



Water Supply and Sanitation in Timor-Leste

Turning Finance into
Services for the Future



This report is the product of extensive collaboration and information sharing between many government agencies, and Timor-Leste organizations. The National Directorate of Basic Sanitation, National Directorate for Water, Ministry of Health, Australian Government Department of Foreign Affairs and Trade (formerly AusAID) BESIK Water Supply and Sanitation Program, and Asian Development Bank have been key partners, together with the Water and Sanitation Program, in analyzing the sector. The authors acknowledge the valuable contributions made by the World Bank Country Management Unit, WaterAid, UNICEF, Japan International Cooperation Agency, Cruz Vermelha de Timor-Leste (Red Cross), and National Development Agency.

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The SDA was carried out under the guidance of the World Bank's Water and Sanitation Program and local partners. This regional work, implemented through a country-led process, draws on the experience of water and sanitation SDAs conducted in more than 40 countries in Africa, Latin America, and South Asia.

An SDA analysis has three main components: a review of past water and sanitation access, a costing model to assess the adequacy of future investments, and a scorecard that allows diagnosis of bottlenecks along the service delivery pathways. SDA's contribution is to answer not only whether past trends and future finance are sufficient to meet sector targets for infrastructure and hardware but also what specific issues need to be addressed to ensure that finance is effectively turned into accelerated and sustainable water supply and sanitation service delivery.

The Water and Sanitation Program is a multi-donor partnership, part of the World Bank Group's Water Global Practice, supporting poor people in obtaining affordable, safe, and sustainable access to water and sanitation services. WSP's donors include Australia, Austria, Denmark, Finland, France, the Bill & Melinda Gates Foundation, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States, and the World Bank.

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Strategic Overview

In the Democratic Republic of Timor-Leste, remarkable progress in water supply and sanitation coverage in the last 10 years means that the country may meet Millennium Development Goal targets for overall water supply coverage but is unlikely to do so for sanitation. These targets are for 78% of the population to have access to improved drinking water sources, and for 60% to have access to improved sanitation facilities. The latest figures from the Joint Monitoring Programme (JMP) of WHO and UNICEF indicate that in 2011 access was 69% for water and 39% for sanitation. For urban areas these targets have been met or exceeded, but for rural areas where close to 70% of the country's population lives—many in small remote communities—these targets remain out of reach, particularly for sanitation. Rural residents account for 92% of the 358,000 people nationally that do not have access to improved water supply, while rural residents make up 86% of the 704,000 people nationally without access to an improved toilet.¹ Timor-Leste also has one of the highest population growth rates in the region at 2.4% per annum. If Timor-Leste is to meet its Strategic Development Plan vision for 2030—which aims for all citizens to have access to clean water and improved sanitation—then current efforts in sanitation, particularly in rural areas, will need to be more intensively supported and scaled up. With greater attention to maintenance of rural water supply schemes, Timor-Leste can extend scheme life span and achieve the nation's rural water supply targets.

The analysis of the service delivery pathway for water and sanitation shows that Timor-Leste performs adequately in the 'enabling' phase of service delivery across all subsectors due to the presence of policy guidelines, national and

subsector targets, and relatively clear institutional roles. Structures and processes are in place for ministerial budget preparation, however budgets for urban and rural water supply and urban sanitation are unpredictable and fluctuate considerably from year to year, and are almost non-existent for rural sanitation. For 'developing' services, which relate to expenditure of funds, systems for allocating them equitably, and securing value-for-money outputs, Timor-Leste needs to improve in the areas of prioritizing budget allocation, budget execution for major capital works, and reporting on expenditure as well as reducing inequality and improving local participation. At the end of the service delivery pathway, Timor-Leste's scores show poor performance in sustainability for all subsectors, especially in the area of maintenance.

The key bottlenecks that currently impede progress in Timor-Leste's water and sanitation sector mainly relate to institutional capacity and absence of technical support services, accountability and incentives for sustaining services. There is a lack of funding to pay for water supply operations and maintenance, including no user fees charged in the urban sector and no clear strategy to effectively support operations and maintenance in the rural sector. With improved operations and maintenance, water supply systems could last longer, save on replacement costs, and be a more cost effective investment. Sanitation goods and services, water supply spare parts and repair services are difficult to obtain in rural areas. District level planning is not coordinated with all stakeholders. Support and communication from the national level to district offices is erratic. Part of this problem is due to the budget, and administrative constraints and the lack of autonomy and incentives the National Directorate

¹ Calculated by authors from JMP coverage and population data

for Water Services (DNSA) has as a government department to respond to district operational needs, as well as the current lack of sanitation staff at district level. Both the water supply and sanitation sector have a shortage of human resources, especially skilled technical staff. Increased human resources such as community outreach workers are also needed to carry out sanitation promotion activities to motivate households to self-invest in improved sanitation in rural areas.

To achieve government-defined access targets to 2020 for water supply (87%) and sanitation (76%), an average of US\$39.4 million each year in capital expenditures on water supply, and some US\$16.4 million per year on capital expenditures for sanitation will be needed.² These figures include estimated hardware expenditures by households, which, especially for rural sanitation, are expected to self-invest. In addition an average of US\$7 million per year (US\$5 million for water supply and US\$2 million for sanitation) will be needed to finance operation and maintenance of rural and urban infrastructure. Critical public funding is necessary for sanitation “software”, such as human and operational resources for behavior change communication campaigns, monitoring and regulation, and private sector development to elicit households to invest in their facilities. For rural sanitation alone, it is estimated that US\$976,000 per year is needed for such software spending.

Estimated annual capital expenditure planned for the next three years (2013-15) is US\$29.4 million for water supply of which about 20% is from development partners. This is an annual shortfall of US\$10 million compared to the US\$39.4

million needed to reach the 2020 targets. There is little firm evidence of intentions for capital spending on sanitation from either government or development partners. This is because both urban and rural sanitation in Timor-Leste are overwhelmingly on-site technologies and spending is expected by households, rather than government and development partners.

For water supply, the estimated necessary capital expenditures amount to approximately 2.4% of the 2013 national budget of US\$1.6 billion. Estimated operations and maintenance costs are 0.4% of the 2013 budget. In the years 2010-2012, estimated recent public capital expenditures on water and sanitation in Timor-Leste (including donor expenditures) averaged 1.1% of the budget and 1.5% of GDP.

Failure to meet financing gaps and address institutional and sustainability bottlenecks will result in Timor-Leste falling short of meeting its water and sanitation targets. The wider implications are that the country’s progress on economic, health and social development will be hampered.

This Service Delivery Assessment (SDA) takes a long-term view of Timor-Leste’s ambitions. It has been conducted as a multi-stakeholder process under the leadership of the Directorate General for Water and Sanitation within the Ministry of Public Works. Through a facilitated process, stakeholders have agreed on intermediate targets, and identified bottlenecks in water and sanitation service delivery that need to be addressed. Agreed priority actions to tackle Timor-Leste’s water supply and sanitation challenges have been identified to ensure finance is effectively turned into services. These priority actions are:

² Authors’ calculations based on SDA financial model

Sector wide priority actions

Institutional

1. Increase autonomy, incentives and accountability of DNSA for providing urban water supply services.
2. Clarify asset ownership and maintenance roles in rural water supply schemes.
3. Strengthen service delivery at district and subdistrict levels by increasing human resources, technical capacity, and improving coordination between programs.
4. Continue dialogue on private sector involvement in service provision and review options appropriate for the stage of sector development to tackle weak capacities in service delivery.

Finance

5. Increase capital works budget execution by improving capacities in public procurement, tendering, and contract management processes and documentation.
6. Develop costing guidelines to ensure that future project plans for capital investment (hardware) are accompanied by budgets for the required level of technical assistance (software), especially for rural water supply and rural sanitation.
7. Improve sector financial coordination by annually reporting in one consolidated place, all sources of capital and non-capital funds expended on WASH.

Monitoring

8. Improve data quality and analytical use of the water, sanitation and hygiene information system (SIBS).
9. Improve performance monitoring, and public disclosure for urban water supply to increase accountability.
10. Synchronize monitoring data and definitions from different sources into robust national monitoring systems.

Priority Actions for Rural Water Supply

1. Establish clear policies and define government and community responsibilities for O&M of rural water systems.
2. Ensure budget is available for technical support systems for O&M services of community-managed schemes.
3. Increase functionality of water supply schemes by a) improving the spare parts supply chain, b) increasing numbers and skills of technical staff in districts, and c) professionalizing management of rural water supply through contracting of NGOs and the private sector.
4. Make district budgets transparent to show water supply funding from DNSA, decentralized projects, development partners and NGOs.

Priority Actions for Urban Water Supply

1. Develop a roadmap for urban water sector reform and regulatory framework that will increase the autonomy of DNSA/ service providers, introduce incentives to drive performance improvements and establish separate regulatory functions.
2. Roll out wider tariff reform to fund operations and maintenance and increase sustainability of water systems.
3. Reinforce coordination between agencies involved in local planning, urbanization, water supply, and drainage including district coordination.
4. Improve water quality of service provision, including testing regimes and disclosure.

Priority Actions for Rural Sanitation and Hygiene

1. Increase budget allocation for rural sanitation promotion and marketing (“software”) to implement the National Basic Sanitation Policy.
2. Increase human resources and build capacity of community health workers, sanitation promoters, local volunteers, to achieve open defecation free *sucos*.
3. Strengthen sanitation markets and ensure supplies of sanitation materials and services in all 13 districts.
4. Strengthen the targeting of sanitation subsidies as part of the vulnerable households program and ensure an appropriate delivery mechanism that does not undermine a market-based approach.
5. Develop integrated national and district plans for increasing sanitation access; monitor and evaluate these plans.

Priority Actions for Urban Sanitation and Hygiene

1. Implement Dili Sanitation and Drainage Master Plan stage 2.
2. Prepare Sanitation Master Plans for the remaining 12 district capital towns (excluding Dili).
3. Improve septage collection and maintenance of septage facilities.
4. Increase the human resources capacity for sanitation in each district capital town (reflecting population size and sanitation needs in district towns).

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Abbreviations and Acronyms

ADB	Asian Development Bank
ADN	National Development Agency
Aldeia	'Sub-village' or hamlet. There are 2,225 aldeias in Timor-Leste.
AusAID	Former Australian Agency for International Development, now Department of Foreign Affairs and Trade (DFAT)
BESIK	<i>Be'e Saneamentu no Ijiene iha Komunidade</i> = AusAID Rural Water Supply and Sanitation Project
CAP	Community Action Planning
CLTS	Community Led Total Sanitation
DNSB	<i>Direcção Nacional de Saneamento Básico</i> = National Directorate for Basic Sanitation
DNSA	<i>Direcção Nacional de Serviços de Água</i> = National Directorate for Water
GDP	Gross Domestic Product
GoTL	Government of Timor-Leste
IMF	International Monetary Fund
JICA	Japan International Cooperation Assistance
JMP	Joint Monitoring Programme (for water and sanitation by UNICEF and WHO)
MCK	<i>Mandi, Cuci, Kakus</i> – [Indonesian] public facility combining bathing, washing, and toilet facilities
MDG	Millennium Development Goal
NGO	Non-Government Organization
O&M	Operations & Maintenance
ODF	Open Defecation Free
PAKSI	<i>Planu Asaun Komunidade ba Saneamentu no Ijiene</i> = Community Action Plan for Sanitation and Hygiene
PDID	<i>Programa Desenvolvementu Integradu Distrital</i> = Integrated District Development Program
PDD	<i>Programa Desenvolvementu Desentralizadu</i> = Decentralized Development Program
PDL	<i>Programa Desenvolvementu Lokál</i> = Local Development Program
Sanitation	Sanitation refers to the provision of facilities and services for the safe disposal of human urine and faeces. It excludes solid waste collection and drainage.
SAS	<i>Serviço de Água e Saneamento</i> = Water & Sanitation Service (District level)
SDA	Service Delivery Assessment
SIBS	<i>Sistema Informasaun Bee no Saneamentu</i> = water and sanitation information system
SISCa	<i>Servisu Integradu da Saúde Komunitária</i> = Integrated Community Health Services
Suco	Lowest level administrative unit equal to town or village. There are 442 in Timor-Leste
UNICEF	United Nations Children's Fund
VIP	Ventilated Improved Pit latrine
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization
WSP	World Bank - Water and Sanitation Program

1. Introduction

Water and sanitation Service Delivery Assessments (SDAs) are taking place in seven countries in East Asia and the Pacific region under the guidance of the World Bank's Water and Sanitation Program (WSP) and local partners. This regional work, implemented through a country-led process, draws on experience of water and sanitation SDAs conducted in more than 40 countries in Africa, Latin America and South Asia.³

The SDA analysis has three main components: a review of past water and sanitation coverage, a costing model to assess the adequacy of future investments, and a scorecard that allows diagnosis of bottlenecks along the service delivery pathway. These components are not directly linked to each other, but in combination they produce a picture of the country's WASH status and critical issues in the sector. The SDA's contribution is to answer not only whether past trends and future finance are sufficient to meet sector targets for infrastructure and hardware, but what specific issues or bottlenecks need to be addressed to ensure finance is effectively turned into accelerated and *sustainable* water supply and sanitation service delivery. Bottlenecks can occur throughout the service delivery pathway—all the institutions, processes and actors that translate sector funding into sustainable services. Where the pathway is well developed, sector funding should turn into services at the estimated unit costs. Where the pathway is not well developed, the capital investment requirements to achieve targets may be gross underestimates as additional finance may be needed to “unblock” the service delivery bottlenecks such as developing institutional capacity and improving sustainability.

The scorecard looks at nine building blocks of the service delivery pathway, which are grouped in three categories: three building blocks or functions that refer to **enabling** conditions for putting services in place (policy development, planning new undertakings, budgeting processes); three functions that relate to **developing** the service (expenditure of funds, equity in the use of these funds, service output); and three functions that relate to **sustaining** these services (facility maintenance, expansion of infrastructure, use of the service). Each building block is assessed by stakeholders against usually three specific indicators which are scored from 0 to 1, and then aggregated to provide a score for that building block of between 0 and 3. (Refer Annex 1 for detailed scoring and criteria). The scorecard uses a simple color code to indicate: building blocks that are largely in place, acting as a driver for service delivery (score >2, green); building blocks that are a drag on service delivery and require attention (score 1–2, yellow); and building blocks that are inadequate, constituting a barrier to service delivery and a priority for reform (score <1, red).

The SDA analysis relies on an intensive, facilitated consultation process, with government ownership and self-assessment at its core. The assessment is undertaken for four subsectors: rural water, rural sanitation, urban water and urban sanitation. Through the SDA process, an evidence-based participatory analysis has been conducted to better understand what undermines progress in water supply and sanitation and what the Government of Timor-Leste can do to accelerate progress to achieve its 2020 targets.

³ For example refer to: Africa CSO synthesis report: <http://www.wsp.org/sites/wsp.org/files/publications/CSO-Synthesis-Report.pdf>

A series of meetings and sanitation and water supply sub-sector workshops with core stakeholders during 2013, together with reviews of reports and budgets, has provided the information for this SDA. Sources of evidence are provided in footnotes, references section and in Annex 1. The SDA process took place in 2012/2013 with data collection between September 2012 and September 2013. The report reflects the situation at the time and may not include the latest data and information. Figure 1.1 outlines the timeline of the SDA process in Timor-Leste.

The analysis aims to help Timor-Leste assess its own service delivery pathway for turning finance into water supply and sanitation services in each of the four subsectors. Specific priority actions have been identified through consultation with government and other sector stakeholders.

This report has been produced by WSP and validated by the Government of Timor-Leste and other stakeholders.

