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Australian Aid

Water For Women

A rapid review of financial risks for private sector WASH businesses in rural Viet Nam

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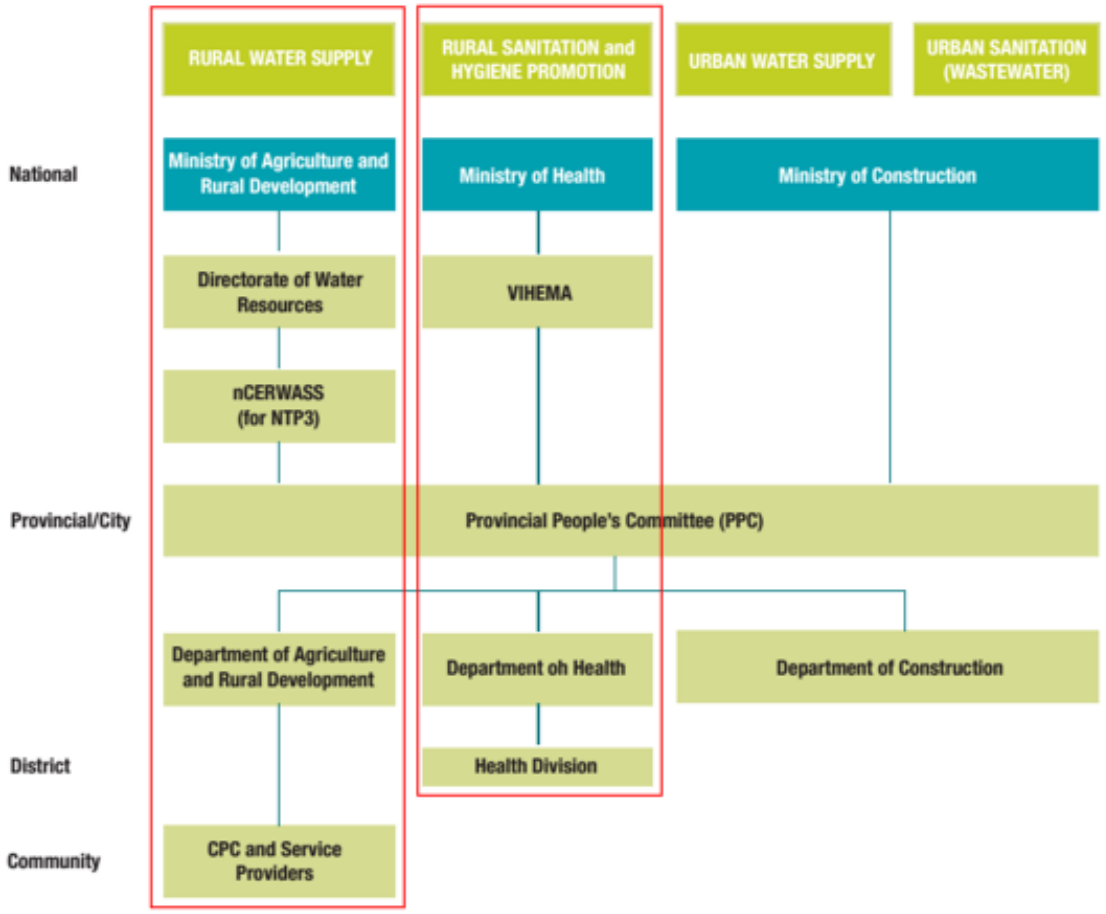
LIST OF ABBREVIATIONS

CERWASS	National Centre for Rural Water Supply and Sanitation
CHOBA	Community Hygiene Output-Based Aid (a previous EMW project)
CPC	Commune People's Committee
CWU	Commune Women's Union
EMC	Emerging Markets Consulting
EMW	East Meets West
FSM	Fecal Sludge Management
GESI	Gender and Social Inclusion
ISF	The Institute for Sustainable Futures
MARD	Ministry of Agriculture and Rural Development
MOC	Ministry of Construction
MOH	Ministry ò health
MOF	Ministry of Finance
OBA	Output-Based Aid
O&M	Operation and Maintenance
OPEX	Operating Expenses
PCERWASS	Provincial Centre for Rural Water Supply and Sanitation
PPC	Provincial People's Committee
PSI	Population Service International
PWU	Provincial Women's Union
SANOBA	The name of the EMW/WU sanitation enterprise
VBSP	Viet Nam Bank for Social Policies
VIHEMA	Viet Nam Health Environment Management Agency
VWU	Viet Nam Women's Union
WASHOBA	Water, Sanitation and Hygiene Output-Based Aid
WOBA	Women-led Output Based Aid

1. VIET NAM WASH SECTOR OVERVIEW

With a population of 97.4 million, Viet Nam's access to improved water supplies increased from 65 % in the year 2000 to 95 % in 2017, while access to basic sanitation jumped from 52% to 84% during the same period. Despite the enormous progress made, 10.7 million people (10.15 million in rural areas and 550,000 in urban areas) still practice open defecation. Additionally, only 13% of the population wash their hands with soap at key moments (UNICEF, 2020). The lack of access to water and sanitation coupled with poor hygiene practices contribute to high rates of diarrhea, pneumonia and parasitic infections. Water, sanitation and hygiene are core elements of human capital development that drive Viet Nam's current and future productivity and growth. In 2017, 93% of the rural population and 84% of the poorest groups had access to improved water supply, compared to 99% of their urban peers and 99% of the rich. Access to basic sanitation facilities mirrors the same trend and was 78% for the rural population and at 41% for the poor, compared to 94% for the urban inhabitants and 98% for the rich. Additionally, it was estimated that 82% of the rural population and 64% of the poor practiced basic hygiene, as compared to 93% of their urban peers and 97% of the rich (UNICEF, 2017).

Spending on other public hygiene services (mainly at government offices) amounted to 15.07%, followed by clean water supply at 7.76%, basic drinking water supply at 7.65%, basic sanitation (household level) at 6.05% and supportive services (training and guidelines) at 4.09%. Spending on hygiene promotion and handwashing were reportedly very low, at 0.01% and 0.02% of total WASH expenditure, respectively. In spite of the significant reduction in WASH expenditure in recent years, the Government has maintained efforts to ensure equity in the access of WASH services. Viet Nam will need to spend 0.5% of its annual GDP on water and 0.6% on sanitation in order to achieve the SDG targets set for safely-managed water and sanitation. In recent years, the private sector has been increasingly encouraged to participate in water supply (equitization), especially in areas of high population density, by being provided with preferential land access and loan subsidies. The biggest



concern remains the fragmented water supply in remote areas, where donor assistance still plays an important role, and the maintenance costs are high and ever increasing (IMF, Anja Baum, 2020).

Overall State management in water and sanitation service provision in Viet Nam is simplified in the institutional overview diagram (WSP 2014) at the right (red framed).

Currently, there are about 16,573 centralized rural water supply schemes supplying water to 44% of the rural population, 56% of the rural population using small, household-sized water supply - Rate of sanitary water supply 88.5% in rural areas, 51% meet the Vietnamese standards. There are more than 500 urban water supply systems with a total capacity of 9.2% million m3/day and night, supplying water meeting standards for 87% of the urban population. The rate of rural sanitation improved by the end of 2019 will reach 75.2% (2020FMM). In term of sustainability, 33.1% of rural water schemes are sustainable and 35.3% are relatively sustainable, mostly in Red-River Delta, East of the South and Mekong-river delta, while 17% are non-sustainable, and 14.6% are inactive, mostly in the Northern mountainous areas, the Central, and the Highland[1].

Between 2016 and 2018, the total expenditure on basic WASH-related activities in Viet Nam decreased by 30%. This translated to a reduction in the proportion of WASH expenditure in GDP from 1% in 2016 to 0.56% in 2018. Investment was focused in large network systems such as urban wastewater treatment and sewerage systems at 59.07% of total State WASH expenditure. Spending on public hygiene services (mainly at government offices) remained low at 15.07%, followed by 7.8% in clean water supply, 7.65% in basic water supply, 6.05% in basic household-level sanitation and 4.09%cent in supportive services (training and guidelines). Spending on hygiene promotion and handwashing within the total WASH expenditure was reportedly very low, at 0.01% and 0.02% respectively. During the same period, most WASH expenditure, 85.96%, was allocated from the State budget. This included 47.24% from government revenues, 20.49% from government repayable funds (loans and bonds) and 18.23% from government nonrepayable funds (grants and Official Development Assistance (ODA)). In recent years, the private sector has been increasingly encouraged to participate in water supply (equitization), especially in areas of high population density (UNICEF 2020).

