



Mapping current incentives and investment in Viet Nam's water and sanitation sector: informing private climate finance

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Abstract

This report summarises findings from the application of a diagnostic tool, as a first step to support governments and other stakeholders seeking to design interventions to mobilise private finance for climate-compatible development (CCD). Using this diagnostic tool in Viet Nam's water and sanitation sector allowed us to make two distinct sets of findings that are useful for actors who want to mobilise private climate finance.

The first set of findings emerges from the *available* data and information, through which we can identify opportunities for the Vietnamese government and development partners to modifying existing incentives and develop new tools to scale up climate-compatible investment; and where there are gaps in sources of capital that both public and private investment might fill. The second set of findings is around *data gaps*: unfortunately, owing to the absence of granular information and discrepancies in the definitions and categories in international and national datasets, there are challenges in understanding the impact of the country's existing incentives on historic investment.

We aim to apply this methodology in a number of additional countries and sectors, with the goal of identifying additional opportunities to mobilise private climate finance, including through improved transparency of private investment data in climate-relevant sectors.

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Abbreviations

ADB	Asian Development Bank
AFD	French Development Agency
CCD	Climate-Compatible Development
BIC	Bank Information Centre
BIWASE	Binh Duong Water Supply Sewerage Environment Co., Ltd.
BO	Build-Operate
BOT	Build-Operate-Transfer
BRICS	Brazil, Russia, India, China, South Africa
BT	Build-Transfer
BTO	Build-Transfer-Operate
CDM	Clean Development Mechanism
CFU	Climate Funds Update
CIT	Corporate Income Tax
COD	Chemical Oxygen Demand
CPI	Climate Policy Initiative
DAC	Development Assistance Committee
Danida	Danish International Development Agency
DEG	German Investment Corporation
DFID	Department for International Development
DONRE	Department on Natural Resources and Environment
ERV	Environment Review of Vietnam
FAO	Food and Agricultural Organization
FDI	Foreign Direct Investment
FMO	Dutch Development Finance Institution

FSF	Fast Start Finance
GDP	Gross Domestic Product
HCMC	Ho Chi Minh City
ICT	Information and Communication Technology
IDA	International Development Association
IFC	International Finance Corporation
JICA	Japan International Cooperation Agency
JSC	Joint Stock Company
KfW	German Development Bank
MARD	Ministry of Agriculture and Rural Development
MOC	Ministry of Construction
MOH	Ministry of Health
MONRE	Ministry of Natural Resources and Environment
NTP	National Target Programme
ODA	Official Development Assistance
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
OOF	Other Official Flows
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public–Private Partnership
PSP	Private Sector Participation
RWSS	Rural Water Supply and Sanitation
SAWACO	Saigon Water Corporation
SMEs	Small and Medium-Sized Enterprises
SOE	State Owned Enterprise
TLC	Transparency, Longevity and Certainty
TSS	Total Suspended Solids
UK	United Kingdom
UN	United Nations

UNDP	UN Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	UN Children’s Fund
URENCO	Urban Environment Company
US	United States
VCAPS	Vietnam Climate Adaptation Partnership
WWSA	Viet Nam Water Supply and Sewerage Association
WHO	World Health Organization
WSP	Water and Sanitation Program
WTO	World Trade Organization

Executive summary

There is consensus within the discourse on climate finance that there is a key role for the public sector (and donor funds more specifically) in mobilising private investment in climate-compatible development (CCD). However, there has been limited analysis about what specific role the public sector and public resources should play, particularly in light of recent findings on (i) the importance of domestic private investment and (ii) the current domination of public investment in international (North–South) finance for CCD (Buchner et al., 2014).

This paper describes the findings from an application of a diagnostic tool (see Whitley, 2015) to support governments and development partners that wish to mobilise private finance for CCD. The first aim of this diagnostic tool is to fill key information gaps about incentives and investment at country level in climate-relevant sectors, in order to support governments in their efforts to shift or direct additional private resources to CCD. The second is to enhance understanding of the links between public incentives and private investment in CCD.

In this case, the diagnostic tool and its three frameworks have been applied to the mapping of current incentives and investment in Viet Nam’s water and sanitation sector, which is a key sector for both the National Climate Change Strategy and the Green Growth Strategy, as well as for subnational adaptation to climate change policy instruments.

Although we could not find publicly available data to fully complete all of the frameworks, by linking the key findings across the three frameworks and comparing them with Viet Nam’s stated objectives for (i) mobilising private investment and (ii) addressing climate change and green growth (see Section 2), we were able to identify some important considerations for the deployment of climate finance in Vietnam’s water and sanitation sector that aims to mobilise private investment:

- The highest levels of investment in the water and sanitation sector in Viet Nam currently come from the national government budget and recently rising levels of official development assistance (ODA). As Viet Nam has now reached middle-income status, it is anticipated that the level of ODA directed towards the country will fall, although perhaps more slowly in the areas of water and sanitation, particularly in rural areas. As a result, the government of Viet Nam has made it a priority to increase levels of private investment in the sector, in terms of both domestic and international sources.
- Given current investment trends and incentives in Viet Nam’s water and sanitation sector, the main source of private investment in the short to medium term will be domestic rather than foreign. Therefore, finding ways in which climate finance could support the domestic private sector need to be developed, particularly focused on government support to small to medium water and sanitation enterprises. There is also a role for climate finance in supporting wider efforts to reform tariffs and fees within the sector, to improve prospects for private investment and allow for parallel increases in government budget resources to invest in those areas of water and sanitation that are priorities for national, provincial and local level.

1 Introduction

Under the UN Framework Convention on Climate Change (UNFCCC), countries have committed to mobilising \$100 billion annually in long-term climate finance from public and private sources to address the climate change needs of developing countries by 2020. Estimates of such needs vary, depending on assumptions and methodologies used, between \$0.7 and \$4 trillion in additional costs between 2015 and 2050 (Global Commission on the Economy and Climate, 2014; Green Growth Best Practice, 2014), high above of the UNFCCC commitment and current levels of climate finance flows of \$331 million, of which 58% is estimated to come from the private sector (Buchner et al., 2014).

To overcome such a gap there is a need to generate significant shifts in private investment towards climate-compatible development (CCD).¹ This requires a stable and attractive regulatory environment through ‘Transparency, Longevity and Certainty’ (TLC) (or long, loud and legal signals), a process in which public finance (domestic and international) plays an important role to enable greater investment (Hamilton, 2009; High Level Advisory Group on Climate Change Financing, 2010; Kreibiehl and Miltner, 2013; Mabey, 2012; UNFCCC, 2012).

Findings from researchers tracking current climate finance (Buchner et al., 2014; IFC, 2013; OECD, 2014) demonstrate that:

- Almost 75% of climate finance is domestic investment, with private actors having an especially strong domestic investment focus, with 90% of their investments remaining in the country of origin.²
- The minority (10%) of international climate finance (North–South) originates almost exclusively (94%) from public as opposed to private sources.
- Overall, there is very limited information available on private investment by climate-relevant sector³ and sub-sector beyond that for large renewable energy projects, and very little country-level data beyond the Organisation for Economic Co-operation and Development (OECD) and the BRICS (Brazil, Russia, India, China, South Africa).

The Overseas Development Institute (ODI) has developed a diagnostic tool to (i) address this limited availability of information on private climate finance beyond renewable energy and outside the OECD and BRICS countries and (ii) increase understanding of the role of domestic and public finance and incentives in shaping international and domestic private investment.

This report outlines the findings from the application of this diagnostic to the water and sanitation sector in Viet Nam. **It is accompanied by a [methodology paper](#) outlining the objectives of the diagnostic, the data-collection approach, key sources of information, current data gaps and areas where additional work might be undertaken to improve information on incentives and investment at the country and sub-sector level (Whitley, 2015).** Parallel studies have been completed on the transport sector in Viet Nam (Darko et al., 2015, forthcoming), the agriculture sector in Zambia (Whitley et al., 2014) and the energy sector in Uganda (Whitley and Tumushabe, 2014). The aim is to refine this diagnostic approach through the application of this approach across additional countries and sectors.

¹ CCD safeguards development from climate impacts (climate-resilient development) and reduces or keeps emissions low without compromising development goals (low-emissions development) (<http://cdkn.org/resource/defining-climate-compatible-development-3/>)

² This information from the Climate Policy Initiative (CPI) is based on a global data review, and it is unclear how this finding would change across different country contexts.

³ For the purpose of this research, climate-relevant sectors have been defined to include agriculture, forestry, extractives, manufacturing, energy, water and sanitation, construction, transportation and information and communication technology (ICT) (Whitley, 2015).

2 Context

This section provides a brief overview of the ‘climate’ for private investment in Viet Nam, a snapshot of the country’s water and sanitation sector including sector governance and objectives on climate change and green growth in the sector.

We include this broader information because, in addition to incentives for investment in the water and sanitation sector (reviewed in Section 4), macroeconomic conditions and levels of financial sector development at national level can also have significant impact on investment.

2.1 Investment climate – Viet Nam

2.1.1 Economy

Viet Nam is considered a development success story.⁴ Its transition from a low-to a lower-middle-income country in 2009 is reflected in the sharp rise in gross domestic product (GDP) per capita, from \$239 in 1985 to \$1,911 in 2013;⁵ a fall in the number of people living in poverty from 60% in the early 1990s to 20.7% in 2010 (Badiani et al., 2013); and the country maintaining a very low share (3%) of GDP coming from official development assistance (ODA) (OECD, 2014).

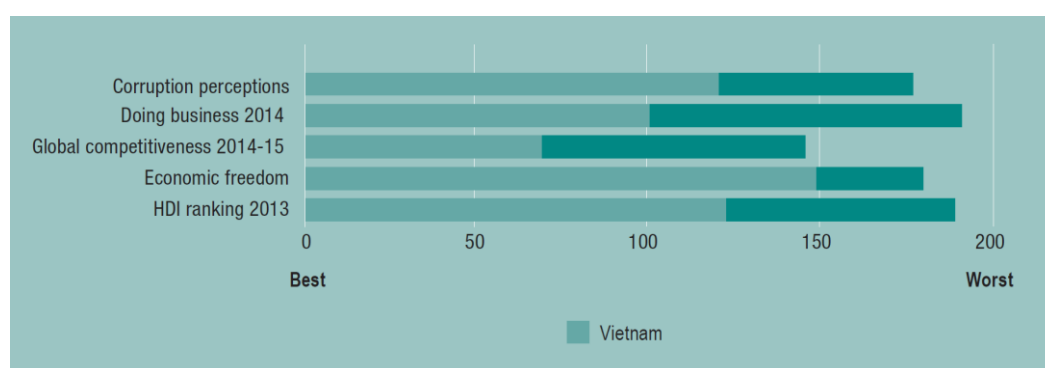
The transformation of Viet Nam’s economy began in 1986 with political and economic reforms, known as Doi Moi. These marked the end of the centrally planned command economy and included reforms permitting increased private sector involvement in sectors deemed to be non-strategic and an increasingly market-based economy. In 1988, a Land Law was enacted that permitted private land rights; Decree 217 in 1987 granted state-owned enterprises (SOEs) greater independence, with rights over capital. However, ultimate investment decision-making is still under the control of the state. At the same time as the economic reforms, a process of international economic integration, with an emphasis on trade liberalisation while protecting domestic production, was taking place in the country (Thanh, 2005).

Although economic reform has led to growth, this has not always been distributed evenly across the country, with an overall medium ranking on the Human Development Index (121st out of 187), and has taken place in the context of higher than average levels of corruption. For example, the majority of foreign direct investment (FDI) has concentrated in industrial and urban areas, mainly in the South East Region and the Red River Delta (Anwar and Nguyen, 2014; Nguyen Thi et al., 2006), and 60% of ethnic minorities remain poor (OECD, 2014). According to the Corruption Perceptions Index 2014, Viet Nam is ranked 119th out of 175, where 175 is the most corrupt country (Transparency International, 2014). Such high levels of corruption can lead to significant costs for business and slow progress on increasing investment from private sources (see Figure 1). The World Bank’s Doing Business Ranking also highlights the negative impact of difficulties starting a business, low levels of credit access and difficulties getting electricity on doing business in Viet Nam (see Figure 2).

⁴ <http://www.worldbank.org/en/country/vietnam/overview>

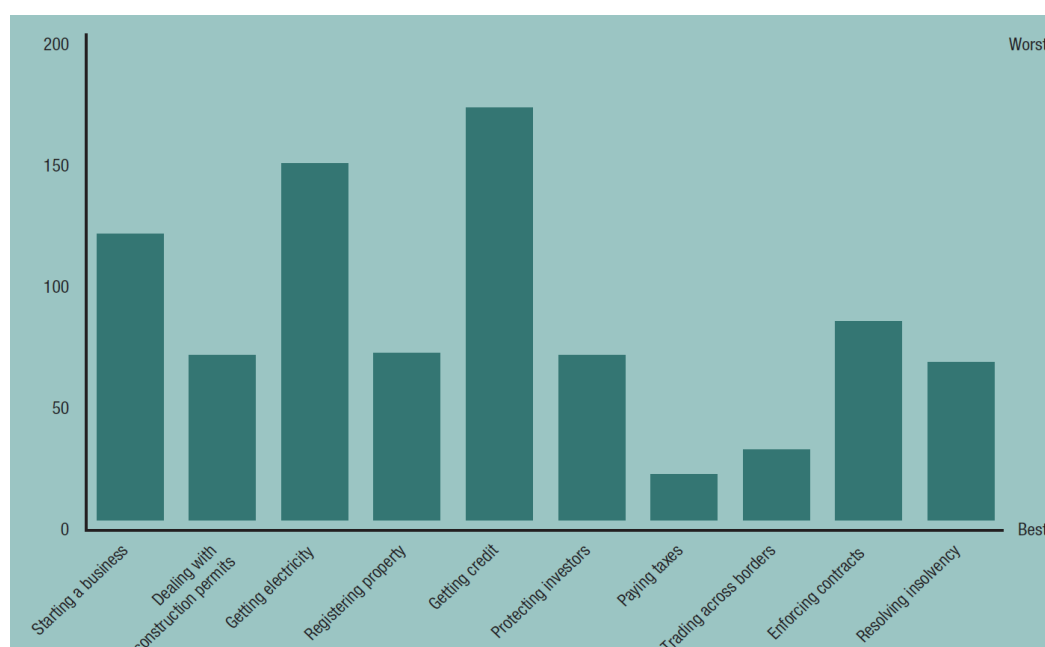
⁵ <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD/countries?display=default>

Figure 1: Rankings on key global indices (0 = best, 180 = worst)



Source: World Bank (2013).

Figure 2: Viet Nam ranking on World Bank Doing Business topics (0 = best, 180 = worst)



Source: World Bank (2013).

2.1.2 Finance and investment

Viet Nam has taken significant steps to encourage private domestic and foreign investment in the economy through relaxation of restrictions on firm ownership (including SOEs) and legislation on public–private partnership (PPP) models, particularly in infrastructure (see Appendix 3).