Figure 1.1 Timeline of SDA in Timor Leste

September 2012	Introduction of SDA to stakeholders
October 2012	Financial and background data
November 2012	Data collection, stakeholder meetings
February 2013	Data analysis, scorecard assessment
March 2013	Stakeholder workshops on water and sanitation scorecards
May 2013	Data analysis and gap identification
June 2013	Stakeholder workshops to present preliminary findings, identify subsector priority actions
July 2013	Consolidation and checking of data
August 2013	Financial modelling
September 2013	Stakeholder workshop to finalize priority actions; draft preliminary report
October 2013	Internal review of preliminary report
December 2013	Draft report for review by stakeholders and peer reviewers
January 2014	World Bank peer review meeting
March 2014	Final SDA Report

Figure 1.2 Map of Timor Leste



Map No. 4111 Rev. 11 UNITED NATIONS
November 2011 (Colour)

Department of Field Support
Cartographic Section

2. Sector Overview: Coverage and Finance Trends

Context

Timor-Leste is the second smallest country by population in Southeast Asia with 1.066 million people in 2010.⁴ Most people—750,000 or 70% of the population—live in rural areas, and 316,000 people (30%) live in urban areas.

Timor-Leste is a post-conflict country, emerging from a 24-year history of occupation and violent struggle for independence, as well as internal conflicts between 1999 and 2006.⁵ When the Indonesian army withdrew from Timor-Leste in 1999, as much as 70% of the country's infrastructure was destroyed.⁶ Since gaining independence in 2002, Timor-Leste has made strides in restoring stability and rebuilding the country. This progress is due to a conscious effort by government to make the provision, and restoration, of key public services and infrastructure a priority for its people, together with complementary initiatives from NGOs.⁷ Since 2006 Timor-Leste has experienced strong economic growth, with the country's real Gross Domestic Product

(GDP) growing by an average of 11.9% per year since 2007. In 2012 Timor-Leste's GDP was estimated to be US\$4.173 billion, with GDP per capita of approximately US\$3,730.⁸ Growth has been underpinned by public spending, however inflation is persistently high at 11%. To improve social development the country has introduced a wide range of social safety net programs and rural labor employment opportunities. Human development indicators have improved, particularly in the health area, although childhood nutrition status remains severe. At 58%, Timor-Leste has one of the highest incidences in the world of stunting of children under age, with 33% severely stunted. Almost half (45%) of children under age 5 are underweight, and 19% are acutely malnourished or wasted.⁹ Poverty incidence remains high at 41% in 2009.¹⁰ Rural poverty is higher than urban poverty owing to low agricultural productivity and limited access to roads and markets. Regional poverty disparities also exist, with poverty being worst in the central region.

⁴ National Statistics Directorate and United Nations Population Fund (2011) *Population and Housing Census 2010*, Dili: Government of Timor-Leste. Only Brunei has a smaller population with 434,000 people.

⁵ Timor-Leste is a fragile state, and member and chair of the "g7+" - a voluntary association of countries that are or have been affected by conflict and are now in transition to the next stage of development..Refer: <http://www.g7plus.org/>

⁶ As much as 70% of Timor-Leste's infrastructure—houses, schools, shops, offices, irrigation systems, water supplies, and nearly 100% of the country's electrical grid—were destroyed during the retaliatory withdrawal of the Indonesian military in late 1999. For water supply this included pumping stations, transmission pipes, valves and tanks. Numerous sources describe the level of destruction, including: (1) The World Bank, *Timor-Leste Overview*, viewed 29 August 2013, <www.worldbank.org/en/country/timor-leste/overview> (2) Government of Timor-Leste (2011) *Strategic Development Plan 2011-2030*, p.81 (3) ICRC *Update No. 99/04 on ICRC activities in Indonesia/East Timor 11-10-1999 Operational Update*. Available at: <http://www.icrc.org/eng/resources/documents/misc/57jq22.htm> [viewed 16/4/2013]. (4) eye witness accounts: ABC 7:30 Report, Transcript 27/9/1999, *Indonesia's scorched earth policy levels East Timor*. Available at: <http://www.abc.net.au/7.30/stories/s55114.htm>.

⁷ World Bank (2009) *Community Based Development and Infrastructure in Timor-Leste: Past Experiences & Future Opportunities*. AusAID – East Asia and Pacific Infrastructure for Growth Trust Fund [pdf] Available at: <http://documents.worldbank.org/curated/en/2012/01/16414897/timor-leste-comunity-based-development-infrastructure-timor-leste-past-experiences-future-opportunities>

⁸ International Monetary Fund, *World Economic Outlook Database*, April 2013, viewed 2 September 2013, <www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx>.

⁹ National Statistics Directorate, Ministry of Finance, and ICF Macro. (2010). *Timor-Leste Demographic and Health Survey 2009-10*. Dili, Timor-Leste: NSD and ICF Macro, UNICEF (2013) *Improving Child Nutrition-The achievable imperative for global progress*. New York:UNICEF

¹⁰ International Monetary Fund, (2012) IMF Country Report No. 12/24 Democratic Republic of Timor-Leste: 2011 Article IV Consultation—Staff Report; Informational Annex; Debt Sustainability Analysis; and Public Information Notice. Washington: IMF

Coverage: Assessing Past Progress

Progress has been made in increasing access to improved water supply, and for sanitation, reducing open defecation according to the Joint Monitoring Programme (JMP) of WHO and UNICEF.¹¹ It is difficult to accurately assess coverage rates during the Indonesian occupation.¹² The JMP estimates a gain in access to improved water supply of 15% between 2000 and 2011 (from 54% to 69% access nationally).¹³ These gains are impressive given the fragility of the country and the high demand for many basic services and infrastructure immediately after Independence. Piped water systems have contributed to these gains far more in rural areas than in urban areas. Access to improved water supply is 93% in urban areas, yet fewer than half of these households (45%) have a piped water connection to the yard or house, and for those that do, service quality is often poor. For rural areas, the most common types of improved water source are public tap/standpipe, and household yard connections—typically sourced from gravity fed piped systems, protected well or spring, and boreholes.¹⁴

Unlike water supply, national access to sanitation has barely increased. The JMP estimated national access to improved sanitation at 37% in 1995, 37% in 2000, and just 39% in 2011 (see Figure 2.1). Although urban improved sanitation

access has increased, rural improved sanitation access has dropped from 32% in 2000 to 27% in 2011. Importantly, during the same period, rural open defecation reduced from 55% to 37%, indicating an uptake in use of basic sanitation facilities in rural areas, but not use of a toilet which is considered “improved” and is more durable. A further 9% of households share improved toilets (generally shared between two households from the same family) however these are not counted in the JMP estimates.¹⁵ No sewerage system exists in Timor-Leste’s urban areas yet, with the most common types of improved toilets being pit latrines with slabs, pour flush to a pit or septic tank, and Ventilated Improved Pit (VIP) latrines. Improved toilets in rural areas are typically pit latrines with slabs and VIP latrines.

Population growth hampers increased access to improved sanitation. Timor-Leste has one of the highest population growth rates in the Asia-Pacific region, with an annual growth rate of 2.41% between 2000 and 2010.¹⁶ Between 1995 and 2011 the population grew by 300,000 people yet only 135,000 people gained access to improved sanitation during the period. In 2011, 167,000 more people were without access to improved sanitation than in 2000, indicating that the absolute number of people *without* access to improved sanitation is increasing. Access to improved water supply has kept ahead of population growth with 344,000 people gaining access during the period.¹⁷

¹¹ According to the JMP, an improved drinking-water source is one that, by the nature of its construction, adequately protects the source from outside contamination, particularly fecal matter eg. piped water into dwelling, piped water to yard/plot, public tap or standpipe, tubewell or borehole, protected dug well, protected spring, rainwater. An improved sanitation facility is one that hygienically separates human excreta from human contact eg. flush toilet, piped sewer system, septic tank, flush/pour flush to pit latrine, ventilated improved pit latrine (VIP), pit latrine with slab, composting toilet.

¹² Prior to Indonesian withdrawal, AusAID estimated national access rates to improved water supply were around 66% in 1999. Refer: Commonwealth of Australia, December 2000. East Timor – Final Report of the Senate Foreign Affairs, Defence and Trade References Committee, p.17 [pdf] Canberra: Commonwealth of Australia. Available at: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=fadt_ctte/completed_inquiries/1999-02/east_timor/report/index.htm.

¹³ Based on the 2010 Census figures of 66%

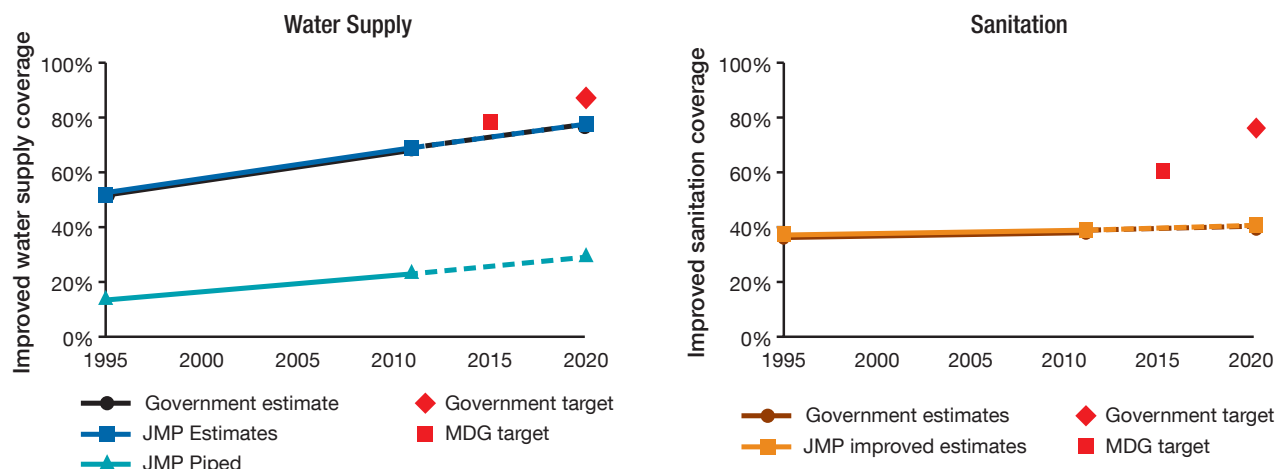
¹⁴ National Statistics Directorate and United Nations Population Fund (2011) Population and Housing Census 2010, Dili: Government of Timor-Leste.

¹⁵ Sharing of toilets is common in Timor-Leste. The 2010 Census indicates about 25% of households using any type of toilet are sharing.

¹⁶ National Statistics Directorate and United Nations Population Fund Population and Housing Census of Timor-Leste, 2010. Government of Timor-Leste Vol 2: Population Distribution by Administrative areas p. xxi. Available at <http://www.mof.gov.tl/wp-content/uploads/2011/06/Publication-2-English-Web.pdf>

¹⁷ Authors’ calculations using JMP coverage and population data

Figure 2.1 Timor-Leste: Progress in water supply and sanitation 1995 – 2020 (estimated)



Source: JMP (2013); MOH (2012); and government targets used for SDA costing analysis.

Access: Targets and Future Trends

The national MDG target for access to improved water supply is 78% by 2015, with sub-targets set by national authorities of 75% for rural and 81% for urban water supply. The country's national MDG target for access to improved sanitation is 60%, with sub-targets of 55% for rural areas and 64% for urban areas. (see Table 2.1)

Timor-Leste is likely to meet its overall MDG target for water supply but is unlikely to do so for sanitation. The country has already surpassed its sub-target for urban water supply and for urban sanitation. Rural water supply appears to be on track to meet its sub-target as long as sufficient operations and maintenance (O&M) is provided to keep schemes working. Rural sanitation is lagging and is unlikely to meet the MDG sub-target. However these figures present a simplistic view of progress which does not take into account the *quality* of services delivered in

urban areas, nor the recent efforts in the rural sector, particularly in rural sanitation, since the last JMP update in 2011. These are discussed more fully in the chapters 7, 8, 9 and 10 of this report.

The National Strategic Development Plan 2011-2030 is clear about the need for universal access to clean water and sanitation for reasons of public health, employment, economic development, and management of water resources. The end goal of the Strategic Development Plan is that by 2030 all citizens in Timor-Leste have access to clean water and improved sanitation. Intermediate targets to 2020 are not all articulated in the Strategic Development Plan. Hence to estimate sector financial requirements by 2020, targets have been agreed in consultation with stakeholders, which are aligned with the Ministry of Public Works' Five-Year Water and Sanitation Action Plans (2013-2017) and the targets articulated in the draft Strategic Sanitation Plan (2020). These are presented in table 2.1.

¹⁸ Government of Timor-Leste and UNDP (2009) The Millennium Development Goals, Timor-Leste. Available at: www.undp.org

Table 2.1 Timor-Leste: Water supply and sanitation targets used for SDA estimates

Sub-sector	JMP 2011 data	MDG target 2015	Target used in SDA 2020	Source of 2020 target
Proportion of Population with access to an improved water source				
National	69%	78%	87%	Calculated from Strategic Development Plan targets for 2020; weighted for assumed rural population of 67% of total population and urban population is 33%
Rural	60%	75%	80%	Ministry of Public Works' Water Action Plan 2013-2017 target for 2020 (refers to access to potable, secure and constant supply of water).
Urban	93%	81%	100%	Ministry of Public Works' Water Action Plan 2013-2017 (refers to access to 24-hour supply in Dili and district centers)
Proportion of Population with access to improved sanitation				
National	39%	60%	76%	Calculated from weighted average of rural target for 2020 and urban target for 2020; assuming rural population is 67% of total population and urban population is 33%
Rural	27%	55%	68%	2020 target calculated from the assumed 2030 target from Draft Strategic Sanitation Plan.
Urban	68%	64%	93%	Calculated: weighted average of urban targets from Draft Strategic Sanitation Plan which are 100% access in Dili and 82% access in district capitals (assuming that Dili population is 60% of total urban population)

Note: UN-agreed MDG targets apply only to national access to water and sanitation; subsector targets have been set by national authorities for 2015

The Government's goal for rural water is access to a potable, secure and constant supply of water.¹⁹ The Ministry of Public Works' strategy to achieve this includes construction of new water supply systems, rehabilitation of non-functioning systems, and improving the capacity of O&M staff.²⁰ Public standpipes will remain the dominant technology, and are preferred by government as being suitable and affordable for Timor-Leste.

The goal for urban water is to provide 24-hour potable water supply to Dili and district capitals. According to the government's Five-Year Plan this will be achieved by securing water sources, building storage capacity, increasing and repairing water transmission networks, connecting households, and introducing user tariffs. In urban areas

the future scenario is that the majority of households will have individual connections, with public taps remaining in low income areas. Baucau, Manatuto, Lospalos and Suai, are high priority district towns where the water situation is critical.²¹

The draft Sanitation Strategic Plan proposes a goal to make Timor-Leste "open defecation free" (ODF). Stakeholders suggest achieving ODF by 2017 – the end of the current government's term. Following this, rural areas expect increased access to hygienic toilets by moving households up the sanitation ladder i.e move from shared to private latrines, improve pit latrines to pour flush toilets. The proportion of pit latrines is expected to fall as people get used to using a toilet and invest resources in improving their

¹⁹ Government of Timor-Leste (2011) Strategic Development Plan 2011-2030

²⁰ Ministry of Public Works (2012) Five Year Action Plans 2013-2017

²¹ Government of Timor-Leste (2011) Strategic Development Plan 2011-2030

existing basic household toilets, combined with greater access to low cost materials. In urban areas the expected trend will be the increased use of toilets connected to septic tanks, and in Dili to commence connecting households to decentralized wastewater treatment systems. The government's vision is consistent with household aspirations for improved sanitation in urban areas.

The Five-Year Plans of the Ministry of Public Works represent the goals of the current government, but are not fully developed to address institutional development, capacity, and full budget needed to implement the plans. Activities of other ministries, NGOs and donors are part of these plans for the first year only.²² Improving water and sanitation services in Dili is a high priority for national government, and is where the bulk of the Ministry's urban water and sanitation budget will be allocated, with district towns largely overlooked for capital investment.