2. GOVERNANCE STRUCTURE

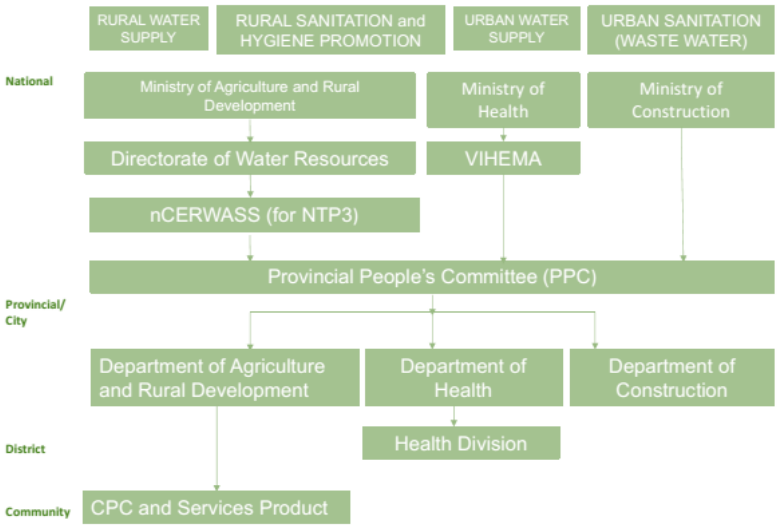
This section provides an overview of governance structure (policy/laws/guidelines[2]) of water services and sanitation services in Viet Nam, and how that contribute to or mitigate risks as discussed above. It comes basically in form of support and incentive policies that encourage private sector in participating in WASH investment and services, support their sustainability in pricing and some other finance-related preferences.

2.1 INSTITUTIONAL SETTINGS

The Institutional settings for the WASH sector in Viet Nam are illustrated in the scheme below, within it, the NCERWASS at the national level and PCERWASS at provincial level provide technical guidance, standards and policy advice to the MARD for managing the water supply services. At the operational level, the Department of Construction and Public Works is held responsible for establishing infrastructure to the point where the water supply services are transferred to the other entities for routine operations and management to keep the schemes functional. O&M issues are more common in remote and mountainous areas in comparison to urban or semi-urban areas. The stakeholders are of the view that GOVN is more inclined towards investing in new water supply schemes rather than in the repair and maintenance of existing schemes due to poor tariff collection and low user fees. Moreover, the rural water supply scheme operators and communities lack technical skills and operational capacities to manage O&M, which is negatively affecting the continued operations of the schemes.

[1] The Electronic Newspaper of the Government

[2] The hierarchy of Vietnam governance structure includes **laws**, the legislative developed by the Legislative Branch (National Assembly), followed by **Decree** and **Prime Minister's Decision**, a tool of executive branch (the Government) that guide the implementation of Laws, and at lower level, the **Circulars**, promulgated by Ministries to provide detailed implementation of legal tools in its specific sector under their mandates.



2.2 REGULATORY SETTINGS

In conjunction with Institutional settings, the legal structure (policy/laws/guidelines[3]) is also supports the sector.

At law level

- The Law on Environment Protection of 2020[4] regulates the households and individuals are to have sanitation works as prescribed. In case of failure to have any work or equipment for wastewater treatment or construction, renovation or repair of a detached house in an urban area or high density residential area, it is required to construct and install work or equipment for in situ wastewater treatment in accordance with environmental protection requirements as prescribed (Article 60.e), and the PPC instruct and allocate resources for the environment and sanitation in rural areas and stipulate incentive and support policy for waste treatment (Article 58.2.c), and roadmap for supporting households in concentrated resident areas to erect and install on-spot waste water treatment facility (Article 86.5.c). Especially, the Article (No.141) on Environment Protection Incentive and support regulate that the Government provides incentive in land, capital, tax exemption/reduction for environment protection activities, transport cost support for environment-friendly products; the Environment Protection Fund at central and provincial levels are to support and contribute finance for environment protection investments.
- The Law on Water Resources of 2012[5] regulates that (Article 45) the Government to priority to exploit, use water resources for living purpose in the investing, supporting projects on supply living water, clean water, priority to areas of ethnic minority groups, border areas, inslands, areas where fresh water is scarce, areas with water sources pollute, deteriorated seriously, areas in difficult socio-economic conditions, areas in extremely difficult socio-economic conditions; to have policy to favour, encourage foreign and domestic organizations, individuals to invest in searching,

A particular interesting provision of this Decree 117/2007 is that (Article 42.2) Water-using households connected to water supply networks of water supply units but do not use water or use water less than 4m3/household/month are obliged to pay, and the water supply units are entitled to collect, water supply charges according to the prescribed minimum water-using volume of 4m3/household/month. However, this provision was removed by the Decree 124/2011.

[3] The hierarchy of Vietnam governance structure includes **laws**, the legislative developed by the Legislative Branch (National Assembly), followed by **Decree** and **Prime Minister's Decision**, a tool of executive branch (the Government) that guide the implementation of Laws, and at lower level, the **Circulars**, promulgated by Ministries to provide detailed implementation of legal tools in its specific sector under their mandates.
[4] Effective from 1st January 2021
[5] Effective from 1st January 2013

exploring,exploiting water sources for living purpose; and People's Committees at all levels and competent state agencies to formulate and implement master plans, plans, projects on supplying living water, clean water; to execute emergency measures to ensure having living water in case of drought, lack of water or incident polluting water sources seriously causing lack of water; and organizations, individuals being supplied living water shall participate in contribution of effort, finance for protection of water sources, exploitation and processing of water servicing for living.

At Decree level

Decree No.57/2018/ND-CP[6] stipulates that investors of rural clean water supply works are entitled to (1) Investment subsidy[7]; (2) subsidies on commercial loans[8].

- Decree 117/2007/NĐ-CP[9] stipulates Investment incentives, preferences and support (Article 30) including (1) Expenses for ground clearance compensation and part of the expenses for investment in construction of works upon the execution of water supply projects for regions meeting with exceptional difficulties in water sources, regions inhabited by ethnic minority people, mountainous regions and islands; (2) Priority in the use of preferential financial sources for water supply investment projects, regardless of users; (3) Priority in terms of the post-investment interest rate supports for water supply projects financed by commercial loan capital; (4) Exemption of land use levies.

  In particular relevant to clean water price, the Decree 117 (Article 51.1) and then Degree 124 (Article 1) stipulate the principle of Clean water prices must be accurately and fully calculated with reasonable production costs in the course of clean water production and distribution (including the connection) to ensure the lawful rights and interests of water supply units and water-using customers; and (Article 51.2 of the Decree 117) ensuring the rights to self-decision on water purchase and sale prices within the price brackets set by the Governments; and (Article 51.8) if the decided clean water prices are lower than the accurately and fully calculated prices of clean water, PPC shall annually consider and allocate the deficit amounts from local budgets in order to ensure the lawful rights and interests of water supply units.

At Circular level

- The Circular 44/2021/TT-BTC[10] stipulates tap water pricing principles (Article 2) of
  (1) Tap water prices should
    - ✓ be calculated accurately and fully taking into account all reasonable and legitimate production cost factors arising in the process of abstraction, production, distribution and consumption, and in a profitable manner;
    - ✓ vary according to water quality, economic - technical norms, tap water supply and demand relationship, natural conditions, local and regional socio-economic development conditions, income of local people likely to change over time;
    - ✓ balance lawful rights and interests of tap water suppliers with those of water consumers;
    - ✓ allow for consumers' economical use of water; encourage water suppliers to improve their consumer service quality, reduce costs, reduce loss and wastage of tap water, and meet customer needs;
    - ✓ help attract investments in the production and distribution of tap water.

  (2) The average retail prices of tap water decided by the PPC must be aligned with the tap water price range (to be from 2,000VND to 11,000VND per cubic meter for rural areas). At peculiar areas (e.g., saltwater flooded areas, coasts zones, those areas facing difficulty in water production), in case where, due to the high costs incurred from production, trading and supply

[6] Decree No.57/2018/ND-CP dated April 17, 2018 of the Government on incentive policies for enterprises investing in agriculture and rural development sector

[7] Article 13 - An enterprise having project on supply of clean water to a rural area shall receive subsidies as follows: a) A subsidy as VND 03 million/m^3/day-night is given to a new water supply plant or a subsidy as VND 02 million/m^3/day-night is given to upgrade and expand an existing water supply plant. b) A subsidy of not exceeding 50% of total expenses for installing major pipelines transporting water to residential areas where there are at least 10 households each shall be given.