The Vietnamese government has also undertaken various measures in recent years to improve the business and investment climate and transparency. Modernisation of the Investment Law and Enterprises Law in 2005, together with the 2007 Securities Law, has established a comprehensive legal framework for the development, regulation and supervision of capital markets (ADB, 2014). Following Viet Nam's accession to the World Trade Organization (WTO) in 2007, FDI increased from \$12 billion in 2006 to more than \$21 billion in 2007 (KPMG, 2011), and the Vietnamese government has opened an increasing number of sectors and sub-sectors to domestic private and foreign investment. The National Assembly passed revised Enterprise and Investment Laws in November 2014, which will take effect from 1 July 2015 and allow greater freedom of operation for enterprises, simplified registration procedures and a new definition of SOEs as enterprises wholly owned by the state (Massmann, 2014).

While growth in Viet Nam's financial markets, and in particular its stock market, has been strong in recent years, it is not diversified and the country's equity markets are quite volatile as a result. There is a strong perception that corporate governance standards are also not consistently upheld and international standards of financial reporting are not fully embraced, meaning risks for investors, particularly foreign investors who must ensure compliance with international standards for their shareholders and with national government legislative compliance (ADB, 2014). State-owned banks hold the majority of market share and continue to provide directed and often subsidised credit to select industries, often supporting the immediate cash needs of less productive public enterprises, potentially at the expense of the private sector (ibid.).

In addition, the Vietnamese banking sector suffers from high levels of nonperforming loans and under-capitalisation (ADB, 2014). The local currency bond market is much smaller than the regional average (56.5% of GDP) and insurance penetration rates are on a par with the Philippines and Indonesia but below those in Thailand and Malaysia (ibid.). The Viet Nam Asset Management Company was created on 9 July 2013 under the direct control of the State Bank of Viet Nam to address some of these issues within the banking sector by purchasing, recovering and restructuring of bad debt (ibid.).

2.2 Water and sanitation in Viet Nam

Viet Nam was selected for a review of incentives and investment in the water and sanitation sector because this sector receives relatively significant levels of climate finance in Viet Nam as compared with other countries. The majority (58%) of Fast Start Finance (FSF) (climate finance from bilateral donors) was directed towards the water and sanitation sector in Viet Nam (see Section 6).

Surface water is the primary source of water in Viet Nam (see Figure 3), with the Mekong and the Red River/Thai Binh the largest river basins in the country. The country's river basins are shared with a number of neighbouring countries including China, Burma, Laos, Thailand and Cambodia (FAO, 2011). Surface water includes water from lakes, including Lake Ho-Tay and Lake Ba Be, which have water volumes of 8 million m³ and 90 million m³, respectively.⁶ Given the limited use of groundwater,⁷ water shortages frequently take place during the dry season (six to seven months of the year) (FAO, 2011). The vast majority of the country's water resources (90%) are used for agriculture, with only 2% going to municipal use (see Figure 4). It is estimated that current levels of infrastructure and financial capacity result in the utilisation of only one-fifth of the country's annual surface water supply (53 billion m³ of a total available 255 billion m³ per year)⁸ (ibid.).

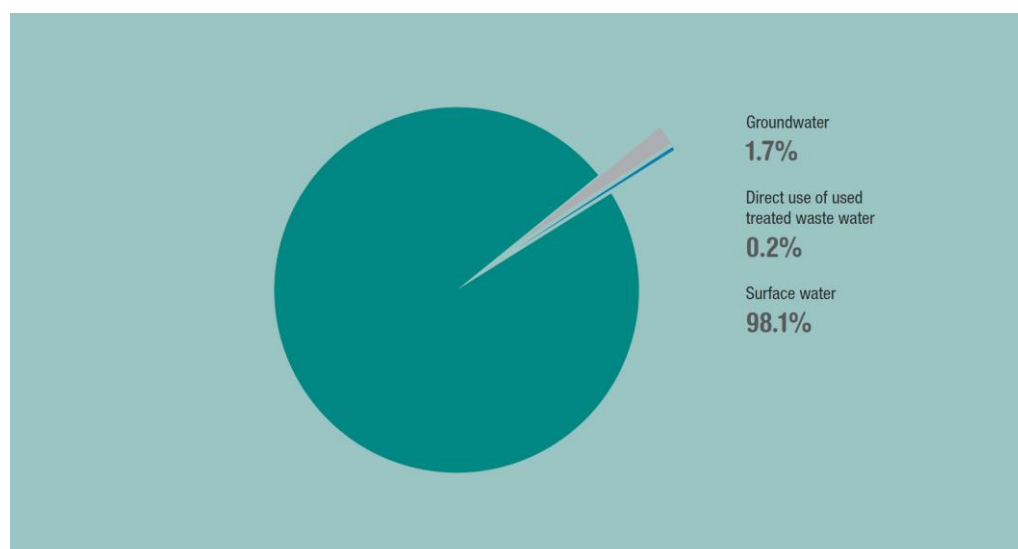
From 1990 to 2012, Viet Nam increased the proportion of the country's population with access to drinking water sources by 33% (WHO and UNICEF, 2014), with levels of access to drinking water in urban areas of 98% and in rural areas of 94% by 2012 (ibid.). In spite of these improvements in water and sanitation, there are significant disparities in the levels of access for different regions of the country, based on levels of population and levels of affluence: 95% of the richest urban quintile have a piped water connection and only 35% of the poorest quintile have access to piped water (World Bank WSP, 2014).

⁶ http://www.fao.org/nr/water/espim/country/viet_nam/print1.stm

⁷ Drinking water is dependent on groundwater in Viet Nam, accessed through private tube-wells, with increasing demand since the mid-1990s (Berg et al., 2007).

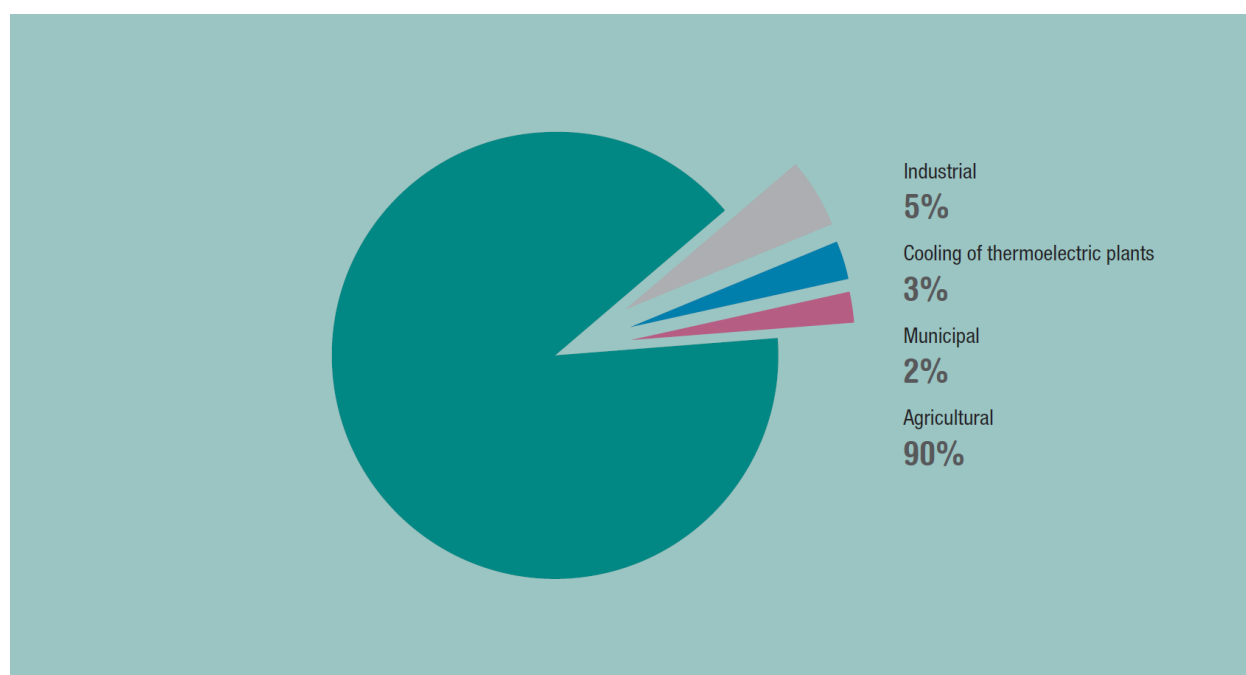
⁸ Withdrawal data are as of 2005.

Figure 3: Viet Nam water withdrawal by source (data as of 2005)



Source: FAO (2011).

Figure 4: Viet Nam water withdrawal by sector (data as of 2009)



Source: UN-Water (2013).

2.2.1 Urban water supply⁹

By 2009, coverage of piped water supply services was around 90% in large cities, such as Ho Chi Minh City (HCMC), Ha Noi, Hue and Da Nang; 60% in medium-sized cities; and only 30% in small district towns, where they are normally restricted to the centre of town areas (ADB, 2009).

Supply in urban areas is provided mainly by provincial water service companies, which can be 100% SoE or have some participation of the private sector, through build-operate-transfer (BOT) or joint stock

⁹ For the classification of urban areas in Viet Nam see Appendix 2

schemes. By 2009, there were 68 water supply companies in urban areas, with a total capacity of 5.9 million m³/day, of which 77% was operational (ibid.).

2.2.2 Urban wastewater collection and treatment

Provision of wastewater treatment is limited in both urban and rural areas, with estimates of less than 10% of wastewater being treated in urban areas (World Bank WSP, 2014). Household wastewater in urban areas normally passes through a septic tank before being discharged to the sewers (GHK, 2005). Such septic tanks are normally financed directly by households. Companies such as the urban environment company (URENCO) in Ha Noi provide tank cleaning and desludging services. Stormwater and wastewater are normally discharged through sewers and canals into lakes, rivers and ponds (ibid.).

Centralised wastewater treatment is still limited in Viet Nam, even in urban areas. A 10% surcharge on the cost of water provision has been introduced in some cities (e.g. Ha Noi) to cover the costs of both sanitation¹⁰ and wastewater services (GHK, 2005). Charging wastewater fees according to discharges is not a common practice (Rogers et al., 2002), even when separating water supply and wastewater fees is considered to incentivise reduction in both the use of water and wastewater (Grontmij, 2012; Rogers et al., 2002).

2.2.3 Industrial wastewater collection and treatment

Industrial zones have been established to move away pollution from urban centres, and therefore are required by law to provide their own sewer networks and centralised effluent treatment plants (World Bank, 2012). From the 174 operating Industrial Zones in 2012, only 60% had complied with such requirement (World Bank, 2012). Main industrial sources include food processing, chemical industry, textile and dyeing, leather, paper and pulp production and automobile repair and mechanics. An estimated of 1 million m³ per day of untreated wastewater is discharged to water bodies, around 70% of the total industrial effluent (ibid.).

There are also 2,800 trade villages that are specialised in mining or paper production, the majority of which do not have wastewater treatment in place. In these trade villages, normally water is collected and discharged directly into rivers without any treatment (ERV, 2006; World Bank WSP, 2012). Some successful models of wastewater treatment in these villages include the use of decentralised bio-digesters for the reuse of the combination of domestic sludge and small-scale industrial waste (World Bank WSP, 2012).

2.2.4 Urban municipal, industrial and medical solid waste collection and disposal

In 2004, there were 91 landfills in Viet Nam, of which only 17 were sanitary landfills (VEA, 2012). In urban areas, collection and transporting of solid waste is undertaken by 63 URENCOs, of which there is one or more in each province's main city. In addition, there are more than 80 companies for domestic waste collection, transport and treatment.

2.2.5 Rural water supply and sanitation services

Rural water supply and sanitation (RWSS) is a priority for the government and it has established a National Target Programme for RWSS up to 2020. RWSS includes clean water supply for domestic use, management of human and animal waste and household waste management.

Piped water supply in rural areas is currently significantly below national averages, with only 9% of rural households having access to piped water within premises compared with 61% in urban areas (WHO and UNICEF, 2014). Also, where rural areas currently have water services, this is through informal management arrangements, which results in low quality and reliability of water supply. In rural areas, consumers provide around 60% of the initial capital cost to build water supply systems (SNV, 2010).

¹⁰ For a five-person household, the construction cost of a septic tank of 1 m³ is about \$200. Additional capital costs to connect a septic tank to the sewerage system are approximately \$10-20, and operation and maintenance costs (for emptying) are in the order of \$20-30 every five years.

In the case of sanitation, there is an even deeper difference between services for urban and rural populations: 94% of the population in urban areas has access to sanitation facilities and only 68% accessing such facilities in rural areas (UNICEF and WHO, 2012). Similarly to the case in urban areas, sanitation in rural areas receives significant funding from consumers, who cover the costs of septic tanks or latrines.

2.2.6 Irrigation

Irrigation for agriculture is the main source of demand for water in Viet Nam (90%). From the total of arable land in Viet Nam, around 46% is irrigated (2.5 million ha) and only 26% has drainage. In particular, the use of irrigation in Viet Nam benefits the cultivation of rice, but it has also contributed to diversification of agricultural production, as irrigated areas also produce coffee and promote other activities as horticulture and aquaculture (World Bank, 2013a).

There are over 100 different types of irrigation systems (at different scales) in Viet Nam, including 1,959 water reservoirs with total water storage of 24.8 billion m³; more than 1,000 km of large canals; over 5,000 km of irrigation canals for watering; and 23,000 km of dykes (World Bank, 2013a).

Obtaining a license to use water for irrigation is costly, but once the irrigation system is established there is no irrigation water tariff. As with water supply, there is a division regarding scale, with large canals and inter-provincial irrigation canals under the responsibility of Ministry of Agriculture and Rural Development (MARD) and irrigation canals and dykes for watering within province under the provincial authority (World Bank, 2013a).