Investment Requirements: Testing the Sufficiency of Finance

Given the assumed 2020 national targets (see Table 2.1), about US\$39.4 million needs to be invested each year until 2020 on water supply infrastructure and about US\$16.4 million on sanitation infrastructure.²³ For water supply, the estimated necessary capital expenditures amount to approximately 2.4% of the 2013 national combined sources budget of US\$1.6 billion. In addition to infrastructure capital expenditure, an average of US\$6.9 million per year would be needed to finance operation and maintenance of current and future infrastructure (see Table 2.4). Estimated operations and maintenance costs are 0.4% of the 2013 budget. In the years 2010-2012, estimated public capital expenditures on water and sanitation in Timor-Leste (including donor expenditures, which are included in the country's combined budget) averaged 1.1% of the budget and 1.5% of GDP.

Table 2.2 Timor-Leste: Estimated Annual Capital Spending Needed 2011-2020 to Reach 2020 Coverage Goals, US\$ million

Sector/Subsector	Coverage		Population requiring access	Investment Requirement			Total Capital Cost	Public Share of Total Capital
	2011	Target 2020		New Capital	Replacement of Capital	Estimated Other		
	%	%	'000/year	\$US million/year				
Water supply								
Rural water supply	60%	80%	41	6.4	12.9	0.0	19.3	15.5
Urban water supply	93%	100%	24	8.9	11.2	0.0	20.1	16.3
Water supply total	69%	87%	65	15.2	24.1	0.0	39.4	31.9
Sanitation								
Rural sanitation	27%	68%	44	1.0	1.9	0.0	2.9	0.0
Urban sanitation	68%	93%	37	9.8	3.2	0.5	13.5	11.7
Sanitation total	39%	76%	81	10.8	5.1	0.5	16.4	11.7

Note: Public Expenditures include domestic (government) and external (development partners and NGOs) sources. Estimated Other requirements include rehabilitation, treatment requirements for existing coverage and natural disasters. Totals may not sum due to rounding. Source: SDA estimates based on financial model

²² Contributions from donors and NGOs to the sector targets were developed after the Action Plans were approved, and include NGO and donor contributions and water supply schemes under decentralization programs.

²³ These figures were calculated from the mid-period year of 2011.

The Government of Timor-Leste together with the IMF have identified lack of adequate infrastructure as a major constraint to economic development in the country, and a major feature of government budgeting in the period 2012-2016 is anticipated to be infrastructure. A 2012 IMF consultation projected a rise in capital spending from about 33% of total government spending in 2010 to about 55% in the period 2013-2016.²⁴ In 2011 the government created an infrastructure fund for major undertakings. Also, combining infrastructure with decentralization, the country has used local development funds and programs extensively to hasten construction of local infrastructure in line with community priorities. The major budget resource for Timor-Leste is its Petroleum Fund, which stood at close to US\$12 billion at the end of 2012.

For water supply and sanitation, the implications of an emphasis on infrastructure plus the way it is funded are profound. Water

supply, particularly rural water supply, has been a priority area in recent government plans, with a corresponding rise in the capital budget of the main institution overseeing water and sanitation, the Directorate General for Water and Sanitation. However, most of the capital for rural water supply has been through various de-concentrated programs and funds such as the *Programa Desenvolvementu Desentralizadu* (PDD). These programs do not provide funding for household toilets, only for public and shared community toilets. Consequently any sanitation investments through decentralization programs have no direct impact on progress towards MDG sanitation targets.

The government's financial commitment to urban and rural water supply and urban sanitation, and taking these de-concentrated funds into account, means that unlike many countries in the region, government funding for water supply and sanitation hardware in Timor-Leste exceeds support from development partners.

Table 2.3 Timor-Leste: Anticipated/Proposed Investment (Capital Expenditure) in Water Supply and Sanitation 2013-2015 (US\$ million per annum)

Sector/Subsector	Anticipated Public Capital Expenditure 2013-2015				Anticipated household capital expenditure	Annual surplus (deficit)
	Domestic (government)	% of SDA Estimated Requirement	External (Development Partners/ NGOs)	Total		
US\$ million/year						
Water supply						
Rural	13.0	67%	1.7	14.7	3.6	(1.0)
Urban	10.6	50%	4.1	14.7	3.4	(2.0)
Water Supply Total	23.6	60%	5.8	29.5	6.9	(3.0)
Sanitation						
Rural	0.0	0%	0.0	0.0	1.0	(1.9)
Urban	4.7	35%	0.0	4.7	0.8	(8.1)
Sanitation Total	4.7	28%	0.0	4.7	1.7	(10.0)

Notes: Investments that do not expand coverage are not included. While there is NGO investment in water supply, it was not possible to determine comprehensively (many small NGOs operate "off budget"). Most NGO expenditure in sanitation, especially in rural sanitation, is non-capital spending, such as technical assistance and capacity development ("software"). The percentage of estimated requirement is calculated as anticipated government expenditure over total requirements (from Table 2.2). Annual surplus/deficit is the difference between the annual investment required (Table 2.2) and anticipated. Totals may not add up due to rounding. Source: SDA estimates based on information supplied by government, development partners, and NGOs.

²⁴ RDTL 2013 p.19

Part of the reason for little to no capital expenditure for sanitation is that, according to Timor-Leste policy, households are expected to invest in their own sanitation facilities, except for a limited subsidy program proposed for disadvantaged households, and community incentives that could offset some sanitation hardware costs. The SDA model calculates anticipated household investment as a figure leveraged by government capital expenditure, which is likely to be small, especially for onsite sanitation. Actual future household investment is likely to be higher if household self-investment can be successfully stimulated by government and external non-capital, “software” spending, e.g. sanitation promotion, community mobilization, etc. In the following charts, the anticipated household investment for sanitation is thus not “guaranteed” and the projected ‘deficit’ in sanitation spending presents the same high leveraging of self-investment by households.

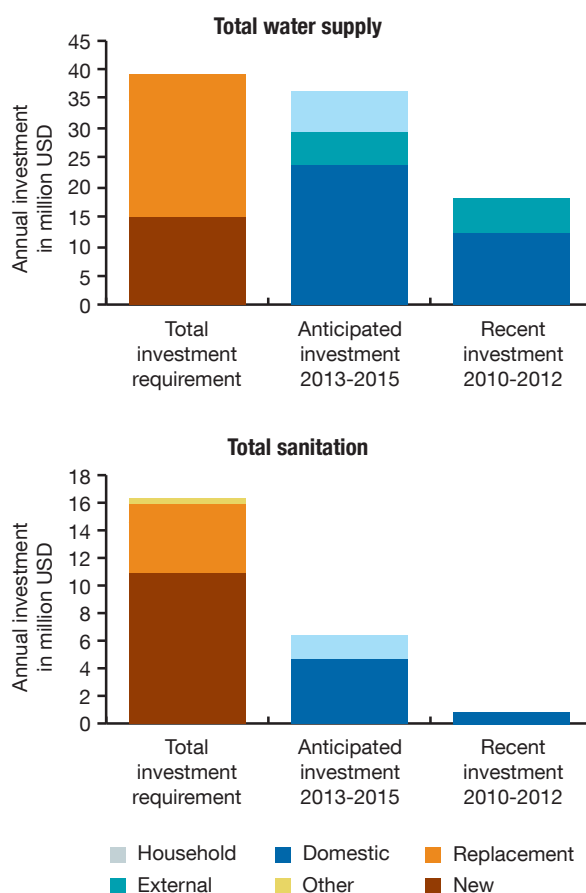
Although anticipated government and development partner capital spending is substantial, it is probably not sufficient to achieve the 2020 goals. This is partly due to the need to consider replacement costs of existing and new infrastructure until 2020, as well as ambitions for networked sewerage in the capital. In addition, software costs to mobilize rural households to build toilets is a Ministry of Health budget line item, yet no budget had been forthcoming from the Ministry of Health up to 2013.

Future software costs for rural sanitation have been estimated for the Rural Strategic Sanitation Plan at US\$8.79 million between 2012 and 2020, or an average of US\$976,000 per year.²⁶ This includes costs for demand generation and sanitation promotion (including government programs), strengthening sanitation supply including sanitation mar-

keting; incentive financing (vouchers, rebates etc), and enabling environment costs such as training.

The following charts summarize the information presented in tables 2.2 and 2.3.

Figure 2.2 Required versus anticipated and recent expenditure



²⁵ Refer Policy statement 8, Timor-Leste National Basic Sanitation Policy 2012, p10

²⁶ Pers. comm. Andy Robinson - draft cost estimate for Sanitation Strategic Plan implementation 8/11/2013. Annual cost breakdown is US\$4.9 million for demand generation; US\$0.59 million for sanitation supply strengthening; US\$2.5 million for incentive program; and US\$0.8 million for enabling environment costs.

Figure 2.4 Overall annual and per capita investment requirements and contribution to anticipated financing by source

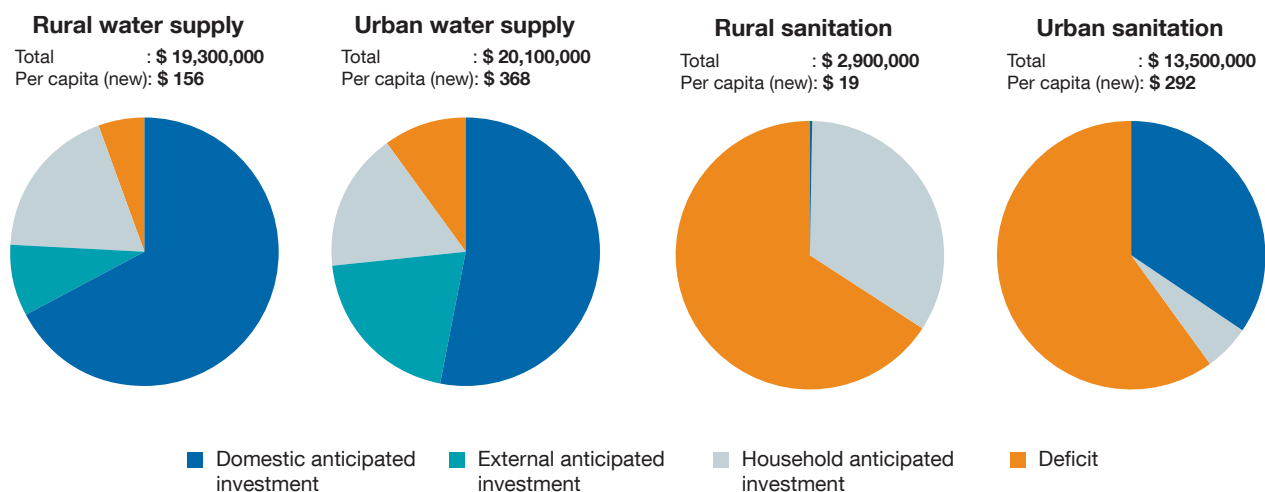


Figure 2.6 shows the different sources of finance for the four subsectors. It indicates that households are expected to be the major source of funding for rural sanitation, and while domestic budgets are significant for the water sector, donors also contribute to urban water supply. There are deficits in investment requirements in all subsectors. Given the conservative assumptions used for SDA estimates of future government expenditures (particularly in determining decentralized fund allocations for water supply), it seems likely that Timor-Leste has adequate budget resources to reach water supply targets, provided that operations and maintenance can be funded and implemented in order to maintain functionality.

On-site urban sanitation coverage is already high, and plans for a decentralized wastewater treatment system for Dili by 2020 likely depend more on capacity and implementation than on budget resources.

Rural sanitation targets will not be achieved without considerable self-investment by households. It seems clear that the “software” necessary to leverage household expenditures, (such as for operational expenses of rural sanitation staff and local promoters) is insufficient to elicit this household self-investment.

Table 2.4 presents estimates of additional funding necessary for the annual operation and maintenance of water supply and sanitation facilities. It indicates that water supply and sanitation requires annual funds of US\$5.3 million and US\$1.6 million respectively. This is about 13% of the required annual capital expenditure for water supply, and 10% of the required annual capital expenditure for sanitation. Most of these funds are expected to be used in urban areas.

Table 2.4 Annual operation and maintenance requirements

Subsector	O&M
	US\$ million/year
Rural water supply	1.9
Urban water supply	3.4
Water supply total	5.3
Rural sanitation	0.2
Urban sanitation	1.4
Sanitation total	1.6

Source: SDA Model

Note: O&M costs are presented as an indicative minimum requirement, assumed to be 3% of the capital cost for water supply piped onto premises or public taps, and 1.5% of the capital cost of other types of water supply technologies. For sanitation, the estimate is 3% of the capital cost for networked sewerage and for pour flush/flush into tanks or pits, and 1.5% for other technologies. This is a standard calculation for the region. For Timor-Leste maintenance costs may well be higher. Totals may not add-up due to rounding

3. Reform Context

The following section discusses some of the achievements and work in progress in reforming and developing the overall WASH sector since Independence.

A Challenging Legacy at Independence

Since Independence in 2002, Timor-Leste's water supply, sanitation and hygiene (WASH) sector has been developing with the assistance of international development partners and NGOs, but not without extreme challenges posed by years of violent foreign occupation, massive destruction of infrastructure, displacement, and political instability.²⁷ Any gains in water and sanitation coverage during the period of Indonesian military control were wiped out by the departing Indonesian army and anti-independence militia following the referendum for self-governance in 1999.²⁸ As recently as 2006, riots in Dili caused further infrastructure destruction and disruption of services. The country's instability made reform difficult, however important reform initiatives in recent years have positively shaped the rural and urban sectors.

National Plans Provide Goals but Lack Detail

The Government's Strategic Development Plan to 2011-2030 signifies a shift from a period of building a sovereign state to detailing a development plan and vision for the next 20 years. The Strategic Development Plan elevates water

supply and sanitation to a national priority and sets a goal for universal access to water and sanitation by 2030, but it lacks detail on planning and how the goal will be achieved. The Ministry of Public Works' recent Five-Year Action Plans 2013-2017 for water supply and sanitation are general plans for achieving goals by subsector, but similarly lack details such as a prioritized and costed investment plan, and implementation plan for the district level. The Ministry of Health's Five-Year Plan has limited information about sanitation and hygiene.

Water Supply Reform Needs Updating and a comprehensive Roadmap

Decree No. 4/2004, implemented quickly after Independence, currently guides the water sector, covering strategic planning and day-to-day activities.²⁹ This decree defines urban and non-urban areas and how they will be served. For urban areas, piped water supply is to be provided in declared water supply zones, under the management of the Water Supply and Sanitation Authority (now the National Directorate of Water Supply - DNSA). In rural areas, community water management groups have been given prime responsibility for supplying water to communities using local methods to raise revenues for operations, with technical input and oversight provided by DNSA.³⁰ The rural responsibility for DNSA is not fully elaborated in the decree and introduces some ambiguity in their role.

²⁷ Independence occurred May 19, 2002. The period of Portuguese rule (1515-1975) included local revolt and benign neglect of the population's needs. Until the 1950s, the capital Dili had no water supply, electricity, telephone lines, or paved roads. Source: 'Understanding the Tipping Point, Dili, Timor-Leste'. <http://www.urbantippingpoint.org/cities/dili/> viewed 16/4/2013.

²⁸ Infrastructure including Mandi, Cuci, Kakus (MCK) – Indonesian public facility combining bathing, washing, and toilet facilities were built during Indonesian occupation. Source: Dutton, P and Siregar, R (2010). Timor-Leste Urban Sanitation Assessment, WSP.

²⁹ Government of Timor-Leste (2004) Approval for the Modalities of Distribution of Water for Public Consumption, 11 February 2004.

³⁰ Local methods of revenue raising include trading of livestock and collective fund raising. Individual household fee collection is not a cultural practice in rural areas.