[8] Article 8. Credit subsidies: An enterprise investing in agriculture and rural development sector shall receive interest rate subsidies on commercial loans from local government budget upon the completion of investment project. To be specific: a) The subsidy is equal to the difference between the commercial loan interest rate and the Government's concessional loan interest rate on the actual outstanding loan balance at the time of considering the application for subsidy

[9] Decree 117/2007/NĐ-CP dated 11 July 2017 by the Government on clean water production, supply and consumption

[10] Circular 44/2021/TT-BTC dated 18 June 2021 by the Ministry of finance setting out regulations on the tap water price range, pricing principles and methods.

of tap water in these areas, the average retail prices of water suppliers whose tap water price plans are reviewed by Departments of Finance are higher than the maximum prices in the price range, the PPC shall, based on the actual situation, demand for tap water and local people's income, decide the appropriate (higher) tap water selling prices accordingly.

And annually (Article 4), tap water suppliers shall assess the implementation of tap water price plans and review tap water prices in the subsequent year, if there is any fluctuation in production and trading cost factors that results in any increase or decrease in the subsequent-year tap water prices, tap water suppliers shall prepare the tap water price plan dossier for submission to Departments of Finance in order for them to review before being presented to PPC to decide on approval of appropriate adjustments.

At PM Decision

- The Decision 131/2009/QĐ-TTg specifically prescribes the preferential, support and incentive policies applicable to investment projects on construction of clean water supply facilities (including projects on new construction, renovation and upgrading) and the management and exploitation of clean water supply works in concentrated systems in service of daily-life activities and other purposes of rural population communities, that include (Article 4):
  - ✓ Land incentives: Rural clean water supply projects and works in service of communities will be allocated land by the State with exemption from land use levies or leased land by the State with exemption from land use levies.
  - ✓ Tax incentives: Organizations and individuals earning incomes from the management and exploitation of rural clean water supply projects or works will enjoy business income tax preferences[11]
  - ✓ State budget supports and capital rinsing: Organizations and individuals investing in rural water supply projects or works are entitled to enjoy state budget capital supports at levels calculated according to the total estimates of projects approved by competent authorities: (1) not exceeding 45%. for district townships; (2) not exceeding 60%, for delta and coastal areas; (3) not exceeding 75%, for other rural areas; (4) not exceeding 90%, for communes meeting with exceptional difficulties, ethnic minority, mountainous, transversal coastal and island areas, border communes.
  - ✓ Rural clean water price subsidy supports: if the clean water prices decided by PPC are lower than the costs correctly and fully calculated according to regulations, the PPC shall annually consider and provide subsidies from local budgets in order to ensure the legitimate rights and interests of water suppliers.

- In particular relevance to the household support, the Decision 18/2014/QĐ-TTg12 provides in details that households in rural area with no or with under-standard water supply that have need to newly build renovate water system up to the standard are entitled to borrow loans of maximum 10 million VND from the VBSP.

Annex 1 lists the key legal papers regulating the WASH sector in Viet Nam.

Nevertheless, the execution of support policies and incentives is questionable in implementation at the local level, no matter how good it is at the central level. Key challenges (ISF 2015, pp39) the government faces in supporting the development of the private sector include:

- Lack of formalized government policy regarding the support of private enterprise, as noted by a government interviewee: “So far we don’t have the policy to support private sector in rural are” [it means that all support policies designed at central level are not felt at local level];

[11] As described in the Article 8 of the Decree No. 69/2008/ND-CP of May 30, 2008, on incentive policies for socialization of activities in the fields of education, vocational training, healthcare, culture, sports and environment:

- A unit is entitled to a 10% enterprise income tax rate for the whole operation period.
- If established after June 2008, the unit is exempt from enterprise income tax for 4 years counting from the time of generating taxable incomes and enjoys a 50% reduction in the subsequent 5 years. If operates in areas entitled to investment incentives, the unit is exempt from enterprise income tax for 4 years counting from the time of generating taxable incomes and enjoys a 50% reduction in the subsequent 9 years and a 10% tax rate for the remainder of its operation period.

[12] Decision 18/2014/QĐ-TTg dated 3 March 2014 by the Prime Minister on the finance for implementation of the National Program on rural water supply and sanitation

- The difficulties government faces in directly supporting private enterprise (e.g. NTP funds cannot currently be used to train masons or to provide suppliers with business training);
- VIHEMA realizes that the market-based approach is valid, but reported that they have limited experience in implementing it;
- There are many elements of private enterprise engagement that the government could support, and government needs to decide which is best e.g. technical support and training, enabling environment, tax incentives etc.;
- Decentralized government means that provincial- and district-level governments must also be convinced to support the private sector, as many decisions are made at subnational level
- Some communities are unwilling to pay for previously subsidized or free services. National government agencies were cognizant of the challenges associated with engaging with the private sector, and are partnering with NGOs, UNICEF and others (e.g. WSP) to pilot approaches and learn by trialing a range of approaches.

Besides cost-sharing in terms of investment, national policy also includes other benefits to attract enterprises to the rural water market. Besides financial support from Government, also some land use and tax incentives for the owners. Again, there is little evidence of the operationalization of these benefits. National policy is poorly implemented at the provincial level (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp15-17).

3. WATER SUPPLY SECTOR

3.1 VALUE CHAINS IN THE WATER SERVICE PROVISION

This section discusses the management models or institutional structure of rural water sanitation service providers in Viet Nam, and associated risks with these models.

The discussion follows the value-chain approach. There may have been a number of value chain models in water service provision, however they seem more or less similar. IEEM[13] developed value chain model based on Michael Porter's general value chain approach, in which service providers are those who provide typically operation management of drinking water works. Some of these operators provide a whole range of services related to water management.

In Vietnam practices, the 4 first management links in the above chain are normally combined in "the Investment" stage and the last 3 links are grouped into "the post-investment management" stage.

At the Investment stage, the R&D starts with obtaining information about the water resources, including hydrogeological, weather, meteorological data, and study on population data and planning at the proposed service areas, need assessment, willingness to pay (for remote and poor areas), and investigation of other parameters such as costing data of all input components, quality requirement for the service areas (for poor and remote areas, the quality requirements are sometime compromised with the need to basic access water) (MARD 2003). For the poor and remote areas, the involvement of local governments and mass organizations are crucial for the data investigation and assessment.

The water work infrastructures are build/erected after administrative procedures with competent authorities. Rural water supply works for rural residents are constructed with the investment (i) from State budget or originated from State budget such as the National target program on rural clean water and environmental hygiene, the Program on supporting production land, resident land, houses and daily-life water for ethnic minorities with poor and difficult life (Program 134), the Program on socio-economic development in special-difficult communes of ethnic minority areas and mountainous areas (Program 135), the National target program on new rural areas, the National strategy on water resources,

[13] The Institute of Environmental Engineering and Management, an autonomous and nonprofit institute at the Witten/Herdecke University/

Program 1592, and (ii) from various Donors from Development Partners to INGOs such as UNICEF, JICA, ADB, WB, DFAT, DFID, WSP, Danida, Childfund, World Vision, East Meet West Foundation, Plan Vietnam, Oxfam GB, IDE, SNV, etc.. One note to make here is the sustainability of the schemes was not always in focus at the planning stage, the priority was to provide access to piped water for poor local residents (top down) but not from the real need and ability to pay for from the end-users (bottom up) (World Bank, 2016, pp3).

At the post-investment stage, operators (water companies, agencies, organizations, units for direct O&M management) are to in charge of implementing the (i) operation, (ii) maintenance, including regular maintenance, periodical repair and is ad-hoc repair with the aim to maintain technical situation and normal operation of the works, (iii) collection of water fee, and in cases (iv) communication and advocacy for clean water use and sanitation (see the Water service provision management institutional model bellow)

3.2 FINANCIAL RISKS IN THE VALUE CHAIN OF WATER SERVICE PROVISION

A number of risks have been identified in the value chains:

- Tariff
- Subsidy
- Operation
- Asset Value
- Core Function of water units
- Access to Finance and Lender hesitation
- Management, IEC
- Willingness to pay
- NRW
- Low consumption
- Pandemic (Covid-19)

3.2.1 Tariff

Challenges

- One of the critical issues that face the sector are the lack of alignment of water tariffs to business needs and their inability to cover costs (ADB 2021, p4).
- Water supply sustainability has been hampered by low tariffs. Legislation enables water supply companies and local government to increase tariffs, but local political considerations often prevent the timely application of tariff adjustments. Affordability and willingness-to-pay surveys have indicated that consumers are prepared to pay for improved services. Water bills on average are 1.1% of urban household income. Most water supply companies recover at least operation and maintenance costs, with an average working ratio close to 0.7. However, few if any companies achieve full cost recovery, if depreciation, replacement and financing costs are included (UNICEF 2020, p7). The reluctance of local governments to raise tariffs in line with Government policies that aim to make the water and wastewater sector financially sustainable and to attract private financing to the water and sanitation sector (ADB 2010, p5). Failure to enforce regulatory frameworks, with an impact, for instance, on the financial viability of water companies (ADB 2021, p11).
- The operating costs of water supply companies are only partially covered by the income from tariffs. In general, water supply companies are not run on business principles, and do not utilize performance indicators against which efficiency can be measured and benchmarked (ADB 2021, p12).
- It was helpful to have tariff set independently, since it was a sensitive point for them to negotiate directly with communities and having an independent decision legitimized the tariff with their customers. However, if an enterprise had higher costs and needed to increase the tariff this would not be easy. Another dynamic concerning tariff setting was a perception that rural water tariff should be cheaper than urban ones (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp10-11).
- All enterprises were charging the lowest tariff within proposed bands, since service users expected their price to be at the lowest end of the band. The challenge here is that a blanket tariff set at the

provincial level may not account for differences in the costs of running different water systems. The enterprises saw this as a barrier to greater enterprise engagement in the sector. Furthermore, whilst in theory, formal regulations developed by central government provide for the province to contribute financially to make up any difference between costs and revenue, in practice this does not happen (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp11).

