sanitation sector.
The National Water Resources Council (NWRC)	An advisory body to the government on national water strategies and policies.
Viet Nam Water Supply and Sewerage Association (VWSA)	An umbrella organisation of water and wastewater utilities and individuals working in the water sector.
Centre for Rural Water Supply and Sanitation (CERWASS)	<p>The Center for Rural Water Supply and Sanitation (CERWASS) is part of the Ministry of Agriculture and Rural Development (MARD). It is based in Hanoi. CERWASS coordinates all water supply actions in Vietnam. More precisely, its mission consists in:</p> <ul style="list-style-type: none"> - assessing five-year action plans for the implementation of the National Strategy on water supply and sanitation in rural area; - organizing the implementation of national and international programs, by facilitating connections between stakeholders and local authorities; - enabling and developing technology transfer by the means of pilot projects.

⁴⁴ This information in this table is sourced from research partners IWEM; and the East Vietnam Association, URL: http://www.asso-east-vietnam.org/index.php?option=com_content&task=view&id=37&Itemid=60&lang=en and the Australian Government, URL: <http://www.austrade.gov.au/Australian/Export/Export-markets/Countries/Vietnam/Industries/water-management>

15. APPENDIX 3. WATER MANAGEMENT MODELS

Management models for organisations that are involved in managing water services in rural Viet Nam.⁴⁵

Private Enterprise: Private Investor and Operator

A private enterprise or individual that has invested funds in the system and owns and operates it under a formal (or informal) agreement with the PPC (or Commune Peoples' Committee - CPC). According to the 2014 enterprise law, these enterprises can be a 'private enterprise' (owned by one individual, with unlimited liability), a limited liability company or a shareholding/joint stock company. There is also a more informal type of household business, registered only with the district government. The enterprise form can be of importance in terms of access to credit and equity capital, with possible forms including:

- shareholding/joint stock companies
- limited liability companies
- private enterprises
- household enterprises.

Private Management Contract

In principle, the CPC owns the system but has contracted with a private individual (or small enterprise) to operate the system. The private water manager collects the revenue and pays the operating expenses. The manager would typically be responsible for carrying out minor repairs. They might pay a small fee to the CPC, but are generally free to manage the finances as they see fit. As with private enterprises, particular models can include:

- shareholding/joint stock companies
- limited liability companies
- private enterprises
- household enterprises.

Cooperative

This refers to multi-purpose cooperatives that might be handling electricity distribution, supply of agricultural inputs, etc. The system is managed by the cooperative's employees and the cooperative receives the revenues from the water charges and it pays the operating expenditures from its own accounts.

Community Management

This can take many forms, with no clear distinctions between them. However, conceptually, it is helpful to think of two different arrangements: (a) **Water Users Association** – This is a small entity formed especially to manage the water system. It includes, in principle, all beneficiaries of the system. It may be formally registered (as a 'cooperative group' under

⁴⁵ The authors are grateful to Per Ljung from East Meets West Foundation for lead authoring Appendix 3 – Water Management Models.

Decree 151/2007/NĐ-CP), but not necessarily. In general, such an association would have a chairman and a treasurer and its own bank account. (b) **Hamlet**. This is a less formal organisation. It might be headed by the village chief. Some of the work might be done on a voluntary basis. Sometimes the village head ('in consultation' with the villagers) appoints a small management board to be responsible for operation and management.

State-Owned Enterprises

The new enterprise law (2014) defines a state-owned enterprise (SOE) as an enterprise 100% owned by the state. It can have various forms, such as a 'shareholding' (or joint stock) company or a 'one member limited liability' company. However, this legal definition is inconsistent with common usage, so for the purposes of this research we classify as an SOE any company/enterprise where the state/government has a controlling interest. Normally, this would mean that the government owns more than 50% of the equity but de facto control can also be exercised with a more limited ownership.

All provinces have water utilities serving urban areas (and sometimes neighbouring villages) and a few (especially in the Red River Delta) have established similar entities to serve rural areas. The exact corporate form varies but they are legally distinct state-owned economic entities. Despite this, the level of autonomy of the water supply companies remains limited. Water supply tariffs are set by the provincial PCs at levels which cover O&M costs but typically are insufficient to fully recover the costs of capital needed by the utility. Key management and operating decisions such as overall production levels, capital investment and maintenance expenses, staff salary and benefits and senior management appointments require PPC approval.

There is a fundamental difference between an SOE and a government department/agency in terms of financial autonomy, work rules, etc. There might also be a significant difference between various government agencies/departments in terms of technical competence and financial resources. Thus, it is important to make a distinction between, for example, CPC and pCERWASS.

Commune Peoples Committee (CPC)

The system is operated by employees of the CPC, water charges collected are counted as revenues of the CPC and the operating costs (electricity etc.) are paid by the CPC.

pCERWASS – as a government department

The pCERWASS operates a significant portion of the RWSS systems in less than a dozen provinces. It generally does so as a government department, relying on budgetary allocations.

pCERWASS—as a Public Non-Business Unit

In some provinces (such as Tra Vinh) the pCERWASS has been established as a public non-business unit based on Decree 43/2006/ND-CP. This arrangement appears to provide for financial autonomy and also builds on the technical strength of the agency.

ENDS