Community participation in rural water supply planning has been formalized through the Rural Water Community Action Planning (CAP) Guidelines, developed by the government in 2005, with AusAID support. These guide both infrastructure development and community planning to support stakeholders to implement WASH programs in rural communities. Following a review of the community engagement, the CAP guidelines are currently being revised to improve consultation with the community and extend community engagement over the entire project cycle, improve social inclusion (disability and gender), and harmonize the process with decentralized project approaches to water supply development. In particular, community representation in the monitoring is an added feature.

A National Water Supply Policy (currently being drafted) is needed to update Decree-Law 4/2004 and provide a policy framework to allow future legislation to be developed. The new policy will reflect the rapid development of the sector, provide a long-term vision and clarify institutional roles of the DNSA and broader stakeholders, and outline arrangements for water resource management, asset ownership, and financing.

A drag on the development of utilities and urban water services is the lack of tariffs for urban areas. Tariffs were introduced briefly between 2004-2006, but since the Dili riots in 2006 people in Dili have not paid for water. With ADB assistance, trials of metering and tariffs in three subzones in Dili are currently underway to reintroduce water tariffs.³¹

Sanitation Reform Delayed but now Founded on Progressive Policy

Until recently, sanitation has been a low priority for government, reflected in limited institutional capacity within government, and *ad hoc* planning and development driven by low and unpredictable budget allocations. Evidence of the government's increasing commitment to and priority for

sanitation improvement includes establishing the National Directorate of Basic Sanitation (DNSB) in the Ministry of Public Works, which—thanks to strong senior leadership of the Secretary of State—has effectively increased the profile of sanitation.³²

Replacing the hastily introduced post-Independence 2002 Sanitation Management Decree, the National Basic Sanitation Policy was endorsed in 2012 after wide consultation, and has done much to unify the sector approach. The Policy comprehensively covers urban and rural areas, and household, institutional and community sanitation; guides all sector stakeholders on the policy principles, policy instruments and financing rules that should be utilized; and clarifies the roles and responsibilities of the various stakeholders.³³ The main focus is on safe excreta disposal and hygiene behaviors, but the policy also covers solid and hazardous waste disposal, and drainage. The policy sets out an integrated and staged approach to achieving a healthy environment, with open defecation free (ODF) *sucos* being the first target. The immediate challenge and focus is for dissemination, comprehension, and implementation of the policy at district level and below, while improving coordination between Ministry of Health, Ministry of State Administration, DNSA and DNSB.³⁴

Following approval of the National Basic Sanitation Policy, work began in 2012 on a draft Strategic Sanitation Plan to guide priorities and actions to achieve sanitation targets. Initially covering rural areas, the Strategic Plan clearly states sanitation targets, identifies priority groups and geographic areas, determines the best use of subsector resources and capacity, and proposes tracking of *suco* sanitation using five levels of achievement – the first being ODF *sucos*.

Timor-Leste has largely abandoned subsidies for household toilets, instead adopting subsidy-free sanitation promotion and triggering behavior to end open defecation, through Community Led Total Sanitation (CLTS). Initially

³¹ Ministerial Diploma October 2009 – How to regulate/implement a system of tariffs.

³² Decree Law No. 1/2011 on Organizational Structure of Ministry of Infrastructure, Article 25 Directorate of National Basic Sanitation Services.

³³ Timor-Leste National Basic Sanitation Policy, approved by the Council of Ministers in January 2012.

³⁴ Pers. comm. Vice Minister for Health, 21/11/2012.

trialed in 2008, CLTS has now been adopted by the government as a primary component within the Community Action Plan for Sanitation and Hygiene (PAKSI) program developed by the Ministry of Health and under trial in selected districts. Government and partners now mostly follow a consistent approach of subsidy-free sanitation.³⁵ Currently being developed is a Program of Assistance for Basic Sanitation that targets vulnerable households identified by the Ministry of Social Solidarity with support to improve sanitation.³⁶

Sanitation and drainage is a priority for the capital Dili and the government has shown a willingness to adopt new technologies not used in Timor-Leste before. In 2012 the government commissioned and funded the preparation of a Sanitation and Drainage Masterplan for Dili.³⁷ This master plan proposes a staged approach to sanitation in Dili, culminating in up to eight decentralized wastewater treatment systems by 2025. Stage 2 of the Masterplan, which sets up new organisational and regulatory frameworks and builds one decentralized wastewater treatment plant in central Dili, has been submitted to Ministry of Finance for tendering. This suggests the government is prepared to fund some aspects of urban sanitation itself. The Master Plan proposes that by 2030 separate government agencies exist for managing policy, regulation and operations to improve accountability, oversight and performance management.

Development Assistance Influenced Reform

Development partners, both donors and international NGOs, have been integral to the introduction of new ideas and practices in Timor-Leste – for example, community planning approaches, CLTS, gender, disability, monitoring tools, and more lately focus on asset management, operations and maintenance and service provider reform. Support has been long term, with the nature of development partner assistance transforming over the last 10 years from emergency response and standalone infrastructure projects

to greater partnership alignment with government development plans, and an emphasis on technical advice and capacity building.

On a Path to Decentralization

Timor-Leste is committed to decentralization and has developed strategies and a legal framework to delegate spending and management to 13 local district governors, although transformation to full decentralization is not likely until at least 2014. Ministry of State Administration policy guidelines (2008) outline a “single-tier” of municipal government which will merge sub-district and district administrations into municipalities to deliver services, specifically civil registration, primary health, primary education, water and sanitation, and local roads. It is intended that most sub-district offices will be kept as service-providing extension units.

Funding for decentralized infrastructure development, through block grants, has been in place since trials of the *Programa Dezenvolvimentu Lokal* (PDL) in 2004. The PDL now operates in all 13 districts. Other programs include the *Pakote Referendum* in 2009, the *Programa Dezenvolvimentu Desentralizadu* (PDD) begun in 2010, which was split into PDD1 and PDD2. The *Programa Nasional Dezenvolvimentu Suku* (PNDS) for small scale community projects at *suco* (village) level including water supply and sanitation is presently under trial in five districts, but set to begin full fund disbursement in 2014.

Community-selected projects under the decentralization programs include water supply schemes and public sanitation.³⁸ However participatory methods at *aldeia* (hamlet) level are weak, technical quality of some water and sanitation projects has been below standard, value for money has been questioned, and, without provision for maintenance, some schemes have failed.³⁹ Due to poor coordination at district level, decentralized (and NGO) water and sanitation projects seem to be operating outside of the mainstream

³⁵ Some cash incentive programs exist, for example Red Cross provides a cash incentive of \$20 as a reward for a select few households who have developed an understanding of hygiene as part of its integrated water, sanitation, hygiene, disaster preparedness, and livelihoods program, however this is very small scale and does not cover the cost of sanitation hardware.

³⁶ The type of sanitation support is yet to be decided but might include a voucher system, rebates, or cash transfers. Pers. comm. Alex Grumbley 13/9/2013.

³⁷ GoTL funded international technical expertise from a consortium led by Melbourne Water to prepare the Masterplan.

³⁸ Decentralized programs do not fund household toilets, only community toilets eg at villages, markets, schools, bus stations etc.

work and knowledge of sector stakeholders such as district DNSA staff.⁴⁰

Each program had or has different rules as to size of infrastructure and different administration and different mechanisms for prioritization. The PDL as well as the PDD2, and PNDS programs are administered by Ministry of State Administration. In late 2011 the government decided on an integrated mechanism to harmonize deconcentrated development programs, called *Planu Dezenvolvimentu Integradu Distrital* (PDID), which includes PDD1, PDD2 and PNDS.

Efforts to improve the quality of infrastructure projects, including decentralized water supply schemes, are in part addressed by the National Development Agency (ADN). Established by decree law in 2011, this agency evaluates the merits of water and sanitation projects planned by individual ministries; and then monitors, using field staff, the delivery of projects and compliance with engineering design and contracts.⁴¹ Other factors that are critical for the sustainability of water supply and sanitation projects such as community participation, maintenance, and coordination mechanisms at national and district level are not part of the Agency's mandate.

Table 3.1: Key dates in the reform of the sector in Timor-Leste

Year	Event
2002	Independence (official date of international recognition of independence 20 May 2002)
2002	Sanitation Management Decree relating to sewage and wastewater disposal in urban areas, solid waste management, and drainage,
2004	Decree No. 4/2004 dated 11 February promulgated (approves the Modalities of Distribution of Water for Public Consumption)
2005	Community Water and Sanitation Guidelines developed by DNSA
2008	Rural Water, Sanitation, Hygiene Sector Strategy 2008-2011 developed
2008	Ministry of Health National Integrated Community Health Services (SISCa) starts – includes promotion of sanitation and personal hygiene at monthly community outreach in all districts
2011	Timor-Leste Strategic Development Plan 2011-2030 developed – sets targets for water supply and sanitation to 2030
2010	National Census includes questions on household water and sanitation which match JMP format
2010	National Water Supply Policy developed (draft)
2010	Rural water and sanitation monitoring tool (SIBS) introduced
2011	National Health Sector Strategic Plan 2011-2030 launched
2011	National Development Agency established by decree law to assess and supervise capital works projects including in districts
2011	National Directorate of Basic Sanitation (DNSB) established
2012	National Basic Sanitation Policy approved by Council of Ministers
2012	Dili Sanitation and Drainage Masterplan prepared
2012	Ministry of Health trials Community Sanitation and Hygiene Planning program (PAKSI) (includes subsidy free CLTS approach to sanitation promotion)
2012	DNSA and DNSB Five Year Action Plan 2013-2017 prepared
2013	Strategic Sanitation Plan developed
2013	Trial of water tariffs in selected zones in Dili
2013	Planning for trials of operation & maintenance options for rural water supply systems commenced

This introduction puts the service delivery pathway in context, which can then be explored in detail using the SDA scorecard. The following Sections 4 to 6 highlight progress and challenges within the WASH sector across three thematic areas—the institutional framework, financing systems, and sector monitoring. The scorecards for each subsector are presented in their entirety in Sections 7 to 10.

³⁹ Shortcomings of projects delivered through decentralized block grants are widely reported by many sector experts, and also reported generally eg. Community Experiences of decentralized development in Timor-Leste, The Asia Foundation/Irish Aid; Dale, P and Butterworth, D. (2010) Articulations of Local Governance in Timor-Leste: Lessons for Local Development under Decentralization. Justice for the Poor Policy Note. World Bank. Washington. Kuehn, S (2010).

⁴⁰ Reported by district representatives during SDA workshops in March and June 2013.

⁴¹ Government of Timor-Leste, Decree Law 2011 National Development Agency. The ADN will eventually evolve to be an economic investment agency in the same vein as national planning agencies in Indonesia, Thailand and Philippines (pers. comm. Alex Sarmento, National Development Agency, 21/11/2013).

4. Institutional Framework

Priority actions for institutional framework

- Increase autonomy, incentives and accountability of DNSA for improving urban water supply services
- Clarify asset ownership and maintenance roles of rural water supply schemes
- Strengthen service delivery at district and subdistrict levels including increasing human resources and technical capacity, and improving coordination
- Continue awareness building on options for private sector involvement, and reviewing options appropriate for the stage of sector development to address capacity constraints
- Increase Government commitment to meeting WASH human resource needs including taking responsibility for staff positions currently funded by donors (if needed) and recruiting adequate numbers of urban and rural staff for DNSB
- Clarify the responsibilities and improve coordination between Ministries of Public Works, State Administration, Health, Education, Tourism etc. in water supply, sanitation, hygiene, and water resources

WASH sector responsibilities

The Ministry of Public Works has lead responsibility for rural and urban water supply and sanitation through the Directorates of Water Supply (DNSA) and Basic Sanitation (DNSB).⁴² A disadvantage of water and sanitation being within the Ministry for Public Works is the tendency for it to be overshadowed by the roads sector, which is a major priority for the government to achieve strong economic growth and improve human development.⁴³ Sector stakeholders state that insufficient financial commitment is given to water and sanitation, and road development projects are favored. However the establishment of a Secretary of State for Water and Sanitation is going some way to improve the standing of water and sanitation within the Ministry. The Ministry of Health is the lead agency for health and hygiene, rural sanitation and promotion, through the Department for Environmental Health (sanitation) and the Department of Health Promotion (hygiene promotion).

Other ministries and agencies with responsibilities related to WASH are the ADN, Ministry of State Administration, Ministry of Education, and Ministry of Tourism. Challenges to effective coordination, particularly between the Ministry of Public Work, ADN, and Ministry of State Administration, are due to constantly changing roles and responsibilities of each organization. Efforts are being made by the new Minister of Public Works to improve internal coordination within the Ministry.⁴⁴

Water Supply

In urban areas the operations and management of Timor-Leste's 13 urban water supply schemes (servicing Dili and 12 district capitals) lies with the DNSA. In rural areas DNSA has a technical advisory role for community managed water supply schemes according to Decree-Law 4/2004.

⁴² Within the Ministry of Public Works the Directorate General for Water and Sanitation has three directorates: water supply (DNSA), basic sanitation (DNSB), and water quality and control/water resources (DNCQA). In 2011 DNSB was elevated to a separate directorate, equivalent to DNSA, previously being a unit under the former National Directorate for Water and Sanitation (DNSAS).

⁴³ Timor-Leste Strategic Development Plan 2011-2030.

⁴⁴ Pers. comm. B da Sousa, ADB, 12/3/2013.

DNSA district offices are small with between 6 and 12 staff, and one or two people assigned to rural WASH. Recent placement of 88 sub-district facilitators has helped supplement rural WASH staff.⁴⁵ District offices are constrained in service delivery due to: lack of qualified technical staff with skills in engineering design, maintenance etc; a recently (2013) increased but historically small discretionary operational budget; lack of vehicles for travelling to urban schemes for operational support; a centralized national procurement system that slows down acquisition of spare parts and repairing water supply systems; lack of clarity over O&M responsibility for rural schemes; absence of performance measures for customer service; and poor communication between national level and district DNSA.⁴⁶ With possibly the exception of the annual budget process, decisions and initiatives affecting the WASH sector are usually developed in Dili and are not always communicated effectively to districts for implementation. National DNSA staff rarely visit districts, and information does not reach district levels on a timely basis (e.g. guidelines, decisions, outcomes).⁴⁷ District staff reported feeling abandoned and ignored.⁴⁸ District level skills and coordination need to be improved including strengthening district WASH working groups.

Because DNSA operates as a government department it has limited autonomy in decision making, other than for basic operations and administration.⁴⁹ All financing, fees and charges, staffing, infrastructure development, and procurement decisions (including hiring of consultants and other technical expertise) require the prior approval of higher level government agencies. This slows down day-to-day operations, and provides no incentive for improving service delivery. Development partner assistance has helped to build DNSA capacity

to plan, manage, and operate water supply systems and to develop and implement water sector policies, and although improving, overall capacity remains weak. Five-year action plans for rural and urban water and sanitation 2012-2017 lack cost estimates, suggesting a lack of skills in preparing detailed costings, as well as limited coordination with other ministries, NGOs, and donors.

In the urban sector, the ability of the DNSA to operate and maintain urban water supplies is also constrained by limited annual budgets to fund O&M. According to Decree-Law 4/2004, any revenue generated from the reintroduction of tariffs would flow to the Ministry of Finance, not to DNSA, for operational purposes. Currently the only advantage tariff reintroduction offers DNSA is as a consumer demand management tool. Maintenance is reactive, planned asset maintenance programs are not implemented, and system functionality and service quality are declining. There is no independent regulator for urban water supply operations or consumer accountability, and in effect DNSA regulates itself. The autonomy of service providers to retain tariffs is essential in establishing a commercial utility approach as a key building block of the sector reform roadmap, as well as the separation of service provision (DNSA) and regulatory functions.

In the rural sector, a key issue is the unclear asset ownership of water supply facilities, especially schemes that are community managed. When maintenance beyond basic repairs is required, the community will typically turn to DNSA for assistance, but DNSA's role in major repairs, and budget for this, is unclear. Rural water scheme functionality is being tracked through a monitoring system but even when non-functional schemes are identified, there is no capacity

⁴⁵ 88 no. Sub district facilitators directly facilitate community engagement, facilitate community action planning, help establish community management groups, collect water and sanitation monitoring data, and monitor contractor performance.