2.2.7 Policies and institutions

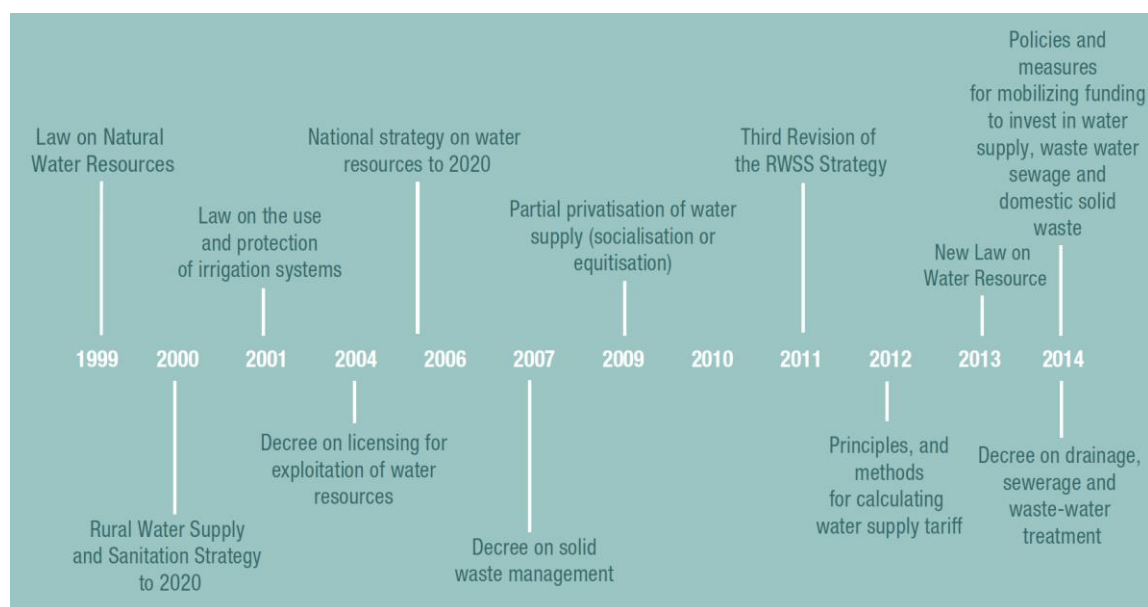
The water policy and legal framework for Viet Nam was developed after the Doi Moi reform period. The first law on water resources was issued in 1998 and brought into force in 1999 (see Figure 5). Since then, over 300 regulations have been used to establish water policy at the national and subnational level (Loan Nguyen, 2013).

Some of the first specific sub-sector water policies were developed under the Rural Water Supply and Sanitation Strategy in 2000 (up to 2020). In 2007, water supply tariffs were regulated (under Decree 117/2007). These had the aim of supporting full cost recovery, but did not take into account investment needs. In 2009, the government introduced the policy of ‘socialisation’ or ‘equitisation’ of water supply companies through Prime Minister Instruction 854/2009 (ADB, 2010). This equitisation (or partial privatisation) was completed in 2010, and included provision of land by the government to water utilities.

The objective of regulation since 2013 has been to ensure the sustainable exploitation and utilisation of water resources (see Figure 5).

A number of different ministries are responsible for the management of the water and sanitation sector in urban and rural areas. For example, the Ministry of Natural Resources and Environment (MONRE) is responsible for overall water resource use management; urban water supply and sanitation is under the oversight of the Ministry of Construction (MOC); and rural water supply comes under MARD (see Figure 6).

Figure 5: Viet Nam water policy timeline



Source: Authors.

Figure 6: Institutions in Viet Nam's water and sanitation sector

Type of institution	Institution	Responsibility
Ministries (Regulation and policy leadership)	Ministry of Construction (MoC):	Urban and industrial parks water supply and sewerage, also solid waste
	Ministry of Agriculture and Rural Development (MARD):	State management of water supply activities in rural areas
	Ministry of Health (MoH)	Rural sanitation and hygiene
	Ministry of Natural Resources and Environment (MONRE)	Natural water resources management. Wastewater discharge control (to rivers, lakes etc.)
	Ministry of Planning and Investment	Encourage and mobilize domestic and foreign investment capital sources for water supply, waste water, solid waste works. Coordinates mobilisation of official development assistance capital sources for investment in water supply development
	Ministry of Finance	Unified financial management of ODA capital sources for investment in water supply development. Coordinate methods for determining clean water consumption prices, price brackets and their implementation
National Institutions (Centralised implementation)	Authority for Irrigation Management (MARD)	Big and inter-provincial irrigation systems. Management over the use and protection of irrigation works.
	Department of Water Resources (MARD)	Major irrigation infrastructure and development
Sub-national Institutions	Provincial People's Committee (PPC)	State investor in irrigation system at provincial level
	Provincial People's Committee (PPC)	Responsible for water supply at district level
	Department of Transport Communication and Public Works within the city government	Planning of the water supply network and other infrastructure in urban centres.
	Department of Agriculture and Rural Development – DARD (MARD)	State management role over irrigation system within provincial responsibility. Irrigation canals for watering within province and dykes
	Department on Natural Resources and Environment (DONRE)	Air pollution control and quality control of water at provincial and district level
Service Providers & Associations	Water Supply Company (WSC)	Utility at urban level – water supply, sometimes they include sanitation and water treatment
	Separate drainage and sewerage companies (SADCs)	Public utility enterprise.
	Viet Nam Water and Sewerage Association (VWSA)	Professional association, predominantly focused on urban water companies
	Irrigation Management Companies (IMC)	Irrigation providers
	Urban Environmental Companies (URENCOs)	Wastewater and solid waste collection, treatment and disposal service providers in urban areas.

Source: Authors.

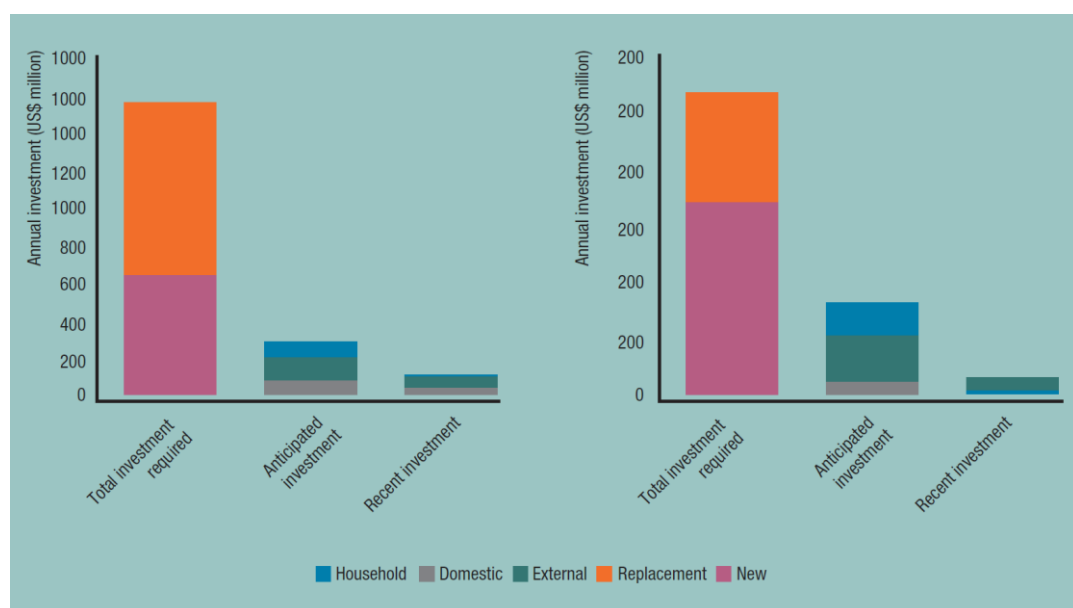
2.3 Demand for water and sanitation sector investment

There are a number of different estimates of the investment needs of the water and sanitation sector in Viet Nam. Meeting the targets established for 2020 requires around \$1.6 billion annually for water supply and \$1.1 billion annually for sanitation (World Bank WSP, 2014) (see Figure 7). Based on a 2014 assessment by the World Bank, most of this investment is needed to expand water and sanitation systems in urban areas (87%), including replacement of existing assets (60% for water supply) (ibid.). These estimates are to meet the needs of access to water supply for 3.7 million people (50% in rural and 50% in urban areas); access to waste water treatment for 1.6 million people in urban areas; and 2 million latrines in rural areas by 2020 (ibid.). MOC has identified investment needs for the 2016-2020 period for urban sewerage systems of VND 70,000 billion (\$3.2 billion) and for urban domestic solid waste system at VND 31,300 billion (\$1.4 billion).

In general, estimates of investment needs have been calculated referencing historic investment, of which the majority (85%) was provided through international public finance (ODA). However, given Viet Nam's current status as a middle-income country, it is likely that ODA resources will fall. As a result, new investment in water and sanitation may need to come from the Vietnamese government, domestic private financial institutions or international private capital (Staykova, 2006).

One of the reasons for the high levels of investment needed in Viet Nam's water and sanitation sector are historically low levels of tariffs, which have not covered investment costs, and the volume of non-revenue water, estimated at an average of 35% – or around 45 million m³ per year. There is a high level of non-revenue water in both urban and rural areas, as only around 200 district towns in Viet Nam have piped water supply (PPIAF, 2012).

Figure 7: Investment needs for water supply and sanitation in Viet Nam



Source: World Bank WSP (2014).

2.4 Climate and green growth objectives (for water and sanitation in Viet Nam)

Viet Nam's climate change strategy for 2011-2020 highlights the risks to the country's water resources from droughts in the dry season and serious flooding in the rainy season, both of which will affect agriculture and water supply in rural areas and cities and power generation. As a result, one of the main objectives of the strategy is to guarantee water security.

This includes the following objectives with regard to water use and management:

- To build the database on change and use of water in relation to climate change and to enhance qualitative and quantitative surveys, research, evaluations, forecasts and observations in exploiting and using water;
- To set up and perfect standards and regulations for effective and multi-purposed exploitation and use of water in conformity with climate change and rises in the sea level;
- To improve the management of water; to promote the realisation of planning schemes and take synchronous measures for the sustainable development of the country's water resources in the context of climate change.

The climate change strategy¹¹ also highlights the importance of waste management in addressing climate change, including:

- To make planning schemes for waste management in order to minimise recycle and reuse waste for lower emission of greenhouse gases;
- To promote research and the introduction of advanced waste-treating technologies; to apply modern waste-treating technologies in urban and rural areas; to strengthen the management, treatment and reuse of industrial and domestic sewage; by 2020, 90% of the total volume of urban domestic solid waste should be gathered and treated, with 85% of this recycled and reused;
- To apply small-scale electricity-generating systems that use methane collected from dumping sites and other sources; to collect gases and make full use of redundant heat from industrial production factories to discover and burn solid waste for electricity generation.

In addition to the national climate change strategy, an adaptation strategy has been developed for HCMC (VCAPS, 2013). This highlights a number of priorities linked to water and sanitation, including (i) increasing the city's water storage and drainage capacity; (ii) implementing smart dredging or flushing of the city's water system (to address flooding and salinisation); (iii) sanitation and surface water quality improvement; and (iv) regulation and enforcement on groundwater extraction.

Vietnam's Green Growth Strategy also includes key targets for 2020 related to water and sanitation, particularly around the establishment of wastewater collection and treatment systems in cities;¹² the development of infrastructure in irrigation and water supply, including for agricultural production, better drainage and flood control; and investment in adequate water supply for industrial and urban development, particularly in areas with water scarcity. The strategy proposes a number of mechanisms for mobilising resources for green growth. These include the possibility of developing a national Green Growth Fund; fiscal policy reform to include eco-tax and carbon taxes; participation in market-based mechanisms (such as the Clean Development Mechanism (CDM)); and encouraging ODA and climate finance, including the Green Climate Fund (Prime Minister, 2012).

¹¹ <http://chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails%3FcategoryId%3D30%26articleId%3D10051283>

¹² 60% for Grade III cities, 40% for Grades IV and V and craft villages; also reinforces the rate of waste that is collected and treated under the Strategy for Integrated Solid Waste Management until 2025
(<http://chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails%3FcategoryId%3D30%26articleId%3D10051283>)

3 Framework 1: incentives (industrial policy tools)

The first framework in the diagnostic tool builds on existing categories of subsidies and the industrial policy tools most commonly used by governments to mobilise investment. We use the term ‘incentives’ to describe all industrial policies, subsidies, support, aid, assistance, fiscal policy and fiscal instruments. **See Whitley (2015) for more detail on the methodology and the three frameworks used for this study.**

Framework 1 (Figure 8) is completed to highlight the key regulatory, economic and information instruments in Viet Nam’s water and sanitation sector. These instruments are outlined in order to provide information on the incentives available to support private investment in Viet Nam and to show whether they are provided across the water and sanitation sector or are targeted at specific sub-sectors. Where secondary analysis was identified on the effectiveness of these incentives in shaping or mobilising investment, this information has been included. Additional detail on economic instruments can be found in Section 4 (Framework 2), and the incentives most frequently referenced in interviews are outlined in more detail in the section below.

It was possible to obtain information for this framework on the basis of interviews with key stakeholders in Viet Nam (see Appendix 2) and of a review of publicly available government documents.

Figure 8: Framework 1 – industrial policy tools

Regulatory	Investment regulation • Water supply and sanitation as a sector to be developed through BoT, BTO and BT contracts • Partial privatization (equitization) of SOEs in the water and sanitation sector (Decision 14/2011/QĐ-TTg and Decision 37/2014/QĐ-TTg). • New Decree on Public-Private-Partnerships (PPP) • Water supply and sanitation, waste water treatment and solid waste prioritized in the Pilot facility for (PPP) Water supply and sanitation • Recognition of the need for investment in particular in water treatment plants. (2005 Investment Law; Decree 108 on investment law, replaced by a new Investment Law adopted in 2014 and implemented in 2015) • Policies and measures for mobilizing funding, and investment incentives to mobilize resources for water supply, domestic wastewater, sewage and solid waste treatment (Prime Minister's Decision No 1196 – 2014) (see Economic instruments) • Legislation on production, provision and distribution of clean water (Decree 117/2007/ND-TTg and 124/2011/NĐ-TTg) • Regulations on water drainage and waste water treatment in urban areas, industrial parks and rural residential areas (Decree 80/2014/ND-TTg - 2014) • Water quality standards • Norms/standards of solid waste collection, transportation and treatment (Minister of Construction's Decision 592/QĐ-BXD – 2014) • Reference of investment and operation costs for solid waste treatment (to be used by local governments) (Minister of Construction's Decision No 322/QĐ-BXD - 2012); • Decree on solid waste management (SWM) (59/ND-CP - 2007) • Investment programme in solid waste treatment 2011-2020 (Decision 798 /2011/QĐ – TTg 2011) • Master Plans at provincial level on water and sanitation Irrigation • Law on the use and protection of irrigation system in Viet Nam (2001) • Law on water resource (adopted in 2012, effective from 2013) • Ordinance on the exploitation and protection of irrigation works (Order 03/2001 L CTN) • Decree on management, protection and integrated exploitation of resources and environment of hydropower and irrigation reservoirs (No. 112/2008/ND-CP)
Economic	• Tariff setting for: water supply (tariff range for clean water supply), solid waste, irrigation, and environmental charge on waste water and drainage (Decree 25/2013/ND-CP) • Exemptions from corporate income tax (ie. for Binh An Water Company – supply) • Exemptions from import tax on equipment, raw materials and materials; exemptions or reductions from corporate income tax for all investments in solid waste disposal facilities. • Exemptions from land use fees and land rent for water supply and solid waste disposal facilities (Decree 117/2007/ND-CP) • Concessional loans and guarantees for construction of wastewater treatment and solid waste disposal facilities (Decree No. 75/2011/ND-CP) from the Vietnam Development Bank • Grants and loans to rural households: National Target Programmes on Rural Water Supply and Sanitation (Decision No 366/2012/QĐ-TTg, and Decision No 277/2006/QĐ-TTg) and on Climate Change
Information	• National Rural Water Supply and Sanitation Strategy • National irrigation development strategy to 2020 • National Strategy for Environmental Protection to 2020, Vision to 2030 • Vietnam Strategy for Integrated Solid Waste Management 2015 (followed by the National Strategy of Integrated Solid Waste Management to 2025, Vision to 2050)

3.1 Regulatory instruments: key incentives, gaps and considerations

Viet Nam has a wide range of legal and regulatory instruments, including different prime ministerial decisions, decrees issued by the government and sector ministries and circulars that provide specific guidelines to support implementation.