- On paper, governments are committed to bridging the gap between water production costs and income through affordable tariff. However, in practice the relevant policy has not been implemented at the provincial level. An interviewee said that at the national level (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp15).

Consequence to private sector

- Low water tariffs and lack of accountability have provided little incentive for water companies to maintain the distribution network (ADB 2010, p7); Water utility companies in their present form are not attractive to private sector investment because of tariff levels (D1, p27).
- Most water supply companies were recovering their operation and maintenance costs, but operation and maintenance budgets are typically set so low that service quality suffers, contributing to widespread problems of poor water quality, low pressure and intermittent supply. To date few, if any, utilities have achieved full cost recovery (WSP 2014, P9).

Mitigation

- Many of the issues raised can be dealt with under legislation that has been adopted recently, the impact of which is yet to be fully realized. Of particular importance are (i) Decree 117/2007, requiring water supply tariffs to be set to full cost recovery, with calculation of tariff according to Inter-Ministries Circular 95/2009 and Circular 100/2009[14]; and (ii) Decree 88/2007[15] requiring sanitation to be charged through a surcharge of the water tariff at a minimum of 10% to achieve recovery of the operation and maintenance costs. The Government's targets for the sector, as recorded in two recent "Decisions" to support the implementation of the Decrees are ambitious, in particular on the targets for non-revenue water (NRW) to be reduced to 15% by 2025 and for wastewater collection and treatment. However, there is no indication of the financial implications of these targets, or of the skills required (ADB 2021, p5).
- Some of the main SEDP objectives relevant to infrastructure include mobilization of resources for adequate operation and maintenance; and enhancement of cost recovery for infrastructure investments by setting and collecting appropriate tariffs and fees (D2, p10). The Government of Viet Nam's current SEDP's objectives relevant to the water sector include enhancement of cost recovery for infrastructure investments by setting and collecting appropriate tariffs and fees (ADB 2021, p18).
- Government has created the potential for significant increases in user charges, by introducing legislation for tariff increases, but sub-national government or agencies have not implemented the tariff increases to the extent required for sustainable operation. Achievement of the Government's targets on water and wastewater tariffs, and the intention to make water supply companies financially self-sustaining by 2025, is thereby at risk (ADB 2021, p12). The improvement of the policy and enabling environment with respect to tariff reform and regulation, for private sector participation and develop capacities for private sector participation in both urban and rural services (on both public and private side) (WSP 2014, piv). Tariffs allowed to reach commercially viable levels whereby utilities can achieve full cost recovery, through independent economic regulation (WSP 2014). Increase autonomy for utilities, allowing them to increase operation and maintenance budgets to levels that enable adequate maintenance to be provided and sustained (WSP 2014).
- While recent policy directives call for cost recovery and the commercialization of service provision, tariffs for public water supply services remain too low in most provinces to enable financially sustainable service provision - despite high collection rates and evidence that consumers are willing to pay more for good services. Instead, tariffs are held at artificially low rates by PPCs, as a result no surpluses are generated to fund reserves for replacement costs and service expansion (WSP 2014 p25).
- Leveraging private sector investment would deserve high priority to reduce the fiancing gap, as well as through increasing user financing through cost recovery tariffs and effective software activities (WSP 2014, p18).

[14] Updated by Circular 44/2021/TT-BTC dated 18 June 2021 setting out regulations on the tap water price range, pricing principles and methods.
[15] Updated by Decree 80/2014/ND-CP dated 6 August 2021 with regard to the drainage and treatment of wastewater.

3.2.2 Subsidy

Challenges

- Agencies established to provide water and waste management services are not yet financially self-sufficient and are still relying on subsidies. Income from water fees rarely cover more than operational costs (ADB 2021, p4). Local governments place greater emphasis on increased cost recovery through user charges to cover capital investment requirements and to reduce the need for subsidies (ADB 2010, p5). Urban water supply systems are still subsidized to a large measure by their respective governments, on a non-targeted default basis (UNICEF 2020, p7);
- In rural sanitation, coverage figures based on infrastructure provision alone must be interpreted with care since provision does not always imply user acceptance. With growing rural population densities and legitimate concerns about water source pollution, poor sanitation behavior has become a major environmental concern. Programs therefore need to focus more on building a fundamental awareness of proper sanitation and thereby rectifying poor sanitation behavior. For households and communities willing but unable to make this transition due to financial constraints, it is important to combine subsidy programs with comprehensive information on the range of available technological options. Opportunities to collaborate with bilateral development agencies already working in this area should be explored, especially on promising approaches like Community-Led Total Sanitation, Community Health Clubs, microcredit for sanitation, and Sanitation Marketing (ADB 2021, p10).
- The key legislations have been enacted in 2007 for sanitation (Decree 88/ND-CP[16]) requires the Urban Environmental Companies (URENC0s) to equitize and to operate on a cost recovery basis with subsidies from the central government for capital investment (ADB 2021, p11).
- Many urban water and sanitation utilities are subject to the GoV policy of equitization, and recent legislation advocates greater cost recovery to cover operation and maintenance of facilities. However, tariffs set by Provincial People's Committees (PPCs) have to date been too low to ensure sufficient funds are available for ongoing asset management, and this means water and sanitation companies are dependent on finance from the government budget and subject to bureaucratic processes (UNICEF 2020, pp3).
- In recent years, the private sector has been increasingly encouraged to participate in water supply (equitization), especially in areas of high population density, by being provided with preferential land access and loan subsidies. The biggest concern remains the fragmented water supply in remote areas, where donor assistance still plays an important role, and the maintenance costs are high and ever increasing (IMF, Anja Baum, 2020, pp10).

Mitigation

- Water supply services in Viet Nam are available at tariffs which are still set too low. The inadvertent impact of this is a government-subsidized service for both residential and commercial users. The main objective of the concept of subsidies in the provision of infrastructure or services should be to fill the gap between acceptable user fees and actual costs of a service which is judged to be essential, socially or environmentally valuable, or both. Government's present policy of low-tariff for water apply effectively constitutes a non-targeted subsidy for a service for which consumers are willing to pay more. The practice encourages wastage and benefits high-end users. Higher tariffs would encourage resource saving, and would enable government to subsidize essential services where willingness and ability to pay is less likely (ADB 2021, pp11).
- Decree 117 issued in 2007 introduced a requirement for public service providers to achieve full cost recovery and today provincial water utilities - in principle - receive no operating subsidy from their Provincial People's Committee (PPC), though they can still access capital grants for new investments (WSP 2014, pp9).

3.2.3 Operation

Challenges

- The critical issues that face the sector are (i) the poor performance and inefficiency of urban water supply companies in service delivery; (ii) the failure of urban water supply infrastructure to keep

[16] Updated by Decree 80/2014/ND-CP

pace with economic development, and the serious lag in urban sewerage and drainage infrastructure (ADB 2021, pp4).

- There are 68 urban water supply companies with a combined installed capacity of 5.5 million m^3/day, but operating at 3.9 million m^3/day. Restrictions in the capacity of the transmission or distribution network and unaccounted-for water are the main reasons for the gap between installed and operating capacity. Service provision across these companies averages 21.6 hours per day, with 55 companies supplying 18 hours per day or more. Average supply ranges between 80-90 liters per capita per day (lpcd) to 120-130 lpcd in the larger cities at a low service pressure, compared to a national design target of 120-150 lpcd. As many as 96% of connections are metered but much of the distribution system is in poor condition (ADB 2021, pp7).
- Benchmarking of system performance - as coordinated by the VWSA - does not yet include any measuring or reporting of energy efficiency. On recent ADB Project Preparatory Technical Assistance (PPTA), the energy efficiency indices ranged from 0.17 kWh/m^3 to 0.23 kWh/m^3 (ADB 2021, pp7).
- For the country as a whole, private sector organizations active in the rural market are typically micro, small and medium enterprises, ranging from individual operators of small schemes to utility-style companies providing piped water. Many of these have emerged informally and neither tariffs nor quality standards are regulated (WSP 2014, pp14).