⁴⁶ District DNSA operational budget has increased to \$3,000/month in 2013, up from \$1,000/month in 2012. Each district has been provided a vehicle in early 2013 (under BESIK) for rural O&M, but not for urban O&M – pers. comm. K Clark, Program Manager, BESIK, 12/9/13

⁴⁷ Some district towns have not had visits from the national level for 5-7 years, and the lack of communication is worsening - pers. comm. B da Sousa, ADB.

⁴⁸ District personnel who attended the SDA workshops directly expressed frustration at the failure of national level to communicate information to districts.

⁴⁹ ADB (2011) Democratic Republic of Timor-Leste: Strengthening Water Sector Management and Service Delivery, Technical Assistance Report, Project Number: 45227, Asian Development Bank, Manila; and SDA water supply workshops March and June 2013.

or budget in DNSA to respond to rehabilitation and repair needs at district level. Rural water supply services are further complicated by the separate budget and delivery systems of Ministry of State Administration-funded decentralization projects. Coordination at the district level is limited to district staff certifying the work of contractors to be paid by Ministry of State Administration. District staff know little about these schemes and have no sense of ownership towards their successful execution and operation.

Sanitation and Hygiene Promotion

In urban areas, households are responsible for on-site sanitation, while wastewater treatment facilities and public toilets are the mandate of DNSB. Only Dili and Baucau have septage treatment facilities. The role of districts in urban sanitation has been defined but is not operationalized due to budget constraints.

Rural sanitation is also the responsibility of households with the Ministry of Health taking the lead agency role, and promotion of household sanitation and hygiene also the domain of the Ministry of Health through the Department for Environmental Health. DNSB has no district staff or program budget for rural sanitation. According to rural stakeholders, householders need technical support to build a durable toilet, even dry pit latrines, but this technical support is missing at the district level. Existing sub-district facilitators, placed around the country to support rural water supply, do not have sanitation in their job descriptions although some have had basic training in latrine construction in 2009. Currently no institution is tasked with providing technical sanitation field support necessary for the implementation of the sanitation policy and rural sanitation programs.

However, currently DNSB is increasing capacity from national level down to the district level with recruitment in 2013 of one sanitation officer in each district to address urban and rural sanitation. Each will be trained in technical and planning aspects of community-based sanitation and hygiene program (PAKSI), but will focus on quality assurance of infrastructure. The directorate will also contain a Policy and Strategic Planning section with responsibility to develop a strategy and formulate multi-year plans for the delivery of basic sanitation services in urban and rural areas of Timor-Leste.

Sanitation and hygiene promotion currently occurs through the Ministry of Health, and to a lesser extent, DNSA. Environmental health promotion, covering personal hygiene, sanitation, and healthy homes, is extended into rural areas through mobile primary health clinics operated by professional health workers and volunteer Family Health Promoters under the Ministry of Health's SISCa (Integrated Community Health System) program.⁵⁰ For sanitation promotion SISCa only targets those who attend the *suco* mobile clinic. However a handwashing with soap campaign currently under trial through the SISCa system, supports Family Health Promoters to undertake *aldeia* based activities for hygiene behavior change and may prove more effective than the *suco* level intervention. In rural communities where a new water supply system is being implemented DNSA sub-district facilitators provide limited sanitation promotion, although this may be strengthened by recruitment of rural sanitarians and improved cooperation with Ministry of Health, local government and NGOs. Hygiene promotion in urban areas only occurs through the SISCa system or as part of standalone infrastructure projects funded by development partners.

⁵⁰ Ministry of Health strengthen communities in the area of health through SISCa (Servisu Integradu da Saúde Comunitária – Integrated Community Health Services).

The future of rural sanitation and hygiene promotion is expected to be carried forward through the PAKSI program implemented by Ministry of Health sub-district sanitarians. Unlike SISCa, PAKSI is implemented at *aldeia* level thus having a greater reach to households, and directly involves local leaders. Based on the results of the trial and sanitarians' ability to successfully implement PAKSI in three districts, a decision will be made by Ministry of Health on whether to expand this as a national program. This means that long term government funding is required to recruit and train sanitarians and fund operational costs and monitoring for all 65 sub-districts.

Development Partners

Development partners play a key role in supporting the government, particularly in infrastructure funding and more recently capacity building. Simple demarcation between development partners over urban and rural sectors has emerged over time.

In the rural sector, AusAID/DFAT has provided substantial support for water supply and sanitation since 2003, with the current BESIK (Rural Water Supply and Sanitation) program ongoing between 2007 and 2020.⁵²

In 2012 USAID completed a three-year integrated rural water, sanitation and hygiene project (DWASH) in two districts (Oecussi and Manatuto), however the project has not been scaled up beyond the pilot districts, and USAID is not currently active in the sector.⁵³ The European Commission is supporting rural WASH as part of integrated rural development.

In the urban sector ADB has been the main funder of urban water supply projects in Dili and district towns (currently infrastructure in Manatuto and Pante Makassar, but in the future institutional support, and water and sanitation master planning for priority district towns of Baucau, Manatuto, Viqueque, and Los Palos). JICA has provided grant aid for the urban water sector for a number of years, particularly rehabilitation of Dili and district towns water, and recently water treatment facilities in Dili. KOICA has funded Timor-Leste's first desalination facility.⁵⁴

A gap in development partner engagement exists in urban sanitation.

NGOs

NGOs play a key role in rural WASH in the absence of strong local government and private sector actors, however they face challenges of limited human resources, technical expertise and financial capacity. Many local NGOs are supported by UNICEF and international NGOs (e.g. WaterAid, Plan, World Vision, Care, Triangle, Red Cross, and Child Fund) to implement water and sanitation in rural areas. The capacity of local NGOs is developing slowly and should improve further as some international NGOs move from contracting local NGOs for project delivery to long-term engagement, capacity building, and organizational support.

BESIK is currently supporting trials of NGOs to provide contract maintenance for water supply systems in three locations. While DNSA and the Ministry of Health are uncomfortable with paying NGOs for this work, it is potentially a solution for improving sustainability of community schemes without tying up DNSA resources in this day to day work.⁵⁵

⁵¹ PAKSI teams are created by the Sanitarian to include Ministry of Health community volunteers who provide support at the SISCAs, *suco* chief, *aldeia* chief, and natural leaders.

⁵² BESIK (Be'e Saneamentu no Ijiene iha Komunidade) Phase I: 2007-2012 (5 years); Phase II: 2012-2020 (in two 4-year blocks)

⁵³ "USAID's Water Project Leaves Behind Robust Systems, Stakeholder Commitment/ USAID Nia Projetu" http://www.flickr.com/photos/usaid_timor-leste/6718849617/ [viewed 9/8/2013]

⁵⁴ Located in Metinaro (on the outskirts of Dili) which produces 240 m³ per day which is then trucked to schools, clinics and public tanks around the plant.

⁵⁵ The opinion that government did not yet feel comfortable contracting O&M functions to NGOs was expressed by several people working in the sector.

The Private Sector

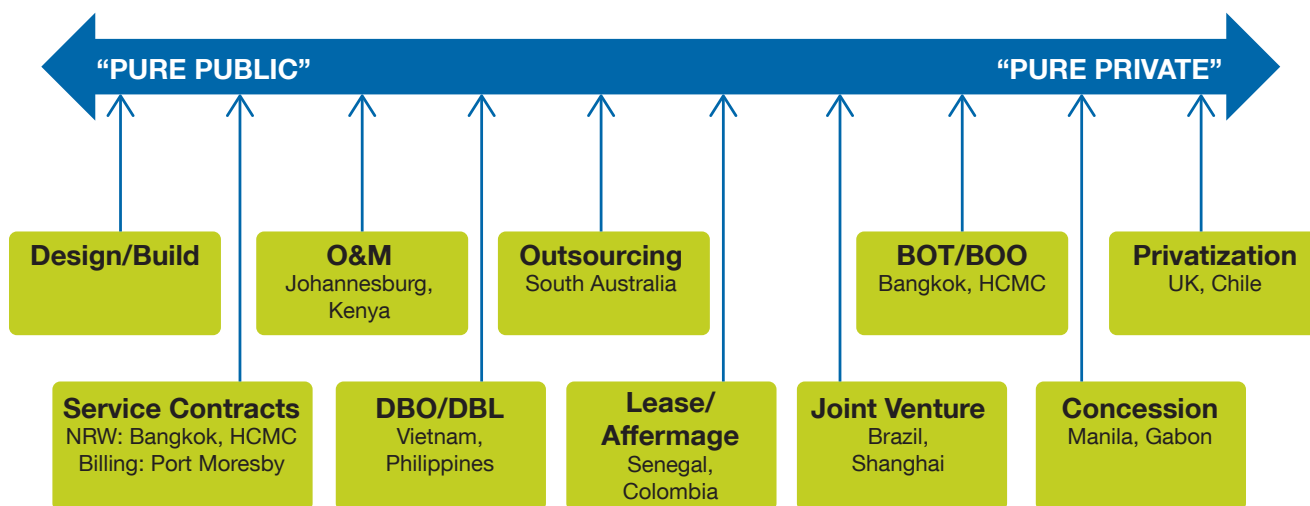
Except for small-scale hardware suppliers, the private sector is absent in Timor-Leste’s WASH sector.

The Government is currently contemplating private sector participation in water supply operations and maintenance in district capitals. While the decision is ultimately a political one, DNSA would consider a role for the private sector in service delivery, however the nature of that role was undetermined.⁵⁶ Starting with service and management contracts for specific functions would be a realistic way to embark on public private partnerships, as Timor-Leste is not yet ready for full-scale private-public partnership models such as

lease and concessions. Private financing of infrastructure development is likely to be unattractive to investors until contracting, financing and cost recovery, and human resource capacity conditions are improved, however there are options for performance-based service contracts and other management contracts which could be implemented in the short term under the control of DNSA. The range of private sector engagement options, and the countries and cities where these options are in use, is shown in Figure 4.1.⁵⁷

Trials of maintenance services for rural water supply under contract to NGOs and local companies are being supported by BESIK but could, with guidance, be managed by DNSA.

Figure 4.1 Public-Private Partnership Options



NRW= Non Revenue Water; O&M= Operations and Maintenance; DBO/DBL= Design Build Operate/Design Build Lease
BOT/BOO = Build Operate Transfer/Build Operate Own

Source: Adapted by authors from WSP Global Meeting on PPP powerpoint presentation by I. Menzies, Nairobi, 28 May 2013.

⁵⁶ Senior DNSA staff, June 2013; Pers. comm. B de Sousa, ADB Project Officer, 12/3/2013; G Costin, ADB consultant, 19/11/2012.

⁵⁷ More information on PPP in service provision is available at: <http://ppp.worldbank.org/public-private-partnership/> and <http://wbi.worldbank.org/wbi/about/topics/public-private-partnerships>

Coordination Mechanisms

Multilateral and bilateral donors are coordinating international development assistance for water supply and sanitation with the Ministry of Finance. Technical levels of coordination between development partners and government exist on a project basis and through formal sector mechanisms such as the WASH Forum and Sanitation Working Group at national level. Coordination between stakeholders at district level is however not formalized. Previously, weekly infrastructure round table meetings of development partners provided an opportunity to share activities, issues and solutions. However these ceased when the ADB initiator departed Timor-Leste, indicating the need for government-owned processes. Development partners would welcome its reinstatement. ADB has proposed establishing a National integrated working group for water and sanitation, however this is awaiting approval from government.

Capacity shortfall

Timor-Leste in general has a shortfall of skilled personnel across many sectors, including WASH. Increased resources and capacity are needed in all subsectors of WASH. For example, DNSB has gone very rapidly from a department to a national directorate. Human resources are especially needed in rural water supply and rural sanitation if targets are to be met.⁵⁸ Simply to meet the MDG targets, there is demand for an estimated 25 to 70 engineers and 120 to just over 300 technicians across all sectors. The biggest shortfall in positions (where the demand will not be met from annual output of qualified graduates alone) is for technicians (drillers, plumbers, carpenters, welders, electricians,

pipe fitters, water supply design technicians, water supply construction technicians) and skilled workers (well builders, hygiene promoters, latrine builders, sanitation mobilizers, hand pump technicians). As mentioned above, outsourcing or developing management contracts with private sector will also be an important way to address capacity gaps in the short and mid-term.

⁵⁸ FH Designs (2009) Human Resource Capacity in the Water, Sanitation and Hygiene Sector in East Timor, DFID.

5. Financing and Its Implementation

Priority actions for institutional framework

- Increase capital works budget execution by improving capacities in public procurement, tendering, and contract management processes and documentation
- Develop costing guidelines to ensure that future project plans for capital investment (hardware) are accompanied by budgets for the required level of technical assistance (software), especially for rural water supply and rural sanitation
- Improve sector financial coordination by annually reporting in one consolidated place, all sources of capital and non-capital funds expended on WASH

Investment planning

Sector investment plans as a formal tool for public investment planning were abandoned in 2007 due to a change in government focus; currently none of the four sub-sectors has a sector investment plan, although there are several strategies and action plans as discussed in section 2. Timor-Leste uses a medium-term expenditure framework that extends planning out for five years with indications of planning for water supply and some sanitation investments within that framework.

The Government is committed to capital investment, spending US\$561 million in 2011 and projected to spend US\$1.08 billion by 2015. By comparison, only US\$55.8 million (or 5% of the 2015 total capital budget) is needed annually for water and sanitation capital expenditure and US\$6.9 million for operations and maintenance expenditure.

Capital expenditure as a proportion of the total government budget was above 50% in 2011 and 2012, but dips to 46%

in the 2013 budget. For 2014 and 2015, budget projections show total capital expenditure at 51% and 52% of the budget respectively. According to the 2013 budget commentary, inability to spend large amounts from the infrastructure fund caused a dip in total capital spending in 2013. This is a major reason that the 2013 budget has been reduced substantially.⁵⁹ The projected budgets also evidence the phasing out of multilateral grant aid in 2017 from World Bank and ADB, due to Timor-Leste graduating from being eligible for such grants. The country will still be eligible for concessional loans and some selected grants in certain sectors or for technical assistance however none has been forecast in budgets.

There are two major sources of capital spending for water supply and sanitation infrastructure in the budget:

1. The Consolidated Fund of Timor-Leste
2. The Infrastructure Fund.

⁵⁹ Government of Timor-Leste 2013a. p. 47.

The Consolidated Fund is not a true fund but another name for the budget; it captures all minor capital spending (including O&M) carried within Ministry budget, including the local development programs, as well as salaries, goods and services, and transfers. In 2010 and 2011 US\$2.2 million and US\$2.5 million respectively were allocated as capital expenditure for DNSA and DNSB, but this appears to have declined precipitously in 2012 and beyond as decentralized funds and the Infrastructure Fund include relatively large amounts of capital spending for water supply and sanitation. The Consolidated Fund includes many local development programs that are major sources of decentralized spending for rural and some urban water supply, and also for public sanitation.⁶⁰ These include the Ministry of State Administration-managed PDL, plus PDD and PNDS funds. Section 3 discusses these funds at greater length.

The Infrastructure Fund currently includes five major water supply and sanitation programs: 1. Studies for master plans regarding water and sanitation at a national level; 2. The Dili sanitation and drainage master plan; 3. Construction and supervision of sewers and drainage in Dili; 4. Construction and supervision of water and sanitation systems (national level); and 5. Water supply in Dili. In addition, the MDG Suco Fund includes budget of US\$6.9 million in 2013 and US\$7.5 million in each of the next four years for water and sanitation.⁶¹

Table 5.1 presents the total budgets for both the Consolidated Fund and the Infrastructure Fund and the estimated water and sanitation budget within those funds, by program.