Table 1: Hierarchy of legal instruments in Viet Nam

Legal instruments	Issuing body
The Constitution Laws (including Codes) Resolutions	National Assembly
Ordinances and resolutions	Standing Committee of the National Assembly
Decrees, regulations and resolutions	The government
Decisions and directives	The prime minister
Circulars and Decisions	Ministries

Source: Allens (2012).

Having reviewed the different levels of regulation in Framework 1, we identified the following incentives, gaps and considerations.

3.1.1 Investment regulations highlight water and sanitation as a priority sector

Water and sanitation is a priority sector within investment legislation. The inclusion of private investment in different sectors of the Vietnamese economy took place through specific changes in the Investment Law (2005), where investment in wastewater treatment and solid waste treatment were highlighted as areas that required investment capital from the national budget (108-2006-ND-CP).

In addition, investments in water and sanitation are part of specific legislation on the manner in which private actors and investors can engage in different sectors in Viet Nam through BOT, build-transfer-operate (BTO) or build-transfer (BT) contracts (Decree 108/2009/ND-CP). Under this legislation, clean water supply systems; water drainage systems; and wastewater and waste collection and treatment systems are all highlighted as areas for private sector participation. Under these types of contracts, the participation of government is limited to 49% of the total investment capital of the project. Under this legislation, the central government issues investment licences for private actors to enter into BOT, BTO and BT contracts. However, domestic investors do not need to acquire investment licenses for projects of less than VND 15 billion (approximately \$714,000) (Bureau of Economic Affairs, 2013).

In 2010, the government decided to trial PPPs in a number of sectors with support from the UK Department for International Development (DFID) and the World Bank (Decision 71/2010/QD-TTg) (see also Appendix 3). A new decree (15/2015/ND-CP) on the PPP investment form has recently been approved (14 February 2015). This includes projects for investments in construction, renovation, operation, conduction of business activities, management of infrastructure facilities and equipment and provision of public services in water supply systems, drainage systems, waste and wastewater collection and treatment systems and agriculture and rural infrastructure facilities. The PPP facility is managed by Rebel IMC, Scriptoria and Mekong Economics, and expects to promote \$170 billion in infrastructure investment, with 50% of the funding coming from the private sector. Clean water supply systems and waste treatment plants are two of the eight pilot investment initiatives proposed for the piloting.

3.1.2 Partial privatisation of state-owned enterprises

The investment law reform included the process of ‘equitisation’ (or partial privatisation) of SOEs by selling part of the assets or liabilities to the private sector, transforming SOEs into joint stock companies (JSCs)¹³ (see also Appendix 3). This reform has been relatively slow, and in the first 20 years resulted in a reduction in the number of SOEs from around 5,900 to 4,500 in 2004 (Nguyen and van Dijk, 2012) and to 3,135 in 2013 (GSO, 2014). Regulation of the equitisation process establishes the sectors that must remain under the control of the state but where there is potential to allow participation of the private sector (Decisions 14/2011/QD-TTg and 37/2014/QD-TTg). These include enterprises for public service provision including water supply, drainage, sewerage, environmental protection and waste collection, which fall within the ‘Fourth Group’ category, and require that between 50% and 65% of the holding remains under state ownership.¹⁴ The number of SoEs in the water and sanitation sector has increased rather than reduced in recent years (see Figure 14). This is mainly because of the expansion of water supply and solid waste collection to cities (beyond large metropolitan areas) and rural areas (see Appendix 3).

3.1.3 Quality and standards

Water quality classification and standards in Viet Nam include those related to water quality depending on the source (surface, coastal and groundwater) and effluent standards (for industrial and domestic wastewater). Water quality is also divided into Class A, for domestic supply, and Class B, for agriculture and aquaculture purposes. The Ministry of Health (MOH) sets technical standards on the quality of water for drinking (Technical Standards QCVN 01/2009/BYT and 02/2009/BYT), but these do not meet the norms for drinking and food processing (without boiling), and overall the basic standards for water quality are rarely met or enforced (interviews). The challenge in meeting water quality standards owes in part to low levels of cost recovery in the sub-sector by both public and private actors.

Standards are in place for the types of wastewater that can be discharged into different bodies of water (rivers, lakes and coastal areas), in particular where these bodies of water have specific designations – for domestic water supply, for sports and recreation or for the protection of aquatic life. Similarly to the case in water supply, enforcement of these standards is limited, particularly as large-scale partially privatised wastewater treatment companies, such as Bin Hung and NhieuLoc-Thi Nghe, are not SOEs and are therefore more difficult for Departments on Natural Resources and Environment (DONREs) to control.

In the case of sanitation in rural areas, the government has identified four acceptable technology options as hygienic toilets: composting latrines with sunken or raised vaults; and pour-flush latrines connected to a septic tank or soakage pit(s) (Circular 27/2011/TT-BYT). This is important as it sets standards for the provision of rural sanitation services, which are mostly privately financed. However, given limited enforcement, there remain low levels of septic tanks maintenance and appropriate discharge, which in most cases results in the overflow being discharged directly into waterways or drains (World Bank WSP, 2014).

3.2 Economic instruments: key incentives, gaps and considerations

3.2.1 Tariffs (see also Appendix 4)

Water supply

There are two stages in the tariff-setting process for all aspects of water supply in Viet Nam. The first step is at national level, where the Ministry of Finance establishes a range for water tariffs with the intention of allowing for full cost recovery, including for the production, treatment and distribution of water. The next step involves negotiation of the final tariff between local government (provincial or municipal) with the water supply company.

The water supply tariff is determined using information on average water use and the purpose of the water use. The water supply tariffs are normally set at a level that covers basic operational costs of water supply companies, but do not support the costs to these companies of making new investments or

¹³ <https://www.gov.uk/government/publications/vietnam-state-owned-enterprise-reform/vietnam-state-owned-enterprise-reform>

¹⁴ <http://www.allenoverly.com/publications/en-gb/Pages/New-opportunities-from-state-owned-enterprises-in-Vietnam.aspx>

expanding facilities (World Bank, 2011). In addition to the low tariffs, full cost recovery in the water supply sub-sector is challenged by an average water loss of 35%, also known as non-revenue water (ibid.).

The tariffs are set at a low level as it is perceived, though not documented, that a water tariff at the level of full cost recovery would not be affordable in Viet Nam (World Bank WSP, 2014). Our interviewees also pointed out that, given the lack of an independent economic regulator for the sub-sector, tariffs have been established below a level that guarantees full cost recovery. In spite of these perceptions, there have been some increases in water supply tariffs through specific projects such as the Asian Development Bank (ADB)-financed Water Sector Investment Program 2011-2020, where a 70% tariff increase was phased in for HCMC over five years and a one-off price increase of 85% was implemented in Da Nang (Venkatachalam, 2014). This demonstrates there is willingness to pay for improved water supply services, particularly in peri-urban areas, and the challenge for full cost recovery may be around an unwillingness to charge (risk of political unpopularity) as opposed to an unwillingness to pay (ibid.).

When there is a gap between the range indicated by the Ministry of Finance and that proposed by the service provider (company), the local government is responsible for filling the gap between the tariff and the price set by the company in order to enable cost recovery (for all services except those provided through BOT contracts). In many cases, this represents a significant subsidy provided to companies to enable cost recovery, and the central government in Viet Nam is looking for opportunities to increase the water supply tariff (Decision 1196/2014), to be able to remove all subsidies linked to the provision of clean water by 2020. There is currently no information available on the full scale of these subsidies in Viet Nam.

Wastewater

The wastewater tariff is calculated as a percentage of the water supply price (tariff). For domestic wastewater, the share of the overall water supply price must not exceed 10% and it does not include treatment costs, leading to the current wastewater tariff not covering full operations and maintenance costs of these services (World Bank, 2011). As a result, some of the wastewater treatment plants in Viet Nam are not operational, including Travaco in Tra Vinh province.

In addition to under-investment in existing infrastructure and facilities, in urban areas only a 30-40% share of households are connected to sewerage systems (World Bank, 2011). Wastewater that is not connected to sewerage systems is treated in on-site septic tanks or discharged directly into waterways (ibid.). Recent regulations establish the need for research and guidance to gradually increase the wastewater and sewerage service tariff, to include investment, management and operation costs for urban wastewater and sewerage systems (Decision 1196/2014/QD-TTg).

For industrial wastewater, the tariff range depends on whether the wastewater contains heavy metals. The price formula for industrial wastewater services consists of a fixed charge determined by the Ministry of Finance with MONRE (up to VND 2.5 million per year) and a variable charge, which depends on the volume of water discharged and the level of water pollution (chemical oxygen demand and total suspended solids). As industries have the obligation to treat their own water before discharge, and the full tariff is paid by the industries, wastewater treatment facilities (such as drainage and sewers) have developed most rapidly in industrial zones. However, full wastewater treatment is still limited.

Solid waste

Tariffs in the solid waste sub-sector also do not cover all production costs. Fees levied on households and hospitals are meant to cover only the costs of the initial collection of solid waste, with the costs of final disposal covered by the government. As a result, the government subsidises both the cost of transport to landfill and the cost of waste treatment. Recent regulations introduce a domestic solid waste treatment tariff that may include management, operation and investment costs for domestic solid waste treatment processes by 2020 (Decision 1196/2014/QD-TTg).

In the case of industrial or hazardous solid waste, the fee structure is meant to cover the full cost, from collection through treatment. Service contracts are paid by the waste generators and include (i) solid

waste collection, transportation and disposal; (ii) solid waste collection and transportation; and (iii) solid waste disposal. The tariffs for industrial and hazardous waste also come under district authorities' supervision as opposed to being set by the central government.

Irrigation

Irrigation dominates the national and regional government budget on agriculture – representing up to 80% of the sector budget. Similar to the case of other water tariffs, the fees for irrigation are established by the Ministry of Finance and ultimately adjusted by Provincial People's Committees according to local conditions. Irrigation fees are established mainly for rice cultivation and depend on the region and the technology used (the fee is per hectare per year). For short-term crops, the fee is set at 40% of the rice irrigation fee. In the case of perennial crops, the fee is per cubic metre of water used, depending on the irrigation method (i.e. electrically pumped or from a water reservoir or canal). Exemption from irrigation fees applies to agriculture for research and development, experimental production, irrigated areas of poor households and irrigated areas within the limited tenure of the household (i.e. for domestic use) (ADB, 2013).

Irrigation costs are also highly influenced by the cost of energy required for pumping water. An analysis of the impacts of energy costs for irrigation and related fossil fuel subsidies has recently been completed in Viet Nam (UNDP, 2013).

3.2.2 Income tax deductions or exemptions

One of the main incentives for investing in Viet Nam relates to tax deductions and exemptions, which are the same for both foreign investors and domestic enterprises. All investors in the water and sanitation sector operate within Corporate Income Tax (CIT). There is a new CIT of 22%, applicable since January 2014 (the previous CIT was 25%), but preferential tax treatments (exemptions, reductions, preferential rates) are also in place for specific sectors including infrastructure development, special economic zones and areas with difficult socioeconomic conditions (KPMG, 2013). Binh An Water Company (a water supply company), saw a full exemption from the CIT for the first four years, a deduction of 50% for the next four and a deduction of 10% from year 6 until the end of the 20 years' contract.

In addition, for sanitation, all investments in solid waste disposal facilities are exempt from import tax on equipment, raw materials and materials.

3.2.3 Land incentives

All land in Viet Nam is owned collectively and managed by the national government and, as such, neither foreigners nor Vietnamese nationals can own it. National government support includes covering the costs of ground clearance and exemption from land use levies. In general, investment in the water and sanitation sector is exempted from land use fees (Decree 117/2007/ND-CP) and water supply companies do not have to pay land rent for solid waste disposal facilities (Decree 59/2007/ND-CP). These exemptions also apply for pilot PPP initiatives.

According to some interviewees, water and sanitation companies sometimes pay compensation for the land to the government, as a goodwill gesture. However, in the case of wastewater treatment plants, where tariffs are below cost recovery, investment is highly contingent on these land incentives. In practice, wastewater companies have the right to use land in areas of operation that can later be used for development of real estate, mainly for housing.

3.2.4 Concessional finance from the Viet Nam Development Bank

Both public and private companies developing water supply and domestic solid waste facilities have priority access to concessional loans and guarantees from the Viet Nam Development Bank. Concessional loans can be provided up to 70% of the project's total investment (excluding working capital), while the maximum loan amount that can be provided to any given investor is 15% of the actual charter capital of the Viet Nam Development Bank (Decree 75/2011/ND-CP).

This concessional finance is available for building works to supply clean water for production and daily life activities (Groups A and B) and building works to treat wastewater and garbage in urban areas, industrial parks, economic zones, export processing zones, hi-tech parks, hospitals and craft village industrial complexes (Groups A and B). Solid waste treatment is also considered eligible for investment credit (Decree 1196/2014/QD-TTg).

3.2.5 National Target Programmes

National Target Programmes (NTPs) deploy government budget to support the implementation of specific strategies and achievement of specific targets. NTPs are generally implemented in phases. Currently, there is an NTP RWSS, which has been in its third phase since 2012 (Decision 366/2012/QD-TTg; Decision 277/2006/QD-TTg). This provides support to rural households through both grant and loans instruments (see Table 2).

In rural areas, funding for water and sanitation is expected to come mainly from households. This includes most of the construction costs and all operation, maintenance and management costs. The government supports this contribution through grants and loans. The grant system includes a contribution for poor households to an equivalent of 60-80% of the water supply facility and 50-70% of the sanitation facility. The remaining costs are assumed by the user, who can borrow from RWSS credit funds to fund up to 70-75% of construction (three- to five-year period) (MARD and MOC, 2010).

There is also an NTP Climate Change for the period 2009-2015,¹⁵ which includes the enhancement of international cooperation. The NTP has a steering committee chaired by the prime minister and an executive board chaired by MONRE (CBCC, 2010).

Table 2: Incentives provided to households through the NTP RWSS

Activity	Grants	Loans (subsidised)
Rural domestic water supply	Community water supply systems (central and provincial funds, beneficiary connection fee)	Household water supply systems
Rural sanitation	Public latrines and water supply in schools and clinics	Household sanitation (support from lending facility from Viet Nam Bank for Social Policies)
Capacity-building, communication, supervision and monitoring and evaluation	Promotion of demand for clean piped water, hygiene and behaviour change and increased demand for sanitation	

Source: BIC (2014).