Consequences

- Even operation and maintenance costs are a challenge; many utilities report that these are recovered, but operation and maintenance budgets are set at rates which are very low by international comparisons, and do not enable utilities to maintain acceptable levels of service (WSP 2014, pp25).

Mitigation

- Discussions with the Ministry of Construction (MOC) have suggested adding an energy efficiency component to the performance improvement initiatives, which currently focus on the reduction of non-revenue water (ADB 2021, pp7).
- increasing water tariffs to raise income, and thereby reduce non-targeted subsidies and provide better incentives to reduce wastage; reducing non-revenue water, to increase company revenues and as an indicator of improved operational control and discipline (ADB 2021, pp18).

3.2.4 Asset Value

Challenges

- A critical issue that face the sector is the absence of clear mechanisms for determining the price of assets, and a lack of consistent regulations on asset management. (ADB 2021, p4). the (international) private sector's lack of confidence in the prevailing regulatory framework for investment in the sector, compounded by an absence of reliable data on the nature and condition of assets (ADB 2021, pp11).
- Urban water supply service providers are typically state-owned enterprises with legally independent status and many are combined water and drainage companies. While they are officially independent, in practice the companies are subject to the authority of the PPCs, which control tariff levels but also investment decisions and senior staff appointments, while the ownership of physical assets is not always clear (D3, pp12).
- Lack of transparency and informal modes of selection of enterprises, the valuation process in instances where a private enterprise takes over ownership of an existing system was unclear, and formal rules around ownership of water system assets were unclear (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp13-14).
- Arrangements where enterprises do not take over ownership, but operate the system for a set period, for example 10 years, can create perverse incentives for enterprises to avoid investing appropriately in necessary repairs (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp14).
- Confidence at the national level that there is sufficient information about water provision costs to determine appropriate tariff (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp14).
- Inequitable treatment of state-owned enterprises (as opposed to private enterprises) was also raised as an issue, as was the lack of clarity in the division of responsibilities between them.

PCERWASS's supervision and regulation of enterprises was inconsistent and sometimes non-existent (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp14).

Consequences

- Water utility companies in their present form are not attractive to private sector investment because of lack of reliable data from water industry on assets and operational efficiencies (ADB 2021, p27);
- Lack of clarity on the ownership of the assets of water supply systems (distribution, transmission, treatment) poses a threat to the effective operation and maintenance of the service, and will lead to a gradual deterioration in the value of the assets. Similarly, this lack of clear definition of ownership and responsibility will deter private sector operators - in particular, international ones - from seeking involvement in the sector in Viet Nam (ADB 2021, p7). Weaknesses remain in reliable data on the effective functioning as well as the assets of many water supply companies, together with remaining gaps in compliance with the legislation intended to protect the sanctity of the Contract, these conditions prevent substantive interest of the private sector for management and investment (ADB 2021, p12);
- The water and sanitation sector has failed to attract significant private sector interest. This must be attributed to the (i) fundamental uncertainty about the ownership of water supply assets; (ii) lack of reliable information about the location, functioning and value of infrastructure assets; (iii) within the regulatory environment, still ongoing ambiguity on responsibilities (ADB 2021, p18).
- Enterprises seemed to be reluctant to take on ownership of water systems, for a variety of reasons (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp14).

3.2.5 Core Function of water units

Challenges

- One of the major sector risks is the involvement of newly equitized water and wastewater companies in non-core businesses, with a high risk of making bad investments (ADB 2010, p5). This is a regulatory risk for both central and local governments: water and wastewater companies should be required to ring-fence their water business accounts (ADB 2010, p5). Equitization was introduced without establishing clearly defied and verifiable performance indicators, or providing incentives to improve service coverage and quality for all, and therefore has not yet delivered efficiency gains or performance improvement. Some stakeholders also have expressed concern that equitized companies have diversified into non-core business areas. As water companies are not required to ring fence their water business accounts, this can expose them to high risks in case of bad investments, which then impact on the core business. (WSP 2014, p12).

3.2.6 Access to Finance and Lender Hesitation

Challenges

- Government policy favors private investment but with government retaining ownership of assets and having significant control over operations via tariff controls and the operational funding of sanitation companies, the environment is not yet conducive for a significant increase in private sector participation. For the same reasons it is difficult for most water and sanitation companies to access commercial finance, as the perceived risks to the lender remain too high (WSP 2014, p13).
- The financing gap for the sector in Viet Nam is such that Government and ODA sources are not sufficient to fund essential investment without additional fund flows from the global private sector. However, the current institutional and legal environment does not provide sufficient confidence to leverage domestic and international capital markets. (ADB 2021, p18).
- The water and sanitation sector has failed to attract significant private sector interest. This must be attributed to the lack of confidence in the sources of income because of failure to enforce water tariff increases within a reasonable timeframe (ADB 2021, p18).
- So far, few public utilities have been able to access commercial finance. A critical obstacle here is the difficulties for utilities to obtain government guarantees, as well as weak capabilities for public-private partnership contracting and management (WSP 2014, p16).
- There was notional support to enterprises for preferential loans and credit allowing money to be borrowed with a low interest rate, for instance from the Government Bank of Investment and Development. However, in practice, enterprises did not report access to such finance. A common

barrier to accessing loans was the need for collateral, since water system assets or land were not eligible (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp16).

Consequences

- It is difficult for most water and sanitation companies to access commercial finance, as the perceived risks to the lender remain too high

Mitigation

- Future programs should include a gradual increase of tariffs as a condition for loan appraisal or effectiveness, combined with Information, Education and Communication (IEC) components to explain links between tariff increases and service improvements to consumers; and encourage the establishment of sustainable wastewater business units based on cost recovery principles, whether linked with water supply companies or, preferably, as independent entities (P2, p17).
- Improved access to operational and financial data, to enable more effective management and as a prerequisite for public accountability (ADB 2021, p18).
- These may be opportunities for leveraging full private sector investment, linked with ADB lending, knowledge products, access to Carbon Market Initiative, energy efficiency and climate change funding facilities through the Clean Energy Financing Partnership Facility. Non-sovereign loans may be considered for private sector operators in areas such as water treatment and distribution system management, or for investment in environmentally sustainable technologies that would mitigate climate change and improve the environmental sustainability of water and wastewater companies and financially sustainable SOEs that are interested in improving their environmental sustainability[17] (ADB 2021, p22).
- Enhance access to commercial finance for utilities by providing government guarantees for utilities (WSP 2014)
- A better enabling environment, especially for regulation of tariffs, and a better investment climate is needed for the sector to become viable and attractive to large scale commercial investors and operators (WSP 2014, p16).

3.2.7 Management, IEC

Challenges

- Skills-gap for technical planning and management in water companies and local level government, which therefore cannot keep pace with the changing scope and increasing complexity of their roles and responsibilities, such as the reduction of non-revenue water, asset inventory and management, modern operational management techniques, financial sustainability (ADB 2021, p11).
- Critical difficulties remain in water quality as well as operation and maintenance of projects once built, and in the functioning of the Center for Rural Water Supply and Sanitation (CERWASS) as the main government organization responsible for planning, and monitoring and evaluation. Rural communities opt for a level of service which is not always financially or technically feasible but is supported by CERWASS nevertheless, affecting the long-term sustainability of schemes (ADB 2021, p13)

Mitigation

- Improve the management – especially cost recovery – for existing infrastructure and services provision, to reduce the fiancing gap for investment needed in infrastructure replacement (WSP 2014, piv)
- Increase “software” spending - especially for rural sanitation - including staffing and operational budgets for provincial and local health line implementation agencies; facilitate increased private sector involvement in making desirable, low-cost toilets available for poor and underserved communities; set up a systematic national capacity building program for sanitation and hygiene for health sector staff and other participating organizations including the Viet Nam Women’s Union (WSP 2014). The anticipated household investment will depend to a large extent on the ability of

[17] An initial attempt will be made with the Saigon Water Supply Company (SAWACO) in HCMC through the MFF for water supply. Another opportunity would be to design the Ha Noi wastewater management project as a PPP together with JICA. Initial discussions have been held with PetroViet Nam on Nghi Son and Dung Quat refineries, to finance environmental infrastructure and to assist with the provision of water and wastewater services under delegated management

government to elicit this self-investment through promotional, communications and marketing initiatives (WSP 2014, p7).