Table 5.1 Timor-Leste: Capital Spending from the Consolidated Fund of Timor-Leste and the Infrastructure Fund Relevant to Water Supply and Sanitation 2011-15

	2011 budget	2012 budget	2013 budget	2014 budget	2015 budget
Total Capital and Development from Consolidated Fund, of which:	86.6	124.8	152.5	158.6	164.9
PDD1 Sub-district, Suco, and Aldeia (re-appropriation)	15.8	34.4	9.4	n.a.	n.a.
PDD2 District (re-appropriation)	26.6	30.1	6.3	n.a.	n.a.
PDID Program (from 2013 on)	n.a.	n.a.	71.3	90.5	94.1
Ministries/Agencies	44.1	60.3	65.5	68.1	70.8
Total Capital and Development from Infrastructure Fund, of which:	--	430.8	604.4	868.3	918.4
Water and Sanitation	--	4.9	10.1	13.2	27.0
Millennium Development Goals	--	14.0	46.3	81.5	64.0

Note: -- not available n.a. not applicable. Source: Government of Timor-Leste 2013a pp. 42-46.

⁶⁰ PDD1 and PDD2 include funding for water supply in communities that are classified as “urban”. Despite their small populations, district capitals in Timor-Leste are generally classified as “urban” even though modes of water supply and sanitation delivery may more typically be “rural” (small piped systems, wells, onsite sanitation). The sanitation in these funds is typically public sanitation on the Indonesian MCK or MCK-plus model, but there seems to be some minor funding of household sanitation.

⁶¹ Government of Timor-Leste, 2013c table 5101 (p16). The MDG Suco Fund provides water and sanitation to new houses in sucos (5 per year per aldeia).

Budget transparency

With a basic understanding of funding sources, it is relatively easy to identify capital investments in water supply and sanitation from Timor-Leste budget statements, although details on each sub-sector allocations are not available.⁶² Cooperating ministries and the Ministry of Finance are quite open with financial information, however details of some decentralized fund expenditures were not readily available and are not published, but program data were willingly given where they were available. Operational subsidies for O&M in district budgets cannot be identified in the budget. The most recent available Public Expenditure and Financial Assessment review was undertaken by the IMF in 2010 based on data from 2007-2009. It states fiscal transparency is “quite high” and “overall provision of fiscal information is quite good”.⁶³ The report compliments advances made in public financial management.

Utilization of budgets

The IMF 2010 review of 2007-2009 data concluded that the Timor-Leste budget is not an accurate predictor of expenditure, partly due to under-execution of the budget and partly due to supplementary budgets. The IMF 2010 review shows that actual primary expenditure deviated from budget estimates by more than 15% in two of the three previous years considered, but has been improving over time. The deviation was 45% in 2007 and 39% in 2008, however it was only 11% in 2009. Moreover, some ministries are better than the overall ranking; participants in the SDA consultation process—many of whom came from the Ministry of Public Works—consistently rated budget execution as high (over 75%). This could partly be explained by the fact that recurring expenditures (salaries) form a high proportion of

the operating budget; and salaries and small capital works budgets are known to execute well.

Most capital expenditures for urban water supply and sanitation are the responsibility of the decentralized funds (largely the responsibility of the Ministry of State Administration) or the Infrastructure Fund (run by the Ministry of Finance). On the basis of two year’s data from the PDL, the decentralized funds appear to have little difficulty spending budget allocations, but these are for small water supply projects more often associated with rural settings. The consolidation of the local development programs into the Integrated District Development Program (PDID) may affect implementation speed, because the program is forecasted to be quite large and budget execution and implementation could become an issue.

One difficulty that arises is estimating capital works implementation and associated expenditure, as evidenced in Infrastructure Fund carry-forwards of unused water and sanitation project allocations.⁶⁴ Only 40-50% of the Infrastructure Fund is executed, and a substantial proportion of low executed projects are from Public Works.

The process for executing approved projects is clear, with the Ministry of Public Works responsible for project supervision; ADN responsible for checking and signing off the technical quality of works; and tendering carried out by the new National Procurement Commission. However there are bottlenecks due to poor procurement and contracting procedures and lack of adequate documentation by the Ministry of Public Works. While the Ministry of Finance payments are quick, it often rejects requests for payments due to poor documentation.⁶⁵ Delays are also caused by the slow tender preparation through the National Procurement Commission.

⁶² Budget Book 6 details Infrastructure Fund Projects.

⁶³ IMF 2010 p.8.

⁶⁴ The Infrastructure Fund for 2012 was significantly underspent and then reduced in 2013. – pers. comm. K Clark, BESIK Program Manager, 12/9/2013.

⁶⁵ Pers. comm. Hans Beck, Senior Economist, World Bank Timor-Leste, 20/1/2014.

6. Sector Monitoring and Evaluation

Priority actions for sector monitoring and evaluation

- Provide implementation support and training to improve data quality and analytical use of the water, sanitation and hygiene information system (SIBS).
- Improve performance monitoring, and public disclosure for urban water supply to increase accountability.
- Develop asset registers and asset management systems for all urban water supplies in preparation for O&M contracting.
- Synchronize data and definitions from different sources in support of robust national country monitoring systems.
- Set up subsector multi-stakeholder annual reviews to monitor past progress and agree corrective actions.

Timor-Leste is well advanced in the development of monitoring systems to track progress on water and sanitation. For the first time in 2010, the national Population and Housing Census included questions on household water supply and sanitation using the same definitions as the JMP, providing a comprehensive nationwide picture of access. According to sector professionals, enumerator unfamiliarity with different definitions of sanitation may have resulted in some misunderstanding and incorrect classification of sanitation types. Further training is needed to improve accuracy in future.

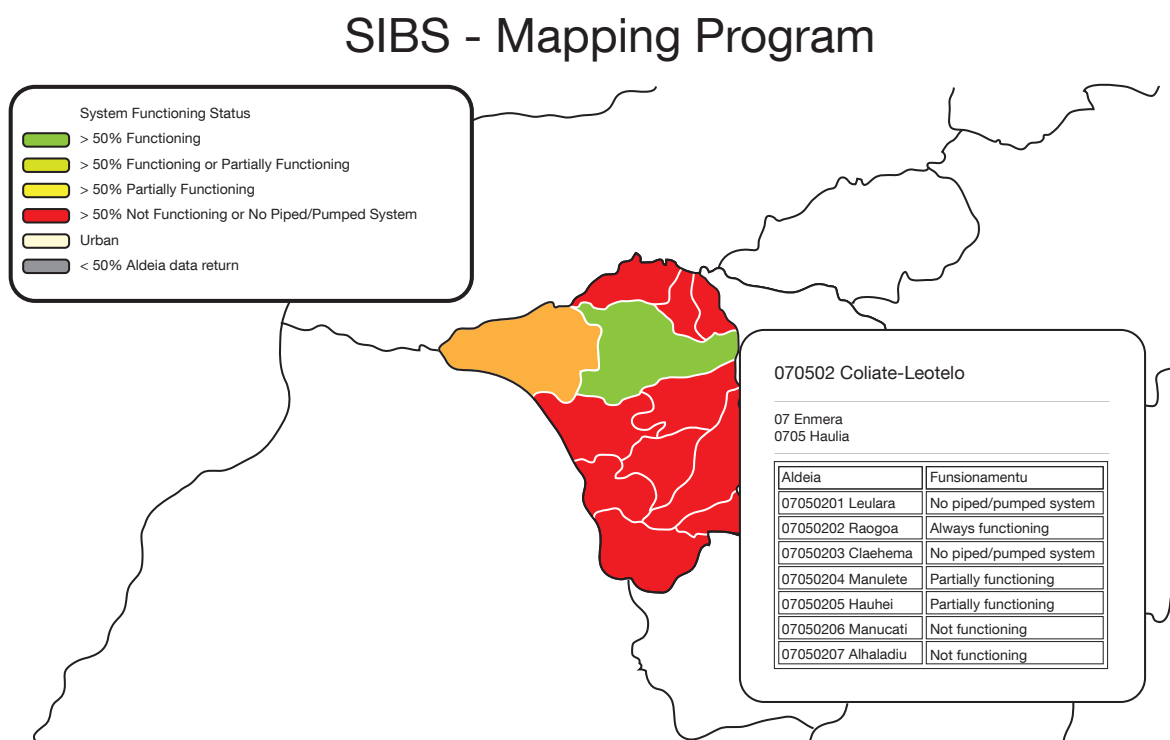
The government is well underway with rolling out a cutting edge *aldeia*-level water, sanitation and hygiene information system or SIBS (*Sistema Informasaun Bee no Saneamentu*) which will help government and partners at all levels to plan and monitor progress and sustainability of services, as well as identify service gaps.⁶⁶ Established with BESIK support, SIBS monitors national coverage and access to water supply and sanitation at the *aldeia* level. Work is currently ongoing to integrate and overlay information from individual water sup-

ply schemes, including functionality of schemes and areas served, which may be more than one *aldeia*. Systems are improving towards consolidating data from the SIBs and sector planning tool to provide information on the overall functionality of water supply schemes. For water supply, indicators include the number of households with access to water, time taken to collect water, scheme types, year of modifications to schemes, community management group and scheme functioning; for sanitation, monitoring includes household sanitation access, and community level ODF status. Sub-district facilitators (DNSA staff) update *aldeia* data as part of their routine work, and since 2012, relay field information via mobile phone SMS messages to the database, which links to a mapping system. Project and scheme-level information is willingly and routinely provided by NGOs and government to update the sector planning database so that it will be possible to identify schemes and unserved areas, and improve linkages between communities with water and schools without water. District managers are provided with monthly information for analysis, although not all district staff are yet fully informed about SIBS.⁶⁷

⁶⁶ The database currently covers 96% of aldeias. Presentation by K Clark, BESIK on SIBS during Water Workshop for SDA, March 2013

⁶⁷ District staff attending SDA workshops did not have knowledge about SIBS although SIBS has been presented in several workshops. This could be due to other district staff attending the SDA workshops.

Figure 6.1 Water supply monitoring in SIBS database



SIBS is not without its challenges, including: resourcing and management of sub-national staff for timely collection of data; quality of sanitation data especially consistent understanding of sanitation by data collectors; accessibility to SIBS information at sub-national offices due to poor internet and computer equipment; government willingness to make SIBS information publically available; and how to link SIBS to an asset management system for each water system.⁶⁸ An additional challenge is how to use the information as a tool for integrated planning. Data collection, management and analysis need strengthening through training and ongoing support.

In the urban water supply sector, ADB is supporting asset recording of schemes in Oecussi and Manatuto, as district staff do not have records of the infrastructure in their schemes, making repairs and replacement of spare parts and assets more difficult. Asset registers, with valuations of replacement cost, are useful preparation for transition to any private sector involvement such as contracting out of services and/or establishing a utility.

As a government department, DNSA does not have the monitoring and reporting regime that most urban utilities would employ, including international benchmarking of

⁶⁸ Water and Sanitation Information System for Timor-Leste SIBS (Sistema Informasaun Bee no Saneamentu) by IRC International Water and Sanitation Centre on Apr 18, 2013. Prepared for the Monitoring Sustainable WASH Service Delivery Symposium, 9 - 11 April 2013, Addis Ababa, Ethiopia. (Available via Slideshare)

utility performance. Information on water supply operations and service levels is difficult to obtain. No data are available on septage management, or septic tank operators (except where contracted directly by DNSB). No records are kept of septage disposals at the Tibar wastewater treatment facility or other district facilities. No information is available on the functioning of treatment facilities nor the quality of effluent discharged. An assessment of the functioning of existing treatment works would be useful before expanding the number of facilities in district towns. DNSA and DNSB are both operator and regulator and therefore have little incentive to monitor service performance and make information available to the public. Improved performance monitoring and public disclosure would strengthen accountability and regulatory oversight.

In terms of water quality monitoring, while DNSA has a functioning water testing laboratory in Dili developed with support of JICA and USAID, water testing is only regularly conducted for Dili water schemes. Operating and maintaining the testing facility has proved to be a challenge recently. Water quality, as far as identification of suitable sources, may be included in the next issue of the Community Action Planning Guidelines for rural water supply, however there is no water quality monitoring done presently.

There is no formal joint annual review mechanism in Timor-Leste for water supply or sanitation although this would be desirable according to sector stakeholders. As mentioned in section 4, information sharing between sector stakeholders, including national and international NGOs, takes place through the government-chaired WASH Forum and the bi-monthly government-led Sanitation Working Group.⁶⁹

Monitoring of infrastructure at the higher levels of government is meant to occur through an Infrastructure Development Strategic Sector working group led jointly by Ministry of Public Works and Ministry of Transport and Communications, and supported by ADB. This high level working group is one of four strategic sector working groups that links with the Development Policy Coordination Mechanism, set up by the Prime Minister's office to operationalize the Strategic Development Plan.⁷⁰ Strategic working group meetings are intended to be held quarterly, bringing together donors, civil society, private sector, and the Ministry of Public Works, and relevant Director Generals for each area to report on annual and five year targets to achieve the Strategic Development Plan. Only one meeting of the infrastructure working group (covering roads and bridges, water and sanitation, urban development, electricity, ports and airports) has been held since the establishment of this mechanism in early 2013.

⁶⁹ The WASH forum is chaired by DNSA and DNSB with coordination support from BESIK.(pers. comm. Keryn Clark 14/8/2013). The Sanitation Working Group is chaired and managed by Ministry of Health and supported by BESIK. Partners implementing rural sanitation share their annual plans and periodically report achievements. Pers. comm. Alex Grumbley 19/9/2012.

⁷⁰ Government of Timor-Leste (2013) *Operationalizing the Strategic Development Plan, Transition from the National Priorities Process to the Strategic Development Plan 2011-2030*. Development Policy Coordination Mechanism (DPCM). Concept paper approved by the Council of Ministers on 19 March 2013.

7. Subsector: Rural Water Supply

Priority actions for rural water supply

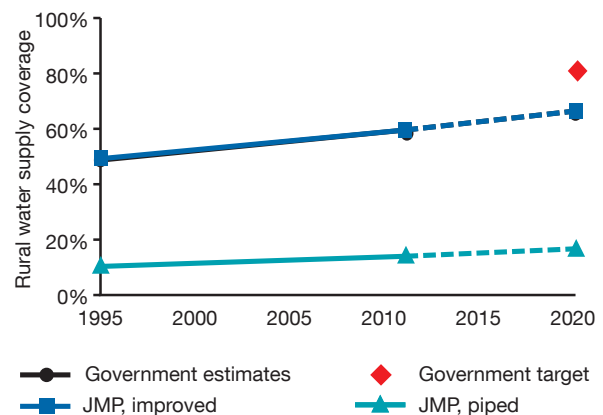
- Establish clear policies and define government and community responsibilities for O&M of rural water systems.
- Ensure budget is available for technical support systems for O&M services of community-managed schemes.
- Increase functionality of water supply schemes by a) improving the spare parts supply chain, b) increasing numbers and skills of technical staff in districts, and c) professionalizing management of rural water supply through contracting of NGOs and the private sector.
- Make district budgets transparent to show water supply funding from DNSA, decentralized projects, development partners and NGOs.
- Finalize community engagement processes to improve community involvement in water supply scheme development and operation, and harmonize approaches with decentralized projects.
- Develop and enforce legislation that is sensitive to traditional customs in order to protect springs and other water resources from illegal use.

As of 2011, 60% of the rural population of Timor-Leste had access to improved water supply, an increase from 50% in 2000 (figure 7.1). Based on 2010 Census data, nearly a quarter (23%) of the rural population use a public tap, followed by protected well or spring (16%), with only 15% accessing piped water (to yard or house).⁷¹

The number of rural people that gained access between 1995 and 2011 (172,000) exceeded the rural population increase during this period (166,000), meaning that access has more than kept pace with population growth.

The 2020 target is for 80% of rural households to have access to improved water supply. This requires about 34,000 people per year in rural areas to gain access to improved water supply between 2011 and 2020. This is more than three times the average number of people (10,700 people) who gained access on an annual basis between 1995 and 2011.