3.3 Information instruments: key incentives, gaps and considerations

3.3.1 Industry hubs and associations

The main industry group within the water and sanitation sector is the Viet Nam Water Supply and Sewerage Association (VWSA). VWSA is focused on private sector actors, as a voluntary association that includes around 300 members. Individuals and organisations work in different aspects of the sector, including management, consultancy, research, training, construction, operation, exploitation and manufacture and trading of material and equipment. VWSA is a vehicle for its members to participate in policy development and in the improvement of the water and sanitation sector in Viet Nam.

¹⁵ The development goal is to minimise the vulnerability of the populations and landscapes of Viet Nam through appropriate measures of adaptation and mitigation.

3.3.2 Information services (water resources)

Information services are limited in the water and sanitation sector in Viet Nam. MONRE is currently drafting a circular on the development of surveys and inventories on water resources in Viet Nam, to be undertaken by the Centre for Master Planning and the Agency for Water Resources Management. The second draft of this has been sent to different stakeholders for comments, including donors, and if passed would provide the foundation for more information on the country's resources.

3.3.3 National strategies

The National Rural Water Supply and Sanitation Strategy highlights the role of the private sector in the rural economy in participating in piped water supply schemes as part of wider government efforts to phase out current government support mechanisms provided through grants and loans (see Section 3.2.5). The strategy foresees that, in the future, all RWSS construction and services will be provided by the private sector and by SOEs (Decision 104/2000/QD-TT).

The National Strategy for Environmental Protection to 2020 (Vision to 2030) highlights the role of equitisation (partial privatisation) and incentives for domestic and international enterprises in priority environmental programmes, including hazardous and hospital waste treatment and solid waste management in urban and industrial areas (Decision 256/2003/QD-TT). The Strategy for Integrated Solid Waste Management 2015 also highlights the role of equitisation in improving and expanding solid waste collection and transport (Decision 2149/2009/QD-TTg).

3.4 Key themes emerging from Framework 1

3.4.1 Regulatory instruments

- Recent investment legislation in Viet Nam has highlighted the water and sanitation sector as a priority sector for private sector participation. Except for irrigation, all other sub-sectors of water and sanitation are included as priority areas for private investment participation, in particular through dedicated contracts with private actors (BT, BOT, BTO) and through the piloting of PPPs.
- The role of the water and sanitation sector in providing public goods means that, in spite of openings for private investment, ownership by the private sector is capped at between 50% and 35% of total equity in companies in the sector. This means that, despite the equitisation of SOEs, water and sanitation companies will remain majority government owned.
- Although Viet Nam does have quality standards for water, and for managing effluent and sanitation facilities, enforcement is low and current practice rarely meets such standards. For newcomers (including private sector investors), this means complying with regulation will require introducing technologies or processes that may not be available or widely distributed in the country.

3.4.2 Economic Instruments

- Tariffs within the water and sanitation sector will need to be reformed in order to attract more private investment.
 - Although water supply tariffs are intended to secure full cost recovery, several studies demonstrate the current pricing system does not cover provide sufficient resources to support the investments needed to meet national targets for system expansion and improvements. Although studies demonstrate willingness among consumers to pay for better-quality water supply services, raising water tariffs will remain challenging, as there is currently no independent institution that can provide oversight to negotiations between the water utilities and the government. Also, as the tariff for domestic wastewater collection and treatment is currently based on a surcharge to the water supply tariff, reform of the water supply tariff will be critical to support investment in a number of water and sanitation sub-sectors.
 - Current tariffs for solid waste treatment do not even seek to recover all costs, and remain explicitly subsidised by governments (mainly provincial or district). Although recent regulation will raise domestic solid waste treatment tariffs to cover

management, operation and treatment processes, this could also present risks for private investors in the near term as the payment will shift from a single customer (the government – subsidies) to a large number of distributed customers (household – payments).

- Irrigation tariffs are also very low, and subsidised by the government, which limits opportunities for full cost recovery and leads to under-investment by the private sector in this sub-sector.
- In the absence of tariffs to create the necessary incentives for investment, tax deductions and exemptions from corporate income tax and land use fees are the main economic instruments for attracting private investment in the sector, particularly for wastewater and solid waste treatment.
- There is limited access to domestic or international debt finance within the sector. Although concessional finance and guarantees are available to public and private investors for the development of water supply and domestic solid waste facilities, these are provided only through Viet Nam Development Bank's specific pilot credit lines, which are supported by donor finance rather than by the commercial banking sector.
- In the case of RWSS, the main incentives are targeted toward households through the NTP RWSS' grants and concessional loans (debt).

3.4.3 Information instruments

- National strategies in the water and sanitation sector recognise the need to promote private investment. This is expected to be done mainly through the equitisation of companies linked to environmental protection, particularly hazardous and hospital waste treatment and solid waste collection and transport. These strategies also highlight a significant role for private investment in the development of water and sanitation services in rural areas.
- There is currently limited information available on both water resources (availability and current use) and specific opportunities for private investment in the sector (project lists, tenders, etc.). This affects financial planning for private actors both in water-intensive sectors such as industrial production and agriculture and in the water and sanitation sector itself. Without such information, the risks of over-extraction and under-investment are high.

4 Framework 2: sources of capital

In addition to understanding incentives at the country level (Framework 1), the design of interventions to mobilise private investment in CCD requires a clear picture of the sources of capital available (Framework 2). **See Whitley (2015) for more detail on the methodology and three frameworks used for this study.**

Framework 2 (Figure 9) outlines the different sources of capital available for the water and sanitation sub-sectors in Viet Nam, to show where there may be gaps that could be filled by the government of Viet Nam, donors and/or private investors. This framework was completed on the basis of interviews and desk-based research, including both formal datasets (government and international) and informal data from sources that included the local media. Our research was limited by the need to find information from these informal data sources in English (formal data sources were accessed in Vietnamese). In most cases, information is made publicly available through company press releases; however, the level of disclosure of financial information on these resources is limited.

For the purposes of this study, the water and sanitation sector includes (urban) water supply (large and small); wastewater collection and treatment; solid waste collection and treatment; rural water supply and sanitation; and irrigation and flood control. We include different categories for urban and rural areas because different ministries in Viet Nam establish policies and related incentives. MOC is responsible for water and sanitation in urban areas and MARD for water and sanitation in rural areas (see Figure 6). In addition, large urban areas offer the opportunity to operate under centralised systems at scale (connecting a large number of households), at least in the most densely populated parts of cities. In the urban periphery or rural areas, centralised systems are generally too costly.

Sub-sectors are categorised in the section and figures below to show where private finance is ‘established’, ‘emerging’ or ‘limited’: this is a qualitative judgement based on the scale and depth of private investment that has been identified. Sources of capital are also categorised as ‘international’ or ‘domestic’. Using the information collected in Framework 2, high-level estimates of the average scale of investment (public and private) by sub-sector are outlined in Figure 10.

Figure 9: Framework 2: sources of capital^{16,17}

Level of private investment		Established	Emerging				Limited
Sub-sectors/sources of capital		Urban water supply (large)*	Urban water supply (small) **	Solid waste collection and treatment ^{16***}	Wastewater collection and treatment ¹⁵	Rural water supply and sanitation****	Irrigation and flood control
Grants (private – including philanthropy and CSR)	Public	Domestic (national and local) International (ODA: Australia, Japan, Korea, Norway, Denmark, France, Finland, Belgium, US, Italy,)	Domestic (SAWACO) International (ODA: Australia, Denmark, Finland, UK, Netherlands, Belgium, Germany, Italy)	Domestic (national and local) International (ODA: Germany, Norway, Japan, France, Switzerland, US)	Domestic (national and local)	Domestic (NTP and local – People's Committees) International (DANIDA, AusAID and DFID, ODA: UK, New Zealand, Germany, Norway, UNICEF)	Domestic (MARD, DARD) International (AIFD, WB)
	Private		International (Bill & Melinda Gates Foundation)			International (Bill & Melinda Gates Foundation)	
Debt (private – including OTC, market traded, microfinance etc)	Public	International (ODA: Japan, France, WB-IDA, WB, ADB,)	International (ODA: Japan, WB-IDA, Germany, Korea, ADB Special Funds, France, Korea, Italy)	International (FMO, Svedfund, DEG, Finland, ODA: WB-IDA, ADB Special Funds, France, Japan)	International (WB, JICA, DANIDA)	Domestic (NTP and Vietnam Bank for Social Policies via credit groups) International (WB, ADB)	International (WB, ADB)
	Private	International (Malaysia)					
Equity (listed and unlisted, including balance sheet finance)	Public	Domestic (Joint Stock Companies)	Domestic (Joint Stock Companies)	Domestic (Joint Stock Companies)	Domestic (Joint Stock Companies)		
	Private	Domestic (Joint Stock Companies) International (Philippines)	Domestic (Joint Stock Companies and households)	Domestic (Joint Stock Companies) International (US)	Domestic (Joint Stock Companies)	Domestic (households)	Domestic International (Norway)
Guarantees (including loan insurance)	Public	Domestic (VDB see Section 4.2.4)					
	Private						

* Information for ODA is for the categories "water supply & sanitation – large systems" and "water supply – large systems" in the OECD DAC Database

** Information for ODA is for the category "basic drinking water supply and basic sanitation" in the OECD DAC Database

*** Information for ODA is for the categories "sanitation – large systems" in the OECD DAC Database

**** Information for ODA is for the categories "basic sanitation" in the OECD DAC Database

¹⁶ A number of solid waste plants with private investment have participated in the CDM to generate additional revenue. Registered projects are focused on methane avoidance or capture in solid waste treatment and landfills and include the Vietstar solid waste treatment facility, Cu Chi Minh Municipal Solid Waste Treatment Plant in HCMC and landfill owned by Bao Ngoc Green Environment Joint Stock Company.

¹⁷ CDM projects in wastewater treatment plants were linked mainly to methane capture and energy generation and include the wastewater treatment plant for methane recovery in Daklak built and operated by Thanh Vu JSC; a wastewater treatment plant within a tapioca starch company, Viet Ma Co., Ltd in coordination with Toshiba Corporation and Constrexim JSC; and a similar investment by Truong Thinh Co. Ltd. in coordination with Nguyen Vu Co. Ltd with technical support from Toshiba Corporation. <https://cdm.unfccc.int/Projects/DB/RWTUV1318938070.61/view> <https://cdm.unfccc.int/Projects/DB/JQA1242089022.88/view>

Figure 10: Average investment scale per sub-sector (indicative based on data collected for Framework 2)

Urban water supply (large)	Urban water supply (small)	Solid waste collection and treatment	Wastewater collection and treatment	Rural water supply and sanitation	Irrigation and flood control
USD 20-50 million	Not available (USD 200 per household unit)	USD 7-50 million	USD 300 million (no information available on cost of privately built industrial facilities)	USD 5 million	USD 25-180 million

4.1 Sources of capital, gaps, and considerations – by sub-sector

4.1.1 Established (private investment) -- Urban water supply (small)

Urban water supply (large)

Urban water supply (large systems) has the highest levels of private investment across water and sanitation sub-sectors, with the majority of this investment in the form of private actors holding equity in JSCs. Until the 1990s, all water supply investments were made through the government budget. Currently, there is significant private investment in water production and distribution of water to water utilities; however, sale of water to the final customer is still under the control of the government and SOEs.¹⁸

The first 100% foreign private company in the water supply sub-sector was Binh An Water Company's development of a water treatment plant in 1999. Binh An is a subsidiary of a Filipino company – the Manila Water Company, Inc. (part of Ayala Corporation).¹⁹ More recently, Manila Water expanded its presence in Vietnam by acquiring partial ownership of a number of Vietnamese water supply companies, including 49% of Thu Duc Water BOO Corp (in 2011); 47% of Kehn Dong Water Supply JSC (in 2012); 31% of Saigon Water Infrastructure Corporation (in 2014) (Olchondra, 2012; Tuoitrenews, 2013). Manila Water also participated in a \$44 million World Bank project in 2008 to reduce the volume of non-revenue water distributed in HCMC.

Additional funding for large-scale water supply projects is provided through both equity from JSCs and debt (mainly concessional loans) from multilateral development banks, such as the World Bank and ADB. For example, Binh Duong Water Supply Sewerage Environment Co., Ltd. (BIWASE) put in operation in 2014 a clean water supply plant with a daily capacity of 30 thousand m³, financed 89% (\$21.8 million) through a loan from the World Bank (Vietnam Breaking News, 2014).

Grants and loans for water supply are also provided through ODA and through the budgets of national and provincial People's Committees. This sub-sector has also been supported by commercial banks outside Viet Nam. The first commercial loan for a BOT project was provided by MayBank from Malaysia and Binh An Water Corporation (\$20 million). Also, the Malaysian Export Import Bank participates in funding the Thu Duc BOT water supply project by Lyonnaise Vietnam Water Supply Company.

¹⁸ Like the Saigon Water Corporation (SAWACO) in HCMC.

¹⁹ The Company subscribed to 31.47% of Saigon Water Infrastructure Corporation which is intended to be the Company's vehicle to further expand its presence in the Vietnam water and wastewater sector (Manila Water, 2014).

4.1.2 Emerging (private investment) – urban water supply (small); solid waste collection and treatment; wastewater collection and treatment; RWSS

Urban water supply (small)

Although not currently supplied through large projects, some parts of periphery and low-income areas of large cities also have access to piped water supply, through services fully funded by the end user. For example, of a total of around 8 million people in HCMC, nearly 2 million do not have access to a clean water supply. In low-income areas of the city where there is no access to piped water, demand is covered through trucks (normally operated by private transport cooperatives), contracted by the regional corporation SAWACO (Tuoitrenews, 2014).

Although not linked to private investment, the extension of piped water services to peri-urban areas is supported by the multilateral development banks. For example, the Mekong Delta Region Urban Upgrading Project includes this type of support through a World Bank International Development Association (IDA) loan to the government of Viet Nam in six cities in the Mekong Delta region (World Bank, 2012a).

Solid waste collection and treatment

Solid waste collection and treatment is considered a public good under Viet Nam's Corporation Law and is supported and subsidised by the government (World Bank WSP, 2007). Solid waste services are mainly carried out by URENCOs, although the private sector is also involved in the management of publicly owned facilities and in early investments in the sub-sector. Fees for solid waste management are between VND 4,600 and 6,600 per household per month, and additional income sources are available through the recovery of recyclable material, such as paper, plastic and glass (World Bank, 2011; World Bank WSP, 2012).

The largest solid waste treatment complex in the country is operated by Vietstar Environmental JSC, a member of Lemna Group, a US-based holding company. The complex supports 1,200 tons of domestic waste from HCMC. The total investment of around \$53 million was arranged in 2009 by the Dutch Development Finance Institution, FMO, which provided \$12.4 million, with contributions from a long-term loan from the German Development Bank's (KfW's) German Investment Corporation (DEG) (\$12.4 million) and capital from Lemna International (\$10.8 million), Swedfund (\$8.2 million) and Vietnam Infrastructure Supero Ltd, a private equity fund (\$5.6 million) (DEG, 2009). The project is also registered under the CDM.