3.2.8 Willingness to pay

- The financial sustainability of rural schemes is undermined because households are either reluctant or unable to pay for water supply. Willingness to pay often remains a mere indication and, after schemes have been built, people either do not use them at all or use them sparingly, supplementing them with water from unimproved sources, resulting in an unintended overcapacity of schemes themselves. This issue may be resolved by designing differential treatment systems that take into account the range of local water use (ADB 2021, p10)

3.2.9 Non-revenue water

- Non-revenue water is reported as having been reduced from 39% in 2000 to around 30% in 2009 (ADB 2010, p7);
- Questions have been raised on the reliability of the data on NRW provided by VWSA members (D2, p7);
- high levels of water losses (both technical and commercial), which are not being dealt with systematically (ADB 2021, p11);
- Funding for implementation of National Unaccounted-for Water (UFW), Non-Revenue Water (NRW) Program to 2025, including mobilize state budget, ODA, credit and other sources of capital for activities of Public Awareness, Institutional strengthening for water supply companies and local authorities, Funds for pipeline rehabilitation, meter replacement, equipment procurement etc. (PM Decision 2147/QD-TTg dated 24 November 2010 approving approve the National Unaccounted-for Water (UFW), Non-Revenue Water (NRW) Program to 2025.

3.2.10 Low Consumption/Demand

Challenges

- Decree 117/2007 (Article 42.2) regulated that water-using households connected to water supply networks of water supply units but do not use water or use water less than 4m3/household/month are obliged to pay, and the water supply units are entitled to collect, water supply charges according to the prescribed minimum water-using volume of 4m3/household/month. This provision was to guarantee a minimum revenue for the water operator to recover their expenses in maintaining the service in the pipe system. However, this provision was removed by the Decree 124/2011.

3.3 WATER SERVICE PROVIDER MANAGEMENT MODELS AND RISKS

This section discusses the management models or institutional structure of water and sanitation

Institutional Models Water supply service delivery models can be divided into two types: (a) small scale works based at the household level such as wells, water tanks and toilets and (b) piped water supply facilities. The household funded and built facilities are carried out without the involvement of local management bodies. In many rural areas, the limited information available indicates huge levels of private investments in RWSS (EMC 2014, pp2). The investment and management pattern for piped water supply systems is shown in the table below.

Investment and Management Models for Piped Water Schemes

	Facility Owner	Management and operation unit
Water supply cooperatives	Water supply cooperatives	Water supply cooperatives
Cooperation Group	Cooperation Group	Cooperation Group
Private enterprises	Private enterprises	Private enterprises
District/commune PC	Commune PC	Management and operation unit Town water supply stations
pCERWASS	pCERWASS	pCERWASS
	Commune PC/village	Management and Operation unit
State-owned enterprises	State-owned enterprises	State-owned enterprises

The provincial PC makes the decision on ownership for small towns and commune water supply projects. The project owner is usually pWSC, pCERWASS, District PC or the CPC. Local agriculture cooperatives or private organizations may become the owners mainly in communes. For larger projects, project owners must obtain a water license. Private investors have participated in construction of a number of commune projects in areas with good economic prospects, high demand for clean water, and scarce water resources by investing sums of between VND 300 million to 1 billion.

The pCERWASS are authorized by the PPC to act as the managers, coordinators and implementers of projects within the scope of the NTP. In some provinces, the DPC establishes the District Project Management Units to implement projects and directly contract service and construction companies. The CPC are members of the project management units. In provinces with ODA projects, pCERWASS or the district or commune PC could be responsible for implementation of the project, under the support and monitoring of the common Project Management Unit (PMU).

In the past pCERWASS has been the most active government agency in the provision of rural water supplies. They have played the role not only of the owner/promoter of the rural schemes, but also the operator. However, this model has problems as the emphasis has been on asset creation rather than on asset operation and maintenance. As a result, many schemes have been built which are either not supported by many in the community, or have fallen into disrepair. Cooperative groups managing RWSS investment projects are more evident in South Vietnam. The model was developed with the technical assistance of pCERWASS in response to local demand. The cooperative groups self-manage the water supply systems, including service rates and contributions for maintenance, repairs or expansion of the works. The system appears to have a high level of sustainability. In some communes, the agricultural cooperative also functions to provide water and electricity supply. Commune scale cooperative groups can mobilize funds from different sources including group members and the state budget.

All finance risk factors as above identified affect all water supply management models in different seriousness. A number of factors that more specifically connect to each of management models are grouped in the table below.

Management and operation unit	Value chain participation	Finance Risk Sensibility (specific)
WSC	• Post-investment management	• Operation • Management, IEC • Willingness to pay • NRW
Cooperation Group	• Investment • Post-investment management	• Subsidy • Operation • Management, IEC • NRW
Private enterprises	• Investment • Post-investment management	• Lender hesitation
Town water supply stations	• Post-investment management	• Asset Value
pCERWASS	• Investment • Post-investment management	• Asset Value
Management and Operation team	• Post-investment management	• Operation • Management, IEC • Willingness to pay • NRW
State-owned enterprises	• Investment • Post-investment management	• Core Function of water units • Asset Value

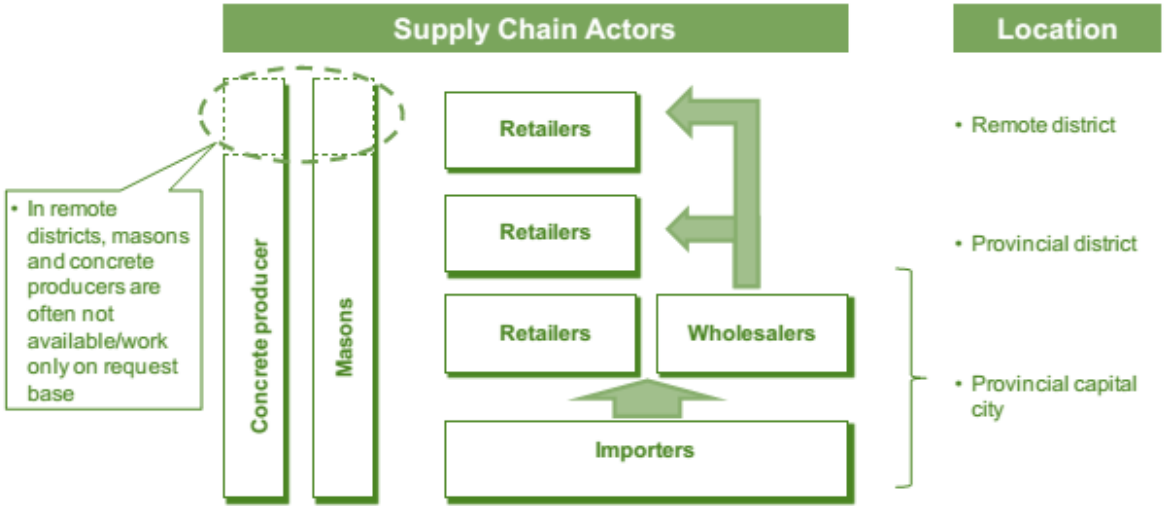
4. SANITATION SERVICE MARKETS

4.1 SANITATION SUPPLY CHAIN

Unlike the rural Water Supply Chain with almost a single supplier/operator, Rural Sanitation in different regions and districts have different supply chains, with different participants and sources of products. There are supply chain for Sanitation Products and supply chain for Sanitation Services.

4.1.1 The supply chain for Sanitation Products

The supply chain for sanitation products is influenced by the location of nearest neighboring economic centers or even provinces/countries. Many construction material suppliers act as importers, wholesalers and retailers (some are just importer and retailer). The rural sanitation Supply Chain Map (conceptual) (EMC 2014, pp2) can be illustrated bellow:



The key actors in the rural sanitation value chain (ISF 2015, pp24) include:

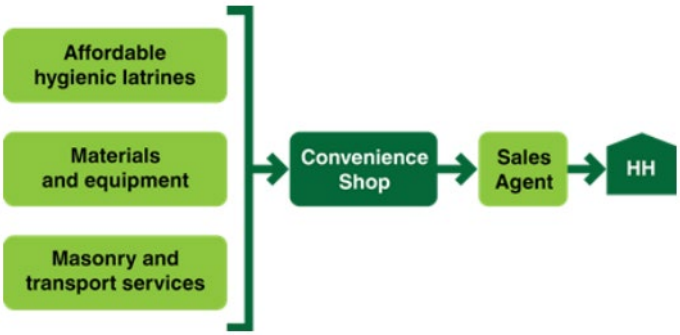
- Materials supply shops – retailers at provincial, district and local levels
- Masons – available in all villages. Masons usually work in teams consisting of a Chief Mason, a Skilled Mason and Assistant Masons. They build any type of construction, from houses, roads, fences, pig sties and latrines.
- Transport providers – available in district center and some commune locations, often as a combined business with materials supply shops
- Local producers – cement blocks, bricks, sand and stones

Another but very similar rural sanitation supply chain in both Hoa Binh and Mekong face the following common obstacles to the construction and use of hygienic latrines:

- Limited awareness of low-cost technology options among masons and sanitation businesses. Most masons had not received any formal training.
- The need to buy materials and services for building latrines from different places, adding to the cost and inconvenience for rural households. All-inclusive services were not generally available.
- A lack of clear and accessible information on the cost of installing different latrine types, since hardware suppliers and masons rarely carried out any marketing activities. Most households with a toilet had built it themselves, neighbors and relatives being the main source of information on options and costs. There was a widely held, but mistaken, view that hygienic latrines are not affordable.
- Private hardware suppliers and masons believed that latrine construction offered little potential for profit due to the current low volumes of sales and small margins on products. Most providers were retailers selling a variety of construction materials, sanitation being only a small part of their businesses.