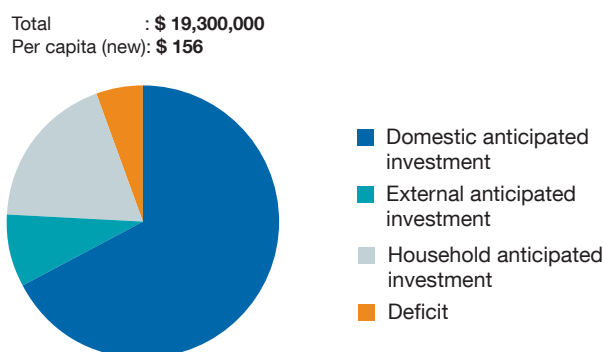
Figure 7.1 Timor-Leste: Rural Water Supply Coverage and Targets



Sources: SDA financial model; JMP (2013); GOL (2004); MOH (2012)

⁷¹ National Statistics Directorate and United Nations Population Fund (2011) Population and Housing Census 2010, Dili: Government of Timor-Leste.

Figure 7.2 Timor-Leste: Estimates of Annual Rural Water Supply Capital Expenditures and Anticipated Sources Necessary to Meet 2020 Target



Source: SDA Estimates

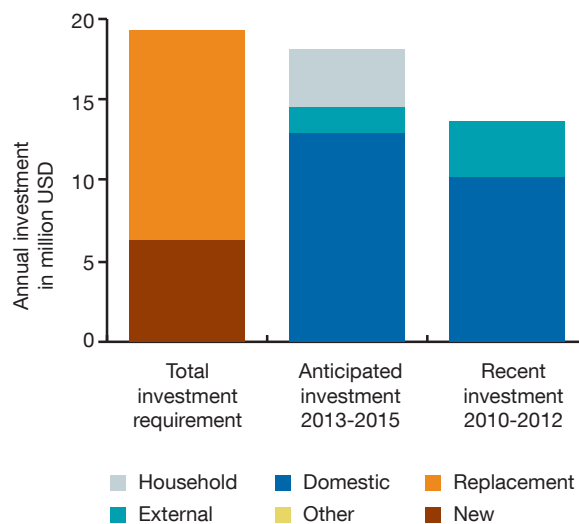
The SDA financial model estimates that in order for the target to be achieved, an annual expenditure of US\$19.3 million will be necessary; some US\$6.4 million for new investments and US\$12.9 million to replace new and existing stock. Assumptions are detailed in Annex 2.

Anticipated investment over the next three years (2013-2015) is almost to the level of required investment. Most of this money comes from government, including decentralized funds. With more attention to operations and maintenance of rural water supplies, the 2020 targets could easily be met. Greater attention to O&M will increase life span and functionality of assets; requiring less future investment in replacement of schemes and saving money in the long run.

Figure 7.4 shows the scorecard results for the rural water supply service delivery pathway. The scores for the rural water supply enabling environment are varied. The subsector has national targets, policy direction from the Water Decree 2004 (and a new Water Policy under development), as

well as clear but underfunded institutional roles. The scores for the planning-related building blocks of rural water service delivery highlight the need for coordination of funds from different sources, particularly integration of decentralized funds, government and development partner funds; a sector investment plan; and annual reviews with all stakeholders. Another bottleneck is the lack of human resources with technical and social skills to execute all facets of rural water service delivery. BESIK has supported placement of some new sub-district facilitators, however most districts are missing much needed engineering staff, and there is a need for people with technical skills such as drillers, welders, plumbers, water supply technicians, etc.⁷²

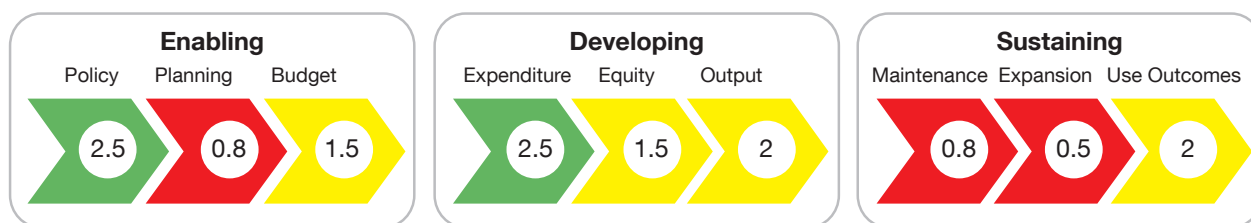
Figure 7.3 Timor-Leste: Estimates of Required and Anticipated Rural Water Supply Capital Expenditures to meet 2020 Target; Recent Capital Expenditure Investment Estimates



Source: SDA Estimates

⁷² Pers. comm. Anor Sihombing, BESIK National Engineering Adviser, 19/9/2012; FH Designs (2009) Human Resource Capacity in the Water, Sanitation and Hygiene Sector in East Timor, DFID

Figure 7.4 Timor-Leste: Rural Water Supply Scorecard



Sufficient budget is probably available to meet the rural water supply targets, but only if attention is given to operations and maintenance to ensure the water supply schemes continue to function. Without this attention to sustainability, progress towards targets will begin to fall behind. Funds for preventive maintenance, major repairs (beyond the capacity of local communities) and technical support services to community-managed schemes need to be included in annual budgets. At the same time, a funding line would need to be established to allow for replacement of rural water assets at the end of their economic lifespan, as such replacement costs are normally not covered through rural water tariffs.

In terms of developing new services, budget allocations from both government and development partners for rural water supply are executed effectively. Processes for local participation and engagement are well documented by government in the Rural Water Supply Guidelines and Community WASH Planning Manual. However, those working in the sector thought implementation of these processes could be stronger and more consistent, especially on decentralization projects where the guidelines may not be followed as rigorously. The Guidelines are currently under review to strengthen the process and harmonize with decentralized projects. The most difficult and most expensive communities to serve are low density settlements in remote rural areas of the country. These communities

make up a high proportion of unserved communities. The government's strategy, through the MDG Suco program, is to move remote households to newly built houses (with water and toilets) within new accessible settlements. To date there has been very little take up of this option by remote households.

Under the sustaining pillar, records are now being kept of the location and functionality of schemes through SIBS. While many water management committees are collecting fees for basic operations, there is no system or policy in place for financing and delivering effective maintenance beyond minor repairs. The unavailability of spare parts, even in Dili, and lack of standardized equipment, such as pumps, is a serious bottleneck in service sustainability. Requisitioning spare parts through the government system can take months.⁷³ Some positive signals of the government's change in commitment to O&M are an increase in the 2013 district operating budget, plus a 2014 budget submission for 13 rural O&M technical staff (1 per district) to be recruited by DNSA and trained by BESIK.

The expansion building block scores red as there are barriers to the expansion of existing schemes despite this being a legitimate government function. A standard exists for water quality, as well as a professional water testing lab, but testing is rarely carried out after scheme design due to sampling logistics, unavailability of chemicals, and insufficient budget.

⁷³ Pers. comm. Anor Sihombing, BESIK National Engineering Adviser, 19/9/2012; Rob Dewhirst, ADB consultant 8/6/2013

In terms of user outcomes, access to improved water is fairly equitable, with 43% of the rural population in the lowest wealth quintile having access, and 77% in the highest quintile. This is also due to government policy that focuses on public standpipes and considers this an appropriate level of service. Piped connections to individual households remain at a low level of 14%, with only 3% of the poorest rural quintile having access to individual house connections, and 28% among the richest quintile.⁷⁴

Timor-Leste does not have abundant natural water resources. A significant number of water systems rely on spring catchments and ground water sources that are recharged by

rainfall. Shifting rainfall patterns and other potential effects of climate change could have serious impacts on water supply systems including availability of water resources in general. In addition, water sources are not properly controlled and need protection against illegal use and overuse eg. irrigation. This requires a coordinated approach between government agencies and integrated catchment management.

National level government officials attended training in late 2012 on adapting to climate change including water resources, sanitation, drainage and solid waste. As yet there are no plans or budgets for addressing climate change risk and implementing risk reduction strategies at local level.

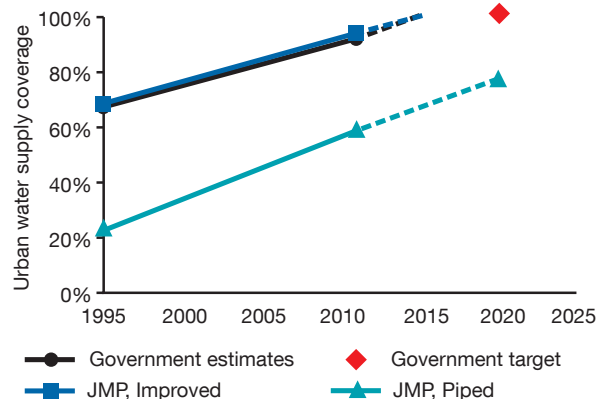
⁷⁴ UNICEF/WHO Equity analysis for East Asia Pacific using DHS 2009 data.

8. Subsector: Urban Water Supply

Priority actions for urban water supply

- Develop a roadmap for urban water sector reform and regulatory framework that will increase the autonomy of DNSA/ service providers, introduce incentives to drive performance improvements and establish separate regulatory functions
- Roll out wider tariff reform to fund operations and maintenance and increase sustainability of water systems
- Reinforce coordination among agencies involved in local planning, urbanization, water supply, and drainage including district coordination
- Improve water quality of service provision, including testing regimes and disclosure
- Introduce socialization programs and sanctions to control illegal connections and reduce water wastage

Figure 8.1 Timor-Leste: Urban Water Supply Coverage and Targets



Sources: SDA financial model. JMP (2013); GOL (2004), GOL NSEDP7 (2015 target); MOH (2012)

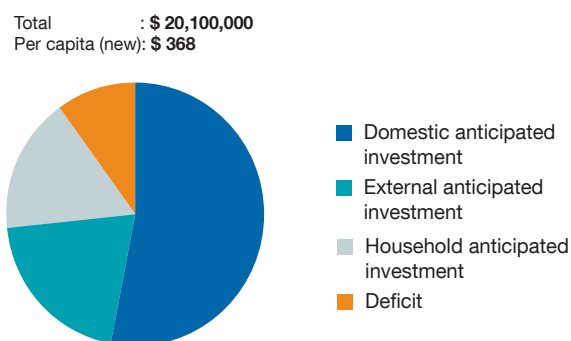
Approximately 93% of the urban population had access to improved water supply in 2011 (figure 8.1). However the level of household connections is low with fewer people having direct access to a piped water service than use other forms of improved water supply. According to the 2010 Census, 41% of urban households have individual connections with piped water on to their premises. Significant sections of the population still rely on public taps (24%), tubewells or boreholes (16%), and protected springs (8%). The number of urban people that had access to improved water supply in 2011 (304,000) has more than doubled compared with that in 1995 (129,000), suggesting access has more than kept pace with population growth and high rates of urbanization.

The 2020 target is for 100% of urban households to have access to improved water supply. This requires about 21,766 people per year in urban areas to gain access to im-

proved water supply between 2011 and 2020. This is twice the average number of people (10,967 people) who gained access on an annual basis between 1995 and 2011. While the increase in percentage terms from 93% to 100% access appears achievable based on past trends, a challenge to attaining this target is keeping pace with rapid urbanization.

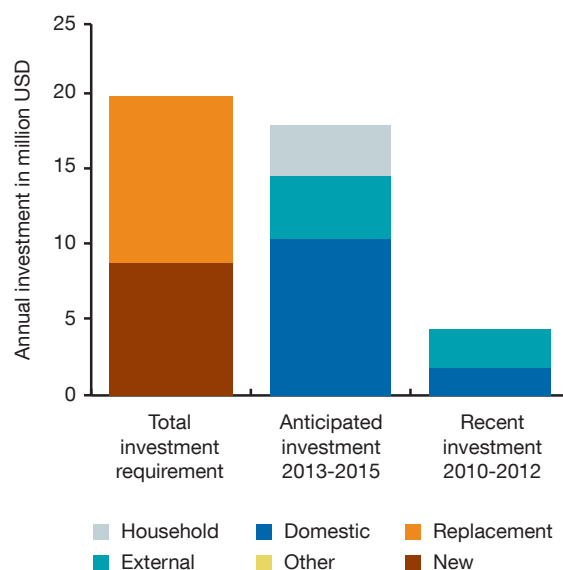
In order to meet the government’s 2020 target of 100%, an annual expenditure of US\$20.1 million will be necessary; some US\$8.9 million for new investments and more than half the requirement - US\$11.2 million – is to replace new and existing stock (see figure 8.2 and 8.3). The average amount of investment anticipated for the next three years comes close to meeting the required investment, and has increased compared to estimates of recent levels of investments. However this relatively “modest” deficit might be misleading as a large proportion of anticipated investment has been earmarked for Dili water supply, and other urban centers may miss out. Assumptions are detailed in Annex 2.

Figure 8.2 Timor-Leste: Estimates of Annual Urban Water Supply Capital Expenditures and Anticipated Sources Necessary to Meet 2020 Target



Source: SDA Estimates.

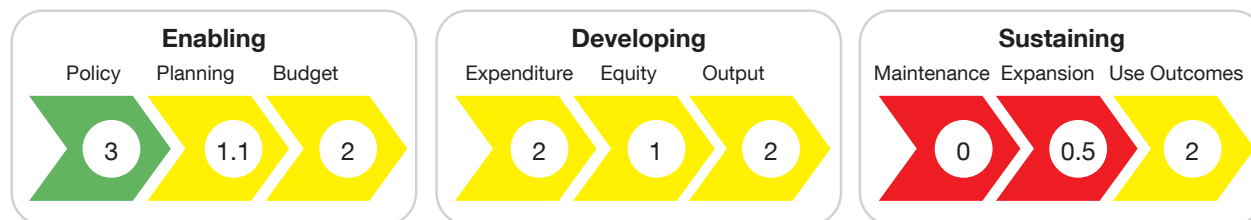
Figure 8.3 Timor-Leste: Estimates of Required and Anticipated Urban Water Supply Capital Expenditures to meet 2020 Target; Recent Capital Expenditure Investment Estimates



Source: SDA Estimates; see Annex 2 for further details.

The service delivery pathway for urban water has a strong enabling environment but has bottlenecks in achieving service sustainability. Clear targets articulated at the national and ministerial level provide direction, and are supported by policy statements and clear institutional responsibilities. Improvements in sector coordination (especially between central level and districts), annual reviews, costed investment plans, human resource capacity, and increased and reliable budget, would strengthen the urban water sector foundation. The subsector is seriously underfunded if piped water coverage is to increase, and O&M is supported.

Figure 8.4 Timor-Leste: Urban Water Supply Scorecard



In the developing pillar of urban water, budget utilization is high. Processes for local participation and reducing inequality tend to be donor-driven and are not mainstreamed into national policies or guidelines as is the case for the rural water subsector. Although national drinking water standards exist, water quality monitoring is not systematically carried out outside of Dili, due to the cost, time, and logistics of collecting samples and transporting them between district towns and the DNSA laboratory in Dili.

The sustaining pillar of the urban water service delivery pathway has serious weaknesses. Non-revenue water is close to 100%.⁷⁵ There are discrete trials of metering and tariff collections currently underway in piped water subzones in Dili that were upgraded with ADB financing. Although earlier ADB technical assistance supported training and procurement of equipment to support the reintroduction of tariffs including billing and collection, a positive step is that DNSA is now continuing the pilot without support from ADB. The pilot subzones represent a small proportion of the total urban service area that could generate income from water sales. Wider introduction of user fees would first require capital investment to replace pipes and upgrade services, and a comprehensive socialization process to inform people about laws and obligations of both customer and service provider.⁷⁶ The valuable experiences from the Dili trials can inform a broader tariff implementation program.