ODA remains a critical source of funding for solid waste collection and treatment. For example BIWASE built a composting plant of 420 tons per day, funded through an ODA concessional loan from the Finnish government (€6.7 million) and the local Binh Duong province budget (57%) (BIWASE, 2013). In general, there is an absence of local commercial bank finance available to the sub-sector, given the perceived high risks in implementation and the low internal rate of return (ibid.).

Wastewater collection and treatment

Wastewater collection and treatment is considered a public good under the Corporation Law, and therefore receives subsidies from the government (particularly domestic wastewater). In general, the role of private investment in this sub-sector is still emerging. So far, domestic wastewater collection (drainage/sewerage) and treatment is still mainly funded through ODA loans, with the main donors being the World Bank, the Japan International Cooperation Agency (JICA) and the Danish International Development Agency (Danida), with an expectation of private sector service provision through specific contracts (including BOT, BT and early PPP initiatives) (BIWASE, 2013; Camix Technology, 2013; Vietnam Plus, 2011; World Bank WSP, 2007). In the case of industrial wastewater, responsibility for collection and treatment lies with the generator, and facilities are generally developed by the SOEs or JSCs (partially privatised companies) that generate the effluent, in collaboration with foreign companies that provide the waste treatment technologies.

For example, Thanh Vu JSC, one of the largest suppliers of agriculture foods in Viet Nam, and specialising in the production of tapioca products, has developed its own wastewater system and treatment plant. This has also been registered as a project under the CDM. In Binh Duong province, a

\$318 million wastewater treatment plant with a capacity of 17 thousand m³ is being funded by a loan from JICA (85%), with the balance funded by BIWASE (Vietnam Plus, 2015).

Similarly to water supply, wastewater collection and treatment is part of the infrastructure development required for the urbanisation process. For example, the World Bank's Da Nang Sustainable City Development Project includes a significant component to improve drainage, wastewater collection and treatment. The total investment is \$202.5 million, with a contribution from the Vietnamese government of \$69.7 (World Bank, 2013b). The new wastewater treatment plants are expected to be operated through the private sector, with the possibility of establishing build-operate (BO) contracts.

Rural water supply and sanitation

RWSS is financed mainly through conditional transfers from the government budget through the NTP RWSS (see Section 3.2.5). Funding is composed of a combination of national and local government grants; ODA, including flows from Australia, Denmark and the UK's development assistance agencies; and concessional loans from multilateral institutions such as the World Bank (World Bank, 2012b). This sub-sector also relies significantly on investment by rural households, which are the ultimate beneficiaries of the NTPs.

For example, in a rural area near Ha Noi, a project to build a clean water supply facility for Trung Hoa commune was funded by the World Bank under the NTP (60%), the People's Committee of Ha Noi (30%) and local individuals (10%), to a total investment of \$4.6 million (World Bank, 2012b). The project includes communal piped networks for water supply – for which household contribution is made through the payment of the connection fee – and household-level systems funded by individuals through subsidised loans from the NTP (ibid.). The programme expects to run under tariffs that generate cost recovery, based on a Rural Water Supply Enterprise model piloted by the World Bank.

The case is similar for rural sanitation. For public or community facilities (such as schools and clinics), funding comes mainly from the NTP3. For household-level sanitation (mainly latrines), a credit is granted by the Viet Nam Bank for Social Policies up to 60% of the capital costs (\$200) over a five-year period, with the balance funded by households (World Bank, 2012b). This arrangement requires the creation of credit groups with the Women's and Farmer's Unions, as households can borrow from the Bank for Social Policies only through such groups (ibid.).

4.1.3 Limited (private investment) – irrigation and flood control

Participation of the private sector in this sub-sector is still limited, and sources of capital are restricted to the public sector, both domestic (local and national) and international (from the World Bank, ADB and the French Development Agency) (World Bank, 2013a; Viet Nam News, 2010, 2015; Vietnam Plus, 2014). There has also been early research in a World Bank project into opportunities for private investment and private participation in irrigation and drainage management companies, which are currently under publicly ownership (World Bank, 2013a).

4.2 Key themes emerging from Framework 2

4.2.1 Sources of capital for large-scale investment (central parts of urban areas)

- Large-scale investment in the sector is possible only in the densest parts of urban areas, where urban water supply, solid waste collection and treatment and wastewater collection and treatment can be centralised, and therefore requires large-scale investment.
- There is a prominent role for the government (at the national and local levels) in large-scale investments in urban areas (large urban water supply, solid waste and waste water collection and treatment, irrigation). Capital comes from budget transfers ('grants'), which are then directed to specific investments by province and district People's Committees.
- These government investments in larger-scale water and sanitation infrastructure (including for irrigation) are often complemented by concessional loans from international partners. International public finance, through ODA, continues to be one of the main sources of investment in the water and sanitation sector. Large-scale projects in this sector are funded

through concessional loans from multilateral institutions such as the World Bank and ADB, but also from bilateral partners such as Japan and France.

- The government also makes investments in these ‘large-scale’ sub-sectors through government ownership of a number of the companies providing water and sanitation services in urban areas. This investment mostly takes place through ownership of SoEs and through the government’s majority ownership in JSCs (companies that have been partially privatised through the ‘equitisation’ process).
- Most of this equity from the private sector in JSCs is of Vietnamese origin (domestic private finance). International equity has been found only in large urban water supply (from the Philippines) and solid waste collection and treatment (from the US).
- The national government has also made available concessional loans and guarantees through the Viet Nam Development Bank, to support investments in water supply and solid waste infrastructure, with concessional loans available for up to 70% of a project’s total investment.

4.2.2 Sources of capital for small-scale investment (peripheral urban areas and rural areas)

- Smaller-scale investment in the sector is needed for peripheral urban areas and rural areas, which the more centralised urban water supply, sanitation and irrigation infrastructure has not reached and where a more decentralised model of investment is required.
- The largest source of capital for these smaller-scale investments is domestic public finance, with the central government and local governments providing significant investment through the NTP RWSS. The NTP RWSS provides both grants and loans for household-level investment.
- Private investment by households is most significant in the areas of rural water supply and sanitation and in small-scale urban water supply. Households can access subsidised loans from the NTP RWSS through community-level credit groups.
- There is a far less prominent role for donors and ODA finance in the water and sanitation sector at these smaller scales. ODA grants from international partners mainly support community-level water supply and public sanitation services (public toilets and latrines) and also contribute to the NTP RWSS.

4.2.3 Sources of capital for the transition from small- to large-scale investment (urbanisation)

- Urbanisation is a significant driver of the identification of needs in infrastructure for the provision of services, including those related to water and sanitation sector. Whereas large-scale infrastructure in most sub-sectors (water supply treatment plants, wastewater collection systems, wastewater treatment plants, solid waste treatment plants and large irrigation and flood control systems) is in place for large cities such as Ha Noi and HCMC; the growing urbanisation process will increase the need to develop smaller-scale infrastructure to provide these services for rural-to-urban transition areas. The World Bank and ADB have begun to support this process within their urban development portfolios, but it is likely that further investment will be required in the short term, with a significant and growing role for investment by small and medium domestic private companies.

5 Framework 3: scale of support

5.1 Findings – summary (Framework 3)

The goal of completing Framework 3 was to understand trends in investment across sub-sectors of the water and sanitation sector. Unfortunately, as a result of significant gaps in international and national datasets, in terms of both year and sub-sector coverage, it was only possible to complete a framework that would show investment trends over time for ODA as opposed to all sources of finance (see Figure 11).

In addition, it was not possible to identify levels of private investment in the water and sanitation sector beyond FDI, as domestic investment was not covered by any of the national or international datasets. It was also impossible to find sub-sector information for FDI, with the lowest level of classification of the General Statistic Office in Viet Nam being ‘water and sanitation’ (see Figure 12). When information was available by sub-sector, datasets tracked it differently. For example, the OECD divides the sector into 11 sub-sectors, mainly around scale (basic vs. large water supply and/or sanitation systems), water management, water resource protection, river basin development, waste management and disposal and education and training. Within the national budget, the sector groups are water supply, wastewater drainage, waste water treatment and solid waste. These classifications are different from, and overlapping with, the sub-sectors used in this analysis, based on UN International Standard Industrial Classification of All Economic Activities codes.

The Vietnamese government also provides information on the number of enterprises across a number of the sub-sectors in the water and sanitation sector, which can also provide some indication or proxy for wider changes in public and private investment (see Figure 14).

This general lack of data has significant implications for tracking climate finance effectiveness, not only because it pertains to private investment. If it is not possible to track support and investment at sub-sector level, it is not possible to make a causal link between the support provided and the shifts or increases in climate-compatible activities and investment.

It was possible, however, to find sub-sector information for public support and investment to Viet Nam’s water and sanitation sector in the form of national budget expenditure, ODA, other official flows (OOF) and FSF and from dedicated multilateral climate funds (from Climate Funds Update (CFU)) (across a number of different years). This allows us to observe some interesting trends in the relative scale of support and investment from these different public sources and different emphases in terms of sub-sector support and investment.

5.2 Key themes emerging from Framework 3

- Investment in the water and sanitation sector in Viet Nam is supported primarily by the national government budget, paired with international public funding, mainly through ODA. Climate finance has also had a significant role in the sector, particularly during the FSF period (2010-2012). The role of FDI in the sector is still relatively low (see Figure 11).
- National government investment was steady in the period 2009-2013, with the share invested in water and sanitation remaining between 3% and 4% in all years. Information on how such investment is distributed across water supply, sewerage, and waste management activities is not available (see Figure 11).

- ODA funding for water and sanitation sector increased around 60% between 2009 and 2013, with most investment through concessional loans (around 75% of total ODA funding). ODA has mainly supported ‘large water supply and sanitation systems’ and small-scale ‘basic drinking water supply and basic sanitation’. In this period, donors diversified their portfolios from investing predominantly in large combined water supply and sanitation systems towards including combined basic drinking water supply and basic sanitation (mainly in rural areas), large sanitation systems and support for policy and administration management (see Figure 13). Japan and the World Bank (IDA) are the primary providers of ODA in the sector, followed by Germany, Korea and Australia (grants only). OOF funding has been relatively small, but has supported basic drinking water supply (through the Water Investment Programme funded by ADB).
- As Viet Nam has been considered a middle-income country since 2009, it is expected that the level of ODA directed towards the country will decline in coming years, and this will have significant implications for investment in the sector. High levels of current ODA in Viet Nam’s water and sanitation sector points to a need for the country to increase domestic budget funding or wider private investment in the sector.
- In terms of climate finance, most ODA to the water supply and sanitation sector is not considered climate-relevant (the Rio Marker is blank or zero) (see Figure 12). In cases where the investment is marked as climate-relevant (Rio Marker is 1 or 2), the adaptation-relevant investments are for large sanitation systems and water resource policy and administration management and the mitigation-relevant investments are for basic drinking water supply and sanitation (rural water and sanitation) and waste management.
- In contrast with climate finance tracked by the OECD, climate finance tracked by ODI during the FSF (2010-2012) is relatively high in Viet Nam (see Figure 11). This includes eight projects supported by JICA (the largest donor) and Italy. The largest project entails the construction of a wastewater drainage system in the southern area of Binh Duong province. Other projects are supporting the development of a water supply treatment plant (for drinking water and irrigation), wastewater drainage and wider capacity development in the sector. It is important to note there is significant duplication between data reviewed on FSF and other datasets on investment in the sector. For example, of the eight FSF projects identified in the water and sanitation sector, five were ODA or OOF and therefore are likely to be included in the OECD Development Assistance Committee (DAC) database, although they may have not been tagged as ‘climate-relevant’ within the OECD data.
- Public and private domestic investment is generally provided by SOEs and JSCs (partially privatised companies). According to the Enterprise Survey, the number of SOEs in the water and sanitation sector has remain relatively stable or increased, which contradicts the sector objectives, which include a move towards partial privatisation (equitisation) of the companies in the sector. This reflects the continued importance of government investment in the sector, in the particular for water collection, treatment and supply sub-sector (where the number of SOEs tripled between 2009 and 2013) and in the collection of non-toxic waste (where the number of SOEs increased by almost seven times) (see Figure 14).
- Information management and disclosure is limited in the water and sanitation sector. Examples of this includes limited financial and non-financial disclosure of information relating to SOEs, including on the level of lending by state-owned banks to SOEs (World Bank, 2014). Although attracting private investment is a priority area for the water and sanitation sector in many government strategies, and Viet Nam has attracted relatively high levels of FDI, there has been limited foreign investment in the sector. Investment in water and sanitation represents less than 1% of total registered capital since Viet Nam opened its markets (the majority of FDI has gone to the manufacturing sector and real estate activities). This is likely because of limitations in ownership for foreign investors in the provision of public services (see Framework 1). Information on FDI by sub-sector is not available.