- Limited availability of sanitation hardware in remote and mountainous areas, adding to the cost and inconvenience of latrine construction.

The business model developed to address these challenges is Sanitation Convenience Shop or SANCON[18]. Originally, these are very small businesses (in many cases even the business license is not necessary) of wastewater concrete ring producers, or brick producers, or retailors; and they have few employees. Based on selection criteria for both SANCON and sales agents, commune health staff screened and proposed potential candidates. Follow up trainings were then organized by district CPM for SANCON and sale agents. The two most experienced district CPMs in Hoa Binh now plan to set up more SANCONs to cover the whole district market in 2016.



The SANCON model allows integrated all-inclusive latrine installation service, can provide standardized products and services, and affordable latrines. It is well illustrated in the schemes below

The service offers a range of benefits to customers:

- Suppliers' sale agents provide information and advice on technology and design options and associated operation and maintenance requirements, to help customers choose an appropriate model.
- All materials required for latrine construction are included in the price paid, both sub-structure and superstructure.
- The package also includes the services of a mason to build the latrine, one of networks of specially trained and certified artisans. (Certification was another pilot initiative, the intention being to scale it up nationwide in due course).
- The supplier delivers all construction materials and components to the household.
- Some suppliers offered their customers payment by instalment, with terms typically three to six months.

4.1.2 Supply chain for Sanitation Service Provision

In the sanitation subsector (OECD iLibrary 2019), the current market structure is predominated by small, often nascent and financially unsustainable business models. Typically, social businesses provide sanitation services across the supply chain with a variety of different approaches resulting in a different revenue stream source.

Potential revenues along the sanitation value chain include the sale of products like toilets, holding or septic tanks, vacuum trucks and faecal sludge treatment or reuse facilities, as well as revenue from products sold after processing of waste (compost, fertilizer etc.). Other revenue streams involve the provision of services and include user fees for toilets, the collection fees generated from waste treatment and waste treatment disposal or reuse.

The pricing of the provision of sanitation services is limited by affordability. As a result, revenue streams are often insufficient to support private sector sanitation service provision, and business models are not financially sustainable. For these businesses, break-even is often limited to OPEX. On the other hand, the complementary faecal sludge collection and treatment service ("waste-to-energy") constitutes a more profitable business opportunity that can become financially sustainable if a sufficient scale is

[18] to be known as "Cửa hàng Tiện ích" in Vietnamese language

reached, though this may be unachievable in smaller settlements where the number of end users is limited.

In general, an observed pathway to sustainable revenues is to collaborate with local and national governments and water utilities.

As to the business models (SNV 2012, pp3), there are

- The one-stop-shop model (providing all services)
- The micro-franchising model (where the business concept of one larger enterprise engages a number of people or small business to implement the idea at scale)
- The network model (where different SMEs coordinate and collaborate closely to provide the service)

These models proved a valuable conceptual framework for analysis and discussion about market structure. Of course, reality is more complex with many variations of the models observed.

4.2 FINANCIAL RISKS ASSOCIATED WITH SANITATION PRODUCTS AND SERVICE PROVISION

4.2.1 Financial risks associated with Sanitation Products

Challenges

Price:

- Key finance risk in the rural sanitation is the price. In regard to cement the key construction materials, while cement was often available in the commune centers, costs were higher, particularly for the more remote communes. Profit margins for cement were typically very low for retailers, the more remote commune centers (e.g. Ang To, 50km away from Dien Bien Phu city) the higher price (up to 40% higher than the wholesale price at the factory) to account for costs associated with transporting the material to their shop. Low profit margins were accepted for the sale of cement and as such, there was limited opportunity to reduce its costs in the supply chain (ISF 2015, pp69).
- Similar situation happens to toilet pan, in Ang To communes, it cost as high as 400% compared to that in Muong Ang town just 13km away. The increase in prices involves the transportation, for example transport costs comprise the highest proportion of costs for VIP latrine (over half the cost in some locations (56%), with an average 33%); for double vault latrines, the proportion is less (average 22% of materials plus transport cost) and least for septic tank latrines (up to 28% of the cost, with an average of 14%). (pp32). Given low profit margins, there was little opportunity to

reduce the cost of toilet pans. Additionally, toilet pans comprised a small proportion of total material costs (between 3-9%), one of the most significant costs involved in toilet pan purchase for locations outside the district center was transport (ISF 2015, pp70). The cost of transporting materials to remote areas was a primary reason for driving up the price of latrines (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp21).

- In-country research revealed numerous households aspired to expensive luxury latrines. The costs were well out of their reach, so they settled for either no latrine or an unimproved pit latrine. One reason for these aspirations was the lack of examples of low cost, desirable hygienic latrines at the commune and village level (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp21).

Access to finance

- A2F is reported as a problem by some actors in the supply chain (EMC 2014, pp82).
- Customer's access to finance for sanitation, in terms of loans and credit, affected their ability to draw on the products and services of private enterprises; and Customer access to loans from the social policy bank was generally difficult; Additional sources of funding for sanitation include Program 135 (Program for SocioEconomic Development in Communes Faced with Extreme Difficulties), although in practice the reach of this program appeared to be limited and commune expenditure was not guided by any central policy. Several households noted that for sanitation they borrowed not from banks, but from family and neighbors (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp25-26).

Low demand for sanitation products and services:

- Household demand for the services and products of sanitation enterprises was limited in most of the locations covered in the and this was due to a number of reasons. Local government and mass organizations (e.g. the Women's Union and Village Health Worker) create demand for sanitation services through household education and awareness raising, however this role did not usually extend to the promotion of mason's services or sanitation suppliers, nor did they receive any benefits for persuading households to build latrines (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp20).
- Marketing of sanitation products was extremely limited and this is another reason household demand was low (Enterprise in WASH WP2b, Anna Gero & Juliet Willetts, 2007, pp20).

Finance risk to material supply shops:

- Demand and affordability: while a trend of increasing demand for construction materials was apparent, the demand for latrines was not noted to have changed, with the vast majority of construction materials purchased for houses and other projects, households in the area tended not to build latrines (ISF 2015, pp61);
- Loan and Credit: Business owners of supply shops selling construction materials used for sanitation were accessing loans, for example from the Vietnam Bank for Agriculture and Rural Development (pp38). Despite offering credit to their customers, most shop owners were required to pay their own suppliers and agents in cash. Managing their debts was therefore a challenge for some businesses. (pp62). This restriction of cash flow proved to be a barrier for businesses taking loans and expanding their business. As a result, some shop owners were becoming reluctant to offer credit to their customers (ISF 2015, pp38);
- It was common for shop owners to borrow from banks for shop needs. Rates were around 13% p.a, often the land ownership certificate was used as collateral for the loan (ISF 2015, pp64).

Finance risk to masons:

Masons acted as laborer only, not playing any role in the purchasing of materials. The services of masons were not always engaged by households in building latrines, with many households opting for simply models (e.g. VIP latrine) and building it themselves, not aware that the skills and experience of masons can assist in ensuring the latrine is hygienic and functional (ISF 2015, pp51).

Finance risk to transport providers:

- the capital required to purchase the vehicles, and associated risks with taking loans for procuring vehicles (ISF 2015, pp65);
- It was common for transporters to borrow from banks for transport business needs. Rates were around 13% p.a, and often the land ownership certificate was used as collateral for the loan (ISF 2015, pp64).

Finance risk to Local producers:

- Bricks – Cement bricks were mostly used for building latrines (as well as fences, pig pens and parts of houses), and they were cheaper and easier to produce compared to red bricks (made from clay). Finance risk therefore may come from the price and availability, and their ability in accessing loans;
- Cement Rings – cement ring producers were located in several of the communes. Cement ring producer buy the molds for the rings and sell most rings to households. Gravel is also produced locally (ISF 2015, pp51). Finance risk therefore may come from the price and availability of input materials and molds, and their ability in accessing loans.