Figure 11: Framework 3 – scale of support (see also Appendix 5)

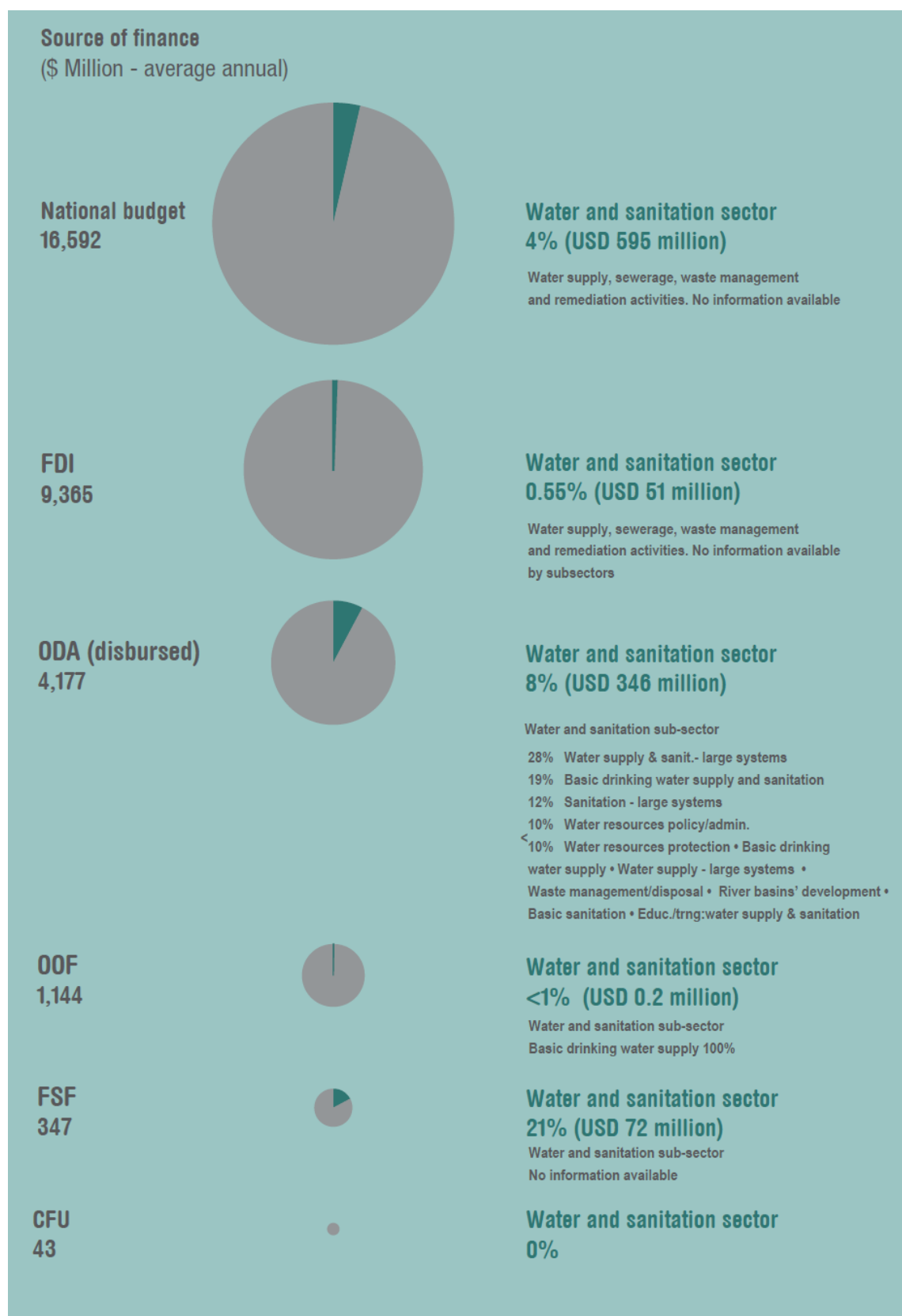


Figure 12: Framework 3 – scale of support for climate change within ODA

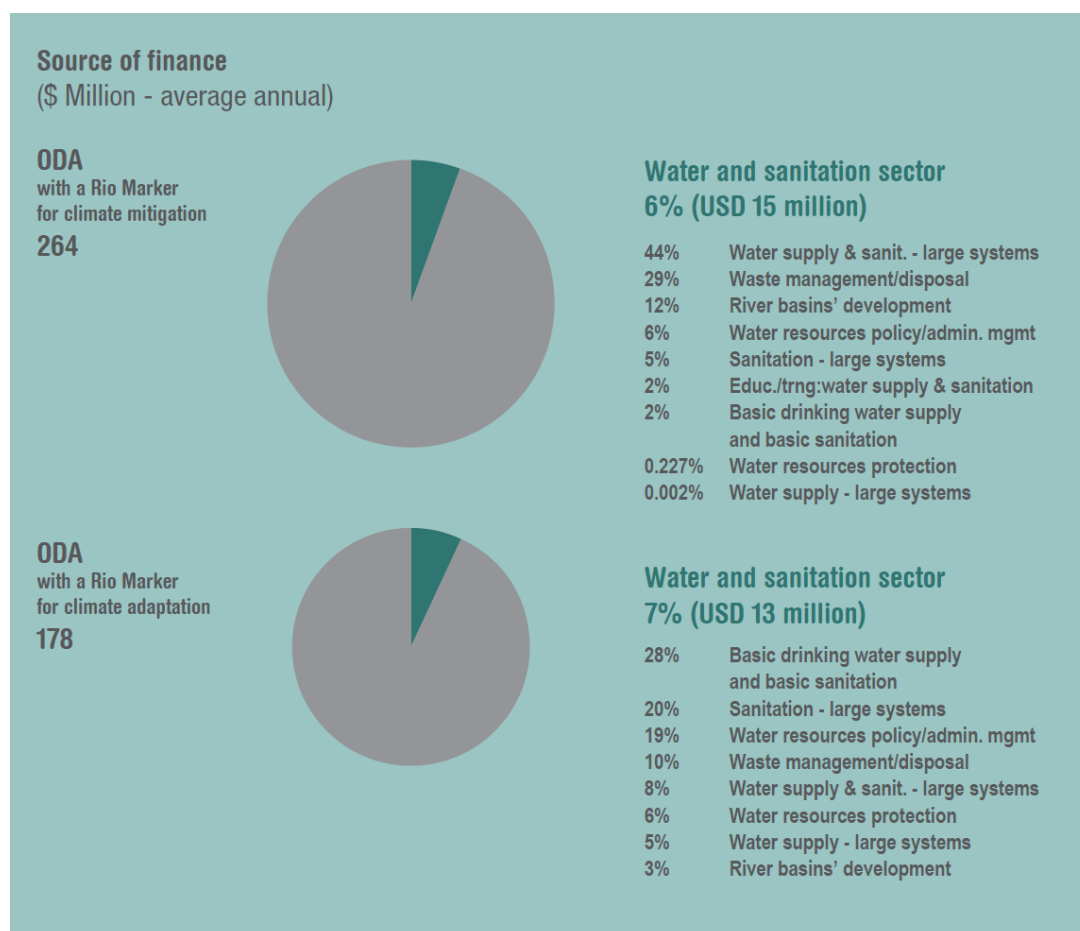


Figure 13: ODA to water and sanitation sub-sectors in Viet Nam 2009-2013 (current US\$ million)

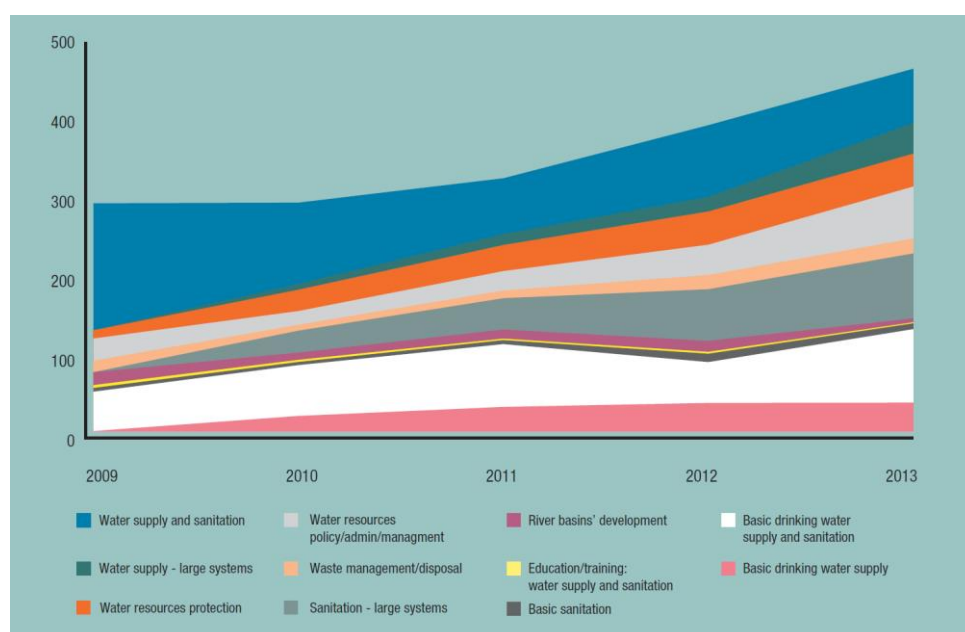


Figure 14: Enterprises in the water and sanitation sector in Viet Nam (2000-2013)/20/21

ISIC Code	ISIC Code Description	2009				2011				2012			
		Total	SOE	FDI (100%) ⁵⁰	Non-State ⁵¹	Total	SOE	FDI (100%) 1/	Non-state 2/	Total	SOE	FDI (100%) 1/	Non-state 2/
3600	Water collection, treatment and supply	334	25	1	300	428	80	1	347	449	81	1	367
37001	Sewerage	21	2	0	19	21	2	0	19	17	2	1	14
37002	Waste water treatment	132	1	3	128	168	1	4	163	153	2	5	146
3811	Collection of non toxic waste	323	16	0	307	508	90	0	418	547	104	1	442
3812	Collection of toxic waste	12	0	0	12	18	0	0	18	16	0	0	16
3821	Treatment and disposal of non toxic waste	34	1	1	32	78	4	3	71	78	4	4	70
3822	Treatment and disposal of toxic waste	16	0	0	16	23	0	0	23	18	0	0	18
3830	Material recovery and waste recycling	89	0	3	86	109	0	3	106	104	0	4	100

Source: Enterprise survey, GSO (2010-2014).

²⁰ FDI represents companies with either 100% of foreign ownership or that are joint stocks with both foreign and Vietnamese capital.

²¹ Non-state companies include cooperatives, JSCs and private companies. JSCs may also have government investment.

6 Conclusions

There were two goals in applying this diagnostic tool to map incentives and investment in the water and sanitation sector in Viet Nam. The first was to address the limited availability of information on private climate finance beyond renewable energy and outside OECD countries and the BRICS; and the second was to increase understanding of the role of domestic and public finance and incentives in shaping international and domestic private investment. More specifically, the application of this diagnostic tool provides the core information needed by governments and other stakeholders seeking to design interventions to mobilise private climate finance. **For more information on the methodology and frameworks used in this report, see Whitley (2015).**

We were able to complete Frameworks 1 and 2 at sub-sector level for the water and sanitation sector in Viet Nam using government websites and documents, interviews with key stakeholders (see Appendix 1) and publicly available information and international datasets. This provided primarily qualitative information that could be used to inform climate-finance spending, particularly as it pertains to actors and programmes that seek to mobilise private investment.

We were unable to complete Framework 3 at sector or sub-sector level because of the absence of publicly available data on private investment, discrepancies in the definitions and categories used in international and national datasets, gaps in coverage for particular years and the fact that a number of actors do not collect sub-sector data. This has significant implications for the second aim of this research, which was to determine links between incentives and investment within a sector. It also has serious implications for the assessment of climate finance effectiveness, and not only as it pertains to private investment. If it is not possible to track support and investment at sub-sector level, it will be very challenging to make a causal link between the support provided and any shifts or increases in climate-compatible activities and investment.

However, by linking the key findings across the three frameworks, and comparing them with Viet Nam's stated objectives for (i) mobilising private investment and (ii) addressing climate change and green growth (see Section 2), we were able to identify some important considerations for the deployment of climate finance in Vietnam's water and sanitation that aims to mobilise private investment:

- The highest levels of investment in the water and sanitation sector in Viet Nam currently come from the national government budget and recently rising levels of ODA. As Viet Nam has now reached middle-income status, it is anticipated that the level of ODA directed towards the country will fall, although perhaps more slowly in the areas of water and sanitation, particularly in rural areas. As a result, the government of Viet Nam has made it a priority to increase levels of private investment in the sector, in terms of both domestic and international sources. This has been promoted in part through the partial privatisation of a number of SOEs in the sector and the introduction of pilots for PPPs, although companies in the sector must remain majority state-owned.
- One of the most significant barriers to private investment in water and sanitation in Vietnam is the low level of tariffs or absence of fees for use, which lead to high levels of government subsidy. This is a barrier to private investment as companies and investors cannot achieve full cost recovery, let alone profits that will allow for reinvestment. This is also a barrier to increasing government budgets at the national, provincial and municipal levels to allow for greater enforcement of standards and regulations in the sector and

improvement and expansion of services. Reform is required in all sub-sectors, but in particular in wastewater collection and treatment.

- Viet Nam's Green Growth Strategy includes as a source of climate finance fiscal policy reform, including the development of new eco-tax and carbon taxes. Applying such reform to the water and sanitation sector in Viet Nam should follow on from, or be applied in sequence with, broader tariff reform to ensure full cost recovery for water and sanitation services. In doing this, Viet Nam will need to strike a balance between ensuring affordable water and sanitation services and increasing private investment. Initial studies on willingness to pay for improved services suggest this balance could be achieved.
- Guaranteeing water security is one of the main considerations under Viet Nam's climate policy. This includes provision of clean water and water for irrigation. Although private investment is not established in many of the sub-sectors of water and sanitation, private sector actors (including international investors) are making investments in large water supply infrastructure in the densest parts of urban areas, and there are opportunities both for private investment in water supply to be scaled up and for private investment to expand into other sub-sectors, particularly waste management.
- Improving waste management has also been highlighted as important to address climate change issues in Viet Nam, including through reuse, recycling and waste to energy projects. There is evidence of emerging private sector participation both in waste management and disposal activities and in around wastewater collection and treatment, again particularly in large urban areas. This has been supported by recent changes in the investment law, including the PPP decree; and the provision of financial support mainly through concessional loans from multilateral and bilateral development banks. Further specific incentives may be developed, in particular for industrial waste management. For domestic waste, a tariff reform is required to promote investment, particularly in waste disposal.
- Another area for additional private investment is smaller-scale water and sanitation systems and services in both urban and rural areas. This investment will likely come from domestic small and medium-sized enterprises (SMEs) for which new incentives could be developed, particularly as part of the wider urbanisation process in Viet Nam. Investment needs for the transition between rural and urban areas in all provinces of the country will require the participation of SMEs, which are so far not covered by current incentives. This will require specific measures such as concessional loans to support SME investment in the sector, focusing on URENCOs or water supply enterprises in rural areas.
- Viet Nam has demonstrated the potential to support household investment in water and sanitation through grants and loans through credit groups. Through the NTP RWSS, such instruments or parallel incentives for small businesses could be used to support the development of water and sanitation services as part of the urbanisation process.
- Supporting private investment will also require improved information on water resources and levels of use, which are currently limited in Viet Nam. Higher government income from tariff reform and a reduction in non-revenue water could allow governments to make further investments in databases and research on water resources, which is also a priority under the climate change strategy.
- As flood and salinisation risks are high in Viet Nam, particularly in delta areas, additional government capacity and resources will be required to track salinisation levels, to set and enforce standards for groundwater use and surface water treatment and to allow for increased water storage for consumption and irrigation purposes. These could be priority areas for public as opposed to private investment.
- Given the current investment trends and incentives in Viet Nam's water and sanitation sector, the main source of private investment in the short to medium term will be domestic rather than foreign. Therefore, finding ways in which climate finance could support the domestic private sector need to be developed, particularly focused on government support to water and sanitation SMEs. There is also a role for climate finance in supporting wider efforts to reform tariffs and fees within the sector, which can both improve prospects for private investment and allow for parallel increases in government budget resources to

invest in those areas of water and sanitation that are priorities at national, provincial and local level.