Risk of subsidy to private sector:

Subsidies create distortions, for both consumers and also private sector suppliers (EMC 2014, pp80). For the demand side, "the incubation of village dependency on outside organizations to assist them with a task that most villagers can do themselves." (Plan International 2011). WSP (2013) found that the "main reason for households having a toilet was that they were provided or supported by projects"[19] and that "Respondents in all sites cited 'never offered a toilet' as a reason for not having one." So, despite some consumer recognition of the benefits of sanitation, many Lao PDR households decide to wait for an NGO or the government to provide a toilet rather than invest in one themselves.

Subsidized latrine programs in social marketing target areas may undermine willingness to pay for latrines, as beneficiaries wait for a subsidy-based intervention. Also, the limited technology promoted may undermine attempts to alter the consumer perception of latrines, if the technology promoted is expensive. On the other hand, a large latrine supply program may offer the opportunity to innovate in technology and delivery mechanisms. In terms of the supply side, subsidies can provide a good source of revenue for businesses, and may make them more familiar with sanitation products than they otherwise would be. However, businesses are also less likely to think of the end user as the consumer of the product because many programs sit between them and the end user. Businesses in the sanitation supply chain hence may be insulated from private demand. They might also be less likely to engage in marketing (EMC 2014, pp81).

WSP (WSP 2012 pp3) noted that a program with a subsidy:

- is expensive to scale up;
- creates community expectations of external support, reducing the motivation of householders to build latrines at their own expense; and
- makes it very difficult for private masons and suppliers to generate business since their products are not subsidized. (WSP 2012a)

Challenges for better integrating and coordinating the sanitation value chain to deliver products and services to base-of-the-pyramid (BoP) customers include (Nathaniel Mason et al, 2015, pp17): lack of marketing capacity to link product manufacturing and technology uptake by users; informal status of many smaller businesses that are best positioned to interface with BoP customers, which inhibits their security and ability to attract credit; dominance of medium-size social enterprises across 'whole-of-chain' approaches which imply that these types of business are still struggling to scale.

Mitigation

More specific strategies to overcome the challenges to key actors of the rural sanitation value chain (ISF 2015, pp73-74) are:

- Access to finance for customers: Approaches that can reduce the outlay for such households, including better managed loans from VBSP with facilitation assistance from mass organizations, may help poor households to access sanitation. Strengthening facilitation role of mass organizations and the VBSP loan programs such that they do provide an effective means through which the poor can access finance for sanitation could overcome some of the challenges faced by poor households in paying for sanitation.
- Organizing communities for collective purchasing: Communities could be encouraged and supported to buy materials as collectives to reduce costs. Both community leaders and government staff could promote this approach. However, while the bulk purchases of goods may work in village

[19] Yet WSP 2012 states that only 18% of latrines were provided by subsidy

or commune centers where trucks can deliver bulk purchases, in remote locations this would not work, as access is limited to motor bikes and on foot.

- Targeting transportation of sanitation materials: The major increase in the cost of latrines in remote locations is due to transport and distance. As well as the barrier of cost, there is also the practical barrier of arranging the physical transportation of the materials to remote households with highly challenging logistics. Government estimates of latrine costs are far below the costs households in this research are required to pay in reality. Targeted government subsidies for this specific case (i.e. transporting sanitation products to remote locations) could be developed to assist in removing this barrier.
- Target bricks as the costliest component of toilet costs: The high proportional cost of bricks compared to other core material components shows that influencing the cost of latrines may involve investigating alternate materials, such as concrete rings – however logistical challenges relating to transport cannot be overlooked here either. In some locations molds for making concrete rings have been shared for use by communities and could help overcome some aspects of the logistical challenge.
- Reconsider appropriate technology and design: Further effort should be directed to research and innovation concerning design of toilets suitable for remote, difficult to reach locations. Models that incorporate light-weight materials in place of heavy construction materials, as well as designs that specifically use locally available materials, both require greater investigation. An outcome of such work may be a broader range of 'standard' toilets (beyond MoH's current set of designs) that take into account the situation in remote, rural locations.
- Improve community understanding of hygienic sanitation options: In remote villages, households had limited awareness of the types of sanitation options that were available. Local government and CSOs, together with Women's Union staff could therefore work to raise the understanding of poor, remote households of the various more affordable types of sanitation that are available.
- Smart targeted subsidies: Design of a 'smart subsidy' involves considering issues in the local context in choice of subsidy, and 'designing-in' mitigating strategies for any disadvantages. Some subsidies involve partnerships or contracts with supply shops, and require several steps in their development to ensure equitable participation of supply chain actors and ensure agreements are transparent and upheld. Various types of subsidies and supporting options have been assessed elsewhere, and potential options for the situation in rural and remote locations in Vietnam may include direct subsidy (cash or voucher), hardware subsidy, subsidy to small suppliers/service, cross subsidy, output-based subsidy, subsidized credit.
- Promote (WSP 2012, pp4) and enable increased household fiancing of latrine construction through information and education, marketing, technical support and attractive fiancing options.
- Reduce dependency on hardware subsidies, which have proved ineffective in creating the demand for toilets and in any case cannot be offered on a large scale due to the cost. Instead, develop and promote a range of affordable technology options for improved sanitation.
- Find a more cost-effective approach to sanitation promotion that can be scaled up district-wide. With this in mind, extend ongoing work by development partners to introduce Community-Led Total Sanitation, which offers the potential for eradicating open defecation across entire community without the use of hardware subsidies.

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ANNEX 1. LIST OF KEY LEGAL PAPERS REGULATING THE WASH SECTOR

Laws

1. Law on Construction 2014.
2. Law on Environment Protection 2022 and 2014
3. Law on Water Resources 2012
4. Law on Protection of Consumers 2010
5. Law on Enterprise 2020 and 2014
6. Law on Pricing 2012
7. Law on Irrigation 2017

Decrees and Prime Minister Decisions

8. Decree 117/2007/NĐ-CP dated 11 July 2017 by the Government on clean water production, supply and consumption
9. Decree 124/2011/NĐ-CP dated 11 December 28 by the Government on revision, supplementation of some articles of the Decree 117/2007/NĐ-CP
10. Decree 32/2019/NĐ-CP dated 10 April 2019 by the Government on task assignment, ordering, or procurement for provision of public good and services using the State budget
11. Decree 57/2018/NĐ-CP dated 17 April 2018 by the Government on incentive policies for enterprises investing in agriculture and rural development sector
12. Decree 63/2018/NĐ-CP dated 4 May 2018 by the Government regulating the Investment in PPP framework
13. Decision 131/2009/QĐ-TTg dated 02 November 2009 by the Prime Minister on some preferential and incentives to investment and management exploitation of centralized rural clean water works
14. Decision 18/2014/QĐ-TTg dated 03 March 2014 by the Prime Minister on emending supplementing the article 3 of the Decision 62/2004/QĐ-TTg dated 16/4/2004 by the Prime Minister on credit for the implementation of the National program on RWSS
15. Decision 1566/QĐ-TTg dated 09 August 2016 by the Prime Minister approving the National Program of securing save water for the period of 2016 – 2025
16. Decision 2147/QĐ-TTg dated 24 November 2010 by the Prime Minister approving the National Unaccounted-for Water (UFW), Non-Revenue Water (NRW) Program to 2025
17. Decision 1978QĐ-TTg dated 24 November 2021 by the Prime Minister approving the National Program of RWSS toward 2030, with vision to 2045

Circulars

18. Circular (inter-ministerial) 75/2012/TTLT-BTC-BXD-BNNPTNT dated 15 May 2012 by 3 ministries (MOF, MOC, MARD) guiding the principles, methods of identification and authority in decision of clean water consumption in urban, industrial, and rural areas
19. Circular 88/2012/TT-BTC dated 28 May 2012 by MOF promulgating the costing framework of residential clean water consumption
20. Circular 54/2013/TT-BTC dated 04 May 2013 by MOF regulating the management, usage, and exploitation of centralized rural clean water works, and Circular 76/2017/TT-BTC dated 26 July 2017 adding some articles to Circular 54/2013/TT-BTC
21. Circular (inter-ministerial) 37/2014/TTLT-BNNPTNT-BTC-BKHĐT dated 31 October 2014 promulgating some preferential policies and incentives in investment, management, exploitation of rural clean water works
22. Circular 41/2018/TT-BYT dated 14 December 2018 on the national technical standards and procedures of checking and monitoring quality of clean water for residential use
23. Decision 2147/QĐ-TTg dated 24 November 2010 by the Prime Minister approving the National Program of preventing NRW towards 2025