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Appendix 1: Urban system classification in Viet Nam²²

Classification	Description	Examples
Special	≥5 million population ≥ 90% Non-agricultural labour ratio ≥ 15,000 people/km ² population density	Ha Noi, Ho Chi Minh City
Grade I	≥1 million population (city under the central state administration) ≥0.5 million population (city under the provincial administration) ≥ 85% Non-agricultural labour ratio ≥ 12,000 people/km ² Population density (city under central state administration) ≥ 10,000 people/km ² Population density (city under Provincial administration)	Central cities: Hai Phong, Da Nang and Can Tho 8 Provincial cities including: Hue, Da Lat, Nha Trang, Quy Nhon, Buon Ma Thuot, Thai Nguyen and Nam Dinh
Grade II	≥ 300,000 population ≥ 800,000 population (if city under control of provincial administration) ≥ 80% Non-agricultural labour ratio ≥ 10,000 people/km ² Population density (under central state administration) ≥ 8,000 people/km ² Population density (under provincial administration)	11 Provincial cities including: Bien Hoa, Ha Long, Vung Tau, Viet Tri, Hai Duong, Thanh Hoa, My Tho, Long Xuyen, Pleiku, Phan Thiet and Ca Mau
Grade III	≥ 150,000 population ≥ 75% Non-agricultural labour ratio ≥ 6,000 people/km ²	47 towns or provincial cities
Grade IV	≥ 50,000 population ≥ 70% Non-agricultural labour ratio ≥ 4,000 people/km ²	42 towns, townships, hamlets
Grade V	≥ 4,000 population ≥ 65% Non-agricultural labour ratio ≥ 2,000 people/km ²	640 townlets

Source: DELGOSEA (n.d.); Stoxplus (2013)

²² Decree 42/2009/ND-CP.

Appendix 2: Interviewees

No	Title	Name	Position	Organisation
1	Dr	Laura Latinger	Senior Economist	World Bank
2	Mr	Le Duy Hung	Senior Infrastructure Specialist	World Bank
3	Mr	Muzamil Hussain	Policy and Corporate Manager	DFID, British Embassy
4	Mrs	Le Thi Bich	Officer	DFID, British Embassy
5	Mr	Kenichi Yamamoto	Deputy Chief Representative, PPP specialist	JICA
6	Dr	Pham Hoang Mai	Director General of Department	Department of Science, Education, Natural Resource and Environment, Ministry of Planning and Investment
7	Ms	Nguyen Viet Trinh	Officer	Department of Science, Education, Natural Resource and Environment, Ministry of Planning and Investment
8	Mr	Le Trong Minh	Deputy Editor in Chief	Viet Nam Investment Review
9	Mr	Nguyen Hoang Linh	Reporter	Viet Nam Investment Review
16	Mr	Nguyen Chi Khoa	Director of Management Board	Ha Noi Water Supply Company
17	Mr	Le Duy HUNG	Vice-Manager	Ha Noi Water Supply Company
18	Mr	Nguyen Duc Thanh	Officer of Planning Division	Ha Noi Water Supply Company
19	Mr	Hoai Linh	Officer of Technical Division	Ha Noi Water Supply Company
20	Mrs	Le Minh Thao	Officer	Ha Noi Water Supply Company
21	Mr	Dinh Pham Hien	Head of Division on Bilateral Cooperation	International Cooperation Department, MARD
22	Mr	Nguyen Anh Minh	Officer	International Cooperation Department, MARD
27	Prof Dr	Dao Trong Tu	Director	Centre for Water Resource Development and Adaptation to Climate Change, MARD
28	Mr	Nguyen Quang Huu	Head of Planning Division	Administration of Water Resource Management, MONRE
29	Mr	Dinh Xuan Quang	Administration in Chief	Administration of Water Resource Management, MONRE
30	Mrs	Nguyen Phuong Hoa	Deputy Head of Surface Water Extraction Division	Administration of Water Resource Management, MONRE
31	Mr	Nguyen ...Thang	Deputy Director General	Institute of Strategy and Policy on Natural resource and Environment, MONRE
32	Mr	Dinh Van Thang	Head of Environment and Natural Resource Economic Division	Institute of Strategy and Policy on Natural resource and Environment, MONRE
33	Mrs	Nguyen Thi Tram	Head of Water Resource Management Division	Institute of Strategy and Policy on Natural resource and Environment, MONRE
34	Mr	Tran Quoc Hy	Vice-Manager, Planning Investment Department,	Department of Transport, HCM People's Committee
35	Mr	Nguyen Quoc Minh	Officer	Department of Transport, HCM People's Committee
36	Mr	Le Huu Quang	Deputy Director of Division on Investment and Planning	SAWACO
37	Ms	La Ngoc Hanh	Deputy Head of Division on International Cooperation	SAWACO

No	Title	Name	Position	Organisation
38	Mr	Tran Trong Khuong	Head of Division on Planning and Investment	Steering Centre of Urban Flood Control Programme, HCMC
39	Mr	Nguyen Huy Binh	Deputy Head of Division on Planning and Investment	Steering Centre of Urban Flood Control Programme, HCMC
40	Mr	Tran Trong Nghia	Officer, Division on Planning and Investment	Steering Centre of Urban Flood Control Programme, HCMC
41	Mr	Lam Nguyen Khoi	Deputy Director	Department of Planning and Investment, HCMC People's Committee
42	Mr	Cao Thanh An	Deputy Head of Division on PPP	Department of Planning and Investment, HCMC People's Committee
43	Mr	Tang Minh Chi	Officer, Division on PPP	Department of Planning and Investment, HCMC People's Committee
44	Mrs	Nguyen Le Hoang Anh	Officer, Division on PPP	Department of Planning and Investment, HCMC People's Committee
47	Mr	Le Minh Tam	Deputy Head of Division of Solid Waste Management	DONRE
48	Mrs	Pham Thi Kim Ngan	Officer, Climate Change Coordination Office	DONRE
49	Mrs	Nguyen Thi Men	Officer, Division of Solid Waste Management	DONRE
50	Mr	Vo Thanh Tung	Officer, Division of Solid Waste Management	DONRE

Appendix 3: Privatisation and the emerging role of PPPs in Viet Nam

According to ADB's Public Private Partnership Handbook (ADB, 2008), the term 'public-private partnership' describes a range of possible relationships among public and private entities in the context of infrastructure and other services. Other terms used for this type of activity include private sector participation (PSP) and privatisation. While the three terms are sometimes used interchangeably, ADB outlines the following differences:

- PPPs are an arrangement (typically medium to long term) that includes the private sector while structuring a role for government to ensure social obligations are met and successful sector reforms and public investments achieved. Sectors in which PPPs have been completed include power generation and distribution, water and sanitation, pipelines, railways and roads.
- PSP contracts transfer obligations to the private sector rather than emphasising the opportunity for partnership.
- Privatisation involves the sale of shares or ownership in a company or the sale of operating assets or services owned by the public sector. Privatisation is most common and more widely accepted in sectors that are not traditionally considered public services, such as manufacturing, construction, etc.

In 2012, it was estimated by ADB that the total investment requirement for infrastructure in Viet Nam would be \$150-160 billion through 2022 (ADB and AFD, 2012). Currently, infrastructure investment is state-led, and as a percentage of GDP is relatively high by international standards (approximately 10% per year). Historically, investment in infrastructure in Viet Nam has been sourced primarily from the state budget and ODA and channelled through SOEs, but as investment needs grow, and ODA is projected to fall, it is possible additional resources could be mobilised through the use of PPPs (*ibid.*).

Public-private partnerships

Thus far, PPPs in infrastructure in Viet Nam have been very limited (see the tables below). To address this gap, in 2010 the government launched a framework and pilot facility for PPP projects (Decree 71/2010/QĐ-TTg) with support from DFID and the World Bank. The facility is managed by Rebel IMC, Scriptoria and Mekong Economics and expects to promote \$170 billion in infrastructure investment, with 50% of the funding coming from the private sector.²³

Based on ADB analysis, the sectors of primary interest for the development of PPPs are power, transport (i.e. toll roads, seaports and airports) and water (ADB and AFD, 2012). Clean water supply systems and waste treatment plants are two of the eight proposed pilot investments through PPP forms (Decision 71/2010/QĐ-TTg).

However, as outlined in the balance of this report, challenges remain with respect to making PPPs in the water and sanitation sector bankable for private sector partners without addressing underlying low tariff

²³ <http://rebelgroup.com/int/projects/development-of-public-private-partnership-support-facility-in-vietnam/335>

issues or providing viability gap financing in the form of credit support and guarantees (ADB and AFD, 2012). In addition, stakeholders interviewed for the study indicated a lack of government capacity for PPP development as a constraint to investment in infrastructure, given gaps in civil servant understanding of PPP structuring and mismatched expectations about private investment in PPPs, with private investment seen as simply covering public sector budget shortfalls, within public sector conceived and managed projects.

Table 1 Viet Nam – Total Number of Public–Private Partnership Projects by Type and Primary Sector, 1990–2008

Sector	Concession	Divestiture	Greenfield Project	Management and Lease Contract	Total
Energy	1	7	10	0	18
Telecommunications	1	0	2	0	3
Transport	0	0	7	0	7
Water and sewerage	0	0	2	0	2
Total	2	7	21	0	30

Source: PPI Database.

Table 2 Total Public–Private Partnership Projects by Primary Sector and Subsector, 1990–2008 (\$ million)

Sector	Subsector	Number of Projects	Total Investment
Energy	Electricity	17	1,783
	Natural gas	1	1,300
	Total energy	18	3,083
Telecommunications	Telecommunications	3	2,013
	Total Telecommunications	3	2,013
Transport	Airports	1	15
	Roads	1	133
	Seaports	5	732
	Total transport	7	880
Water and sewerage	Treatment plant	2	213
	Total water and sewerage	2	213
Total		30	6,189

Source: PPI Database.

SOE reform and privatisation

In addition to piloting PPPs, the government of Viet Nam is increasing its focus on private sector investment by rejuvenating the ‘equitisation’ (partial privatisation) process, strengthening SOEs in advance of partial privatisation and sharply reducing their number to 690 by the end of 2015 and 200 by 2020. There is recognition of the need to restructure large SOEs to improve governance and inter-ministerial coordination and oversight, and to create a more ‘level playing field’ for private investors and SOEs in developing PPPs through improved bid transparency and more balanced SOE access to state-directed and preferential financing (ADB, 2014; ADB and AFD, 2012). The reduction in the number of SOEs was carried out mainly through merging and liquidation with other SOEs, with a limited impact on the total volume of their activities (Ishizuka, 2009).

The government issued Decision 37/2014/QĐ-TTg in June 2014, on the criteria for the classification of SOEs, the main purpose of which is to reduce the number of sectors where the state is required to be a majority or sole shareholder and to encourage private investment. Decision 37 sets out four categories of state ownership requirement: (i) 100%; (ii) 75% or more; (iii) from 65% up to 75%; and (iv) from 50% up to 65%. There are 16 sectors in which the state is required to retain 100% ownership, including the management of irrigation systems. Public services for water supply, drainage sewerage and waste collection are among the sectors in which the state will hold a more than 50% but less than 65% stake²⁴. A new decree, 15/2015/NĐ-CP, on PPP investment has recently been approved (14 February 2015), with regulation for investment in construction, renovation, operation, conduction of business activities, management of infrastructure facilities, equipment and provision of public services in water supply systems, drainage systems, waste and wastewater collection and treatment systems and agriculture and rural infrastructure facilities.

Dedicated water supply companies (for Grade II and higher areas) completed their equitisation process in 2010, according to Prime Minister's Instruction 854/2009 (ADB, 2010b). Equitisation was expected to expand the access of these companies to loans from commercial banks (*ibid.*).

²⁴ <http://www.allenoverly.com/publications/en-gb/Pages/New-opportunities-from-state-owned-enterprises-in-Vietnam.aspx>

Appendix 4: Tariff formulas (water supply and wastewater)

Water supply tariff formula:

$$Gtthmd = Gttbq \times Httthmd$$

Where:

$$Gttbq = Ztb + (Ztb \times P)$$

Gttbq: Average water supply Ttariff (VND/m³)

Ztb: Average sale price per m³ clean water (VND/m³)

P: Business profit rate set by local government (usually 5% if WS provider takes all production processes)

H: Coefficient depending on use (domestic use, public buildings, production, service)

Tariff frame applied to domestic clean water supply
(as under Circular 88/2012/TT-BTC dated 28 May 2012)

Category	Min. tariff (VND/m ³)	Max. tariff (VND/m ³)
Urban of Special Category and Category 1	3,500	18,000
Urban of Categories 2, 3, 4 and 5	3,000	15,000
Clean water in rural areas	2,000	11,000

Formula for wastewater tariff not containing heavy metals:

$$F = f + C, \text{ of which:}$$

F: payable charge

f: fixed charge by Ministry of Finance and MONRE, but not exceeding VND 2,500,000 dong per year

C: Variable charge based on total water volume discharged and content of chemical oxygen demand (COD) and total suspended solid (TSS)

No.	Pollution substance calculated charge	The minimum level (VND/kg)	The maximum level (VND/kg)
1	COD	1,000	3,000
2	TSS	1,200	3,200

Formula for wastewater tariff containing heavy metals:

$$F = (f \times K) + C, \text{ of which:}$$

- F, f and C mean as specified in point a clause 2 of this Article;

- K means coefficient to calculate charge under waste water volume containing heavy metals of 'production and processing establishments according to the list of production fields, sectors that have waste water containing heavy metal promulgated by MONRE and defined as follows:

No.	Waste water volume containing heavy metals (m ³ / day and night)	Coefficient K
1	Under 30 m ³	2
2	Between 30 m ³ and 100 m ³	6
3	Between over 100 m ³ and 150 m ³	9
4	Between over 150 m ³ and 200 m ³	12
5	Between over 200 m ³ and 250 m ³	15
6	Between over 250 m ³ and 300 m ³	18
7	Over 300 m ³	21

Appendix 5: Additional information for Framework 3

Sources of finance – Viet Nam (total)

	Sources of finance	Average annual investment/ support (US\$ million/year)	Data source
Viet Nam state investment	2009-2013	16,592	General Statistics Office of Viet Nam (http://www.gso.gov.vn/default_en.aspx?tabid=776)
ODA disbursed for Viet Nam	2009-2013	4,181	OECD Creditor Reporting System
FDI total registered capital	1988-2013	9,365	General Statistics Office of Viet Nam (http://www.gso.gov.vn/default_en.aspx?tabid=471&idmid=3&itmID=15486)
FSF approved	2010-2012	347	ODI FSF Database (http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8692.xlsx)
CFU approved	2009-2015	43	CFU (www.climatefundsupdate.org)
OOF disbursed	2009-2013	1,144	OECD Creditor Reporting System

Sources of finance – Viet Nam (water and sanitation sector and sub-sectors)

Sources of finance – Viet Nam (water and sanitation sector and sub-sectors)				
Sources of finance	Years	Average annual investment/ support (US\$ million /year)	Data source	
Viet Nam state investment	2009-2013	595	General Statistics Office of Viet Nam (http://www.gso.gov.vn/default_en.aspx?tabid=776)	
ODA disbursed	2009-2013	346	OECD Creditor Reporting System	
FDI total registered capital	1988-2013	51	General Statistics Office of Viet Nam (http://www.gso.gov.vn/default_en.aspx?tabid=471&idmid=3&itmID=15486)	
FSF approved	2010-2012	72	ODI FSF Database (http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8692.xlsx)	
CFU approved	2009-2015	0	CFU (www.climatefundsupdate.org)	
OOF disbursed	2009-2013	0.2	OECD Creditor Reporting System	



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