Lack of revenue from user fees restricts the execution of operations and maintenance necessary to maintain a quality service which in turn users are willing to pay for. In other words, without tariffs the direct accountability between customer and service provider is absent. Tariffs used in the subzone trials are identical to those in the 2004 Water Decree, and while deemed adequate for present circumstances, a tariff policy and review process will need to be developed in future that rationally sets prices for water. Tariff reform would also need to address greater autonomy for DNSA to retain and control revenues rather than the Ministry of Finance so that O&M can be effectively addressed. This reform would require a utility approach with autonomous service provision and regulation functions to be separated. A regulation study would be needed to assess the best institutional and organizational arrangements for hosting economic and service regulation.

The imposition of tariffs was assumed to happen and did not emerge as a strong priority in the stakeholder consultations. However, the need for financing and implementing operations and maintenance of urban water systems was a priority.

Another major weakness is the lack of an independent and accountable water utility with autonomy in decision making for investment planning, human resources, and procurement. As a government entity, DNSA only has autonomy

⁷⁵ Non-revenue water is measured as the difference between the volume of water produced in a system and the volume of water billed.

⁷⁶ During SDA workshops, DNSA staff stated they had already experienced abuse and physical threats when delivering tanker water in some areas.

in minor administrative matters, with all other decisions referred to government. This is a serious constraint to day-to-day operations, especially for district towns that already have logistic and communication difficulties between district towns and the national DNSA in Dili. Also as a government entity, without operational control, DNSA has no incentive to improve performance of water supply services as there is no direct benefit in doing so.

The national assessment of climate change and disaster risk considers the impact of water shortages.⁷⁷ While emergency procedures are in place and funding is available in the event of a natural disaster, proactive climate adaption strategies and climate proofing have yet to be integrated into urban water supply services. This will be-

come critical for Dili as the major urban center and nation's capital.

Given the high level of access to improved water supply, Timor-Leste is well on its way to meeting targets for access to improved water. However while access to piped water is around 65% (household connections and public taps), the reality is that for most people in district towns and Dili, piped water is only available a few hours per day.⁷⁸ In Dili the poor service is largely the result of missing or aging pipe networks and inadequate demand management through tariffs and regulation. The overall risk of this service delivery pathway is that capital investment without the necessary reforms will translate into unsustainable services, leading to sub-optimal user outcomes.

⁷⁷ Government of Timor-Leste (2010) National Adaptation Programme of Action (NAPA) On Climate Change. Dili: Ministry for Economy And Development, Secretary of State for Environment

⁷⁸ Piped water access figures from National Statistics Directorate and United Nations Population Fund (2011) Population and Housing Census 2010, Social and Demographic Characteristics, Volume 3, Dili: Government of Timor-Leste

9. Subsector: Rural Sanitation and Hygiene

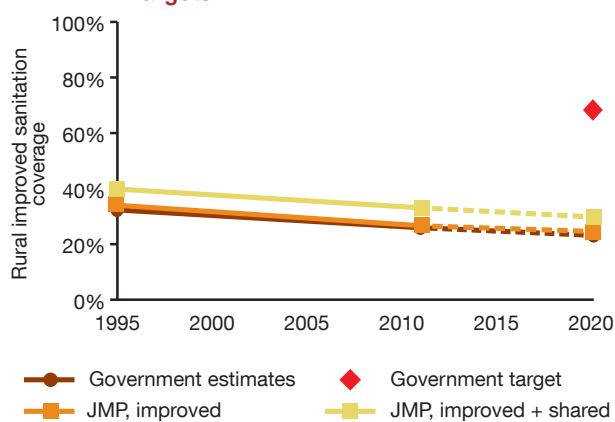
Priority actions for rural sanitation and hygiene

- Increase budget allocation for rural sanitation promotion and marketing (“software”) to implement the National Basic Sanitation Policy
- Increase human resources and build capacity of community health workers, sanitation promoters, local volunteers, to achieve open defecation free sucos
- Strengthen sanitation markets and ensure supplies of sanitation materials and services in all 13 districts
- Strengthen the targeting of sanitation subsidies as part of the vulnerable households program and ensure an appropriate delivery mechanism that does not undermine a market-based approach
- Develop integrated national and district plans for increasing sanitation access; monitor and evaluate these plans
- Improve subsector coordination, including formalizing the national Sanitation Working Group and improving basic sanitation working groups at the district level

Data from JMP show that just over a quarter (27%) of people living in rural areas had access to improved sanitation facilities in 2011 (figure 9.1) with 6% sharing facilities. According to the 2010 Census, the most common improved sanitation facility is a pit latrine with a slab (11%), followed by VIP latrine (8%). There has been a small decrease in percentage coverage rates over the period 1995 to 2011. In absolute terms, this means that the number of people with access to an improved facility has been almost stable, with only 5,160 people gaining access during the period. More recently, NGOs and the BESIK program report much higher numbers of people with access to improved toilets between 2010-2013. For example, under the BESIK program at least 30,000 people have gained access to an improved latrine during this period.⁷⁹ These numbers are not reflected in the 2010 national census or the latest JMP data so the recent rural sanitation access rates may be more positive. However regression, or return to open defecation, is a serious and real challenge to increasing access. This return to old

habits highlights the need for strengthened behavior change communications, not just a focus on building toilets.

Figure 9.1 Timor-Leste: Rural Sanitation Coverage and Targets



Sources: SDA financial model, JMP 2013a and Timor-Leste 2010 Census.

⁷⁹ Pers. comm. Keryn Clark, Program Manager BESIK program, 12/9/13

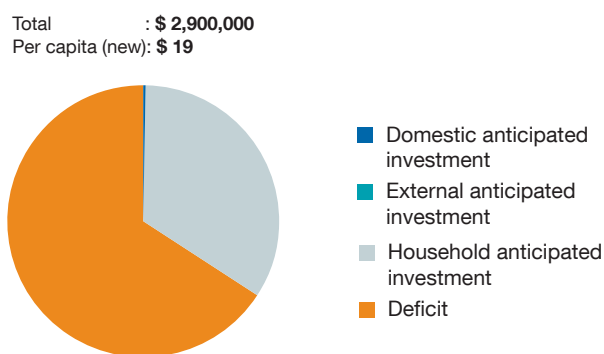
The 2020 target (derived from the Sanitation Strategic Plan 2030 target of 100%) is for 68% of the rural population to have access to improved sanitation facilities. This requires 51,700 people per year in rural areas to gain access to improved sanitation between 2011 and 2020, or 161 times the average number of people (320 people) who gained access annually between 1995 and 2011.⁸⁰

In order to meet the government’s 2020 target of 68%, it is estimated that an annual expenditure of US\$2.9 million is necessary, for new investments and to replace new and existing stock (see figure 9.2 and 9.3). Sanitation is considered a household investment decision so to achieve the 2020 target, households need to be motivated to invest in new toilets and in replacing them after their functional lifespan (see details in annex 2). Current efforts in sanitation promotion, including Community-led Total Sanitation, and marketing will have a positive impact on progress but data do not show this yet. This “software” for sanitation promotion, and behavior change needs funding commitment to

be successful. Sufficient funding is also required for market development — to make appropriate, affordable toilets easily available to rural households — as well as for government operational budgets, and capacity building. These software costs are estimated at US\$976,000 annually and are in addition to the annual capital expenditure required for rural sanitation in figure 9.2.

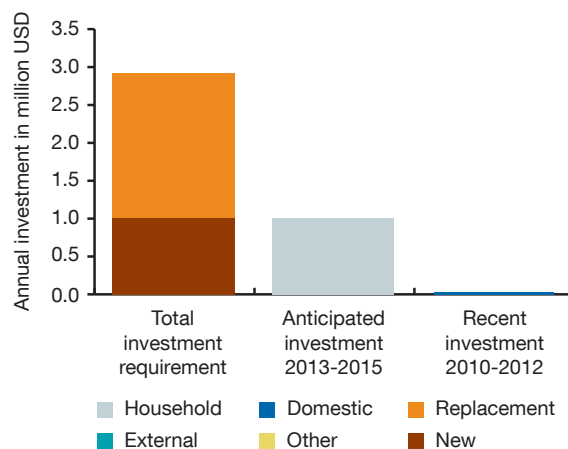
Much of the investment in domestic facilities has been initiated and funded by householders themselves because, until recently, most promotional projects by government and development agencies were short term and on a fairly small scale. Such projects tended to promote relatively expensive toilet designs and to rely heavily on the use of hardware subsidies as an incentive for toilet construction. The National Action Plan indicates that in future, hardware subsidies should be provided only for the poorest and most remote communities, following the successful piloting of Community-Led Total Sanitation (CLTS) in recent years.

Figure 9.2 Timor-Leste: Estimates of Annual Rural Sanitation Capital Expenditures and Anticipated Sources Necessary to Meet 2020 Target



Source: SDA Estimates

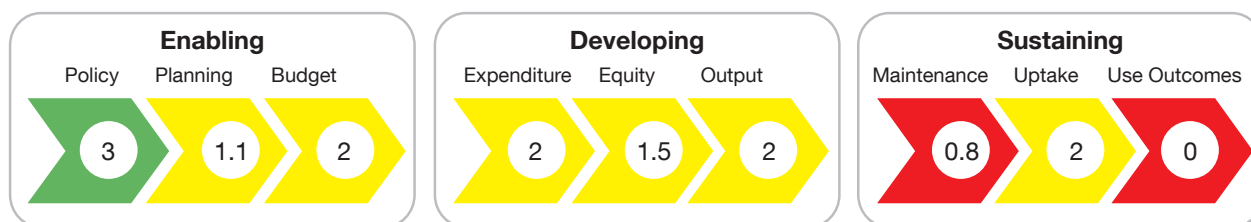
Figure 9.3 Timor-Leste: Estimates of Required and Anticipated Rural Sanitation Capital Expenditures to meet 2020 Target; Recent Capital Expenditure Investment Estimates



Source: SDA Estimates

⁸⁰ Authors’ calculations using JMP access and population data

Figure 9.4 Timor-Leste: Rural sanitation scorecard



Since households will continue to be the predominant source of capital financing, the deficit indicated in Figure 14 below is in fact a deficit in household financing. Even the anticipated household investments might not, in practice, materialize — especially if government and development partners devote insufficient resources to sanitation promotion and supply side development and so fail to elicit household investments.

The sanitation component of the National Action Plan envisages a substantial scaling up of sanitation and hygiene promotion, with the bulk of the funding needs arising from the costs of promotion and marketing. As with rural water supply, poor and remote communities are prioritized for support but implementation of the plan depends on Department of Hygiene together with the provincial departments developing a detailed sector investment plan, based on the outline provided in the Action Plan, and securing funding from government and development partners.

The rural sanitation service delivery has good enabling foundations in place to support the scaling up needed to reach 2020 targets, yet weaknesses emerge in the sustaining area of the pathway. With clear targets, a sanitation policy, and well defined institutional roles, Timor-Leste has a strong framework. While there are various subject reviews in place and forums for technical issues such as the Sanitation Working Group, and generally good informal coop-

eration between stakeholders, an annual multi-stakeholder review is needed to closely monitor the annual progress towards targets and identify reasons for slow progress if the country is to successfully intensify efforts to meet targets. The recent draft Sanitation Strategy and monitoring tools such as SIBS provide valuable data that could be utilized in a regular review so that all stakeholders are working together in a coordinated fashion. The budgeting process is clear and transparent, however more money needs to be allocated to the subsector for “software”: human resources, operational budgets, training for sanitation and hygiene promotion, marketing, incentives, program supervision and monitoring.

The adoption of the PAKSI sanitation promotion approach by government and development partners provides a unified framework for achieving sanitation targets. However this approach must be actively supported and funded by the government in order to scale up and deliver on the full implementation potential. PAKSI operationalizes the objectives of the National Basic Sanitation Policy, covering hygiene and solid waste, elimination of open defecation, building hygienic toilets, using handwashing facilities, disposing of solid waste safely and managing wastewater. With BESIK support, the PAKSI program is currently being trialed by Ministry of Health in 15 subdistricts and 164 *sucos* with training of community health workers/sanitation motivators underway since the first quarter of 2013. PAKSI is also be-

ing trialed concurrently in selected sucos in four districts by national NGOs.⁸¹ These efforts, including financing of sub district sanitarians and training of facilitators, will need to be replicated in the remaining subdistricts of Timor-Leste in order to meet targets. Developing strong links between PAKSI and sanitation market development will also be needed to enable households to either buy or build toilets once their motivation is “triggered”.

Timor-Leste has a history of conducting useful research (on topics such as handwashing with soap, WASH and disability access, sanitation marketing) that has contributed to evidence-based rural sanitation and hygiene approaches.

A challenge to scaling up rural sanitation is the availability of sanitary products and services such as toilets pans and construction materials and skilled sanitation personnel in remote rural areas, where poor roads and transport make access difficult and increase the price of goods. These bottlenecks in the supply chain are being addressed through development of easily transportable sanitation products, and training of the private sector, but more needs to be done to ensure there is a cost effective market for sanitation in all districts. Increased government support and incentives for the private sector could help overcome these challenges. Improvements in rural road networks will benefit the expansion of the sanitation market.

Rural sanitation is estimated to be off track to meet the MDG targets, which will set it back in achieving longer term 2020 targets unless intensive scaling up occurs soon. According to WHO/UNICEF analysis, those missing out on improved sanitation are the poorest 20% of rural residents, who are 12 times less likely to have an improved toilet than the wealthiest 20% of rural households.

The focus on rural sanitation in the last three years has likely resulted in an increase in access (which will not be known until the next census or national survey), but more remains to be done. To help redress inequalities in sanitation access, a subsidy program for vulnerable households to increase access to sanitation was piloted by the government in 2011-2012, however budget uncertainty and shortcomings in targeting the poor have hampered implementation.⁸² The program is being evaluated and is likely to be relaunched in 2015. Without such a program it will be difficult for the bottom 20% of rural households to access sanitation, however, targeting and delivery mechanisms of subsidies for poor and vulnerable households need to be carefully designed, so as to i) incentivize usage of facilities, ii) align with community open defecation free outcomes and iii) minimize distortion of market-based approaches.

⁸¹ Ministry of Health sanitarians are trialing PAKSI in 15 subdistricts in Baucau, Bobonaro and Liquica; national NGOs are trialing the approach in sucos obtaining a water supply system in Lautem, Manatuto, Ainaro and Covalima.

⁸² Program of Assistance for Basic Sanitation. This policy uses established criteria of the Ministry of Social Solidarity.

10. Subsector: Urban Sanitation and Hygiene

Priority actions for urban sanitation and hygiene

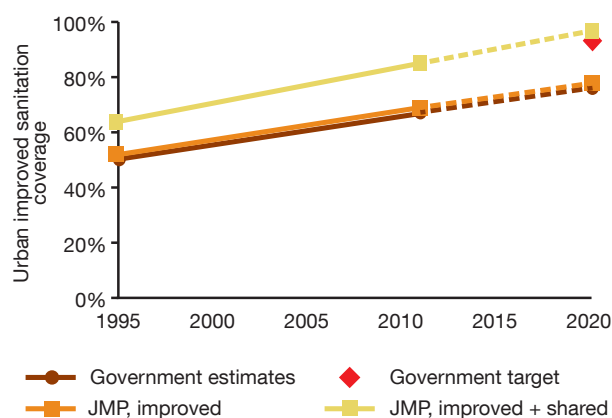
- Implement Dili Sanitation and Drainage Master Plan stage 2
- Prepare Sanitation Master Plans for the remaining 12 district capital towns (excluding Dili)
- Improve septage collection and maintenance of septage facilities in all towns
- Increase the human resources capacity for sanitation in each district capital town according to the population size of each town and sanitation needs
- Increase community awareness of urban sanitation roles, responsibilities, and obligations of government and households

By JMP estimates, 68% of the urban population had access to improved sanitation in 2011 (figure 10.1), and was as high as 84% when shared facilities are counted.⁸³ According to the 2010 Census the majority of toilets are pit latrines with a slab (37%), followed by pour flush to a pit or septic tank (24%), and VIP latrines (20%). Smaller surveys in Dili and Baucau indicate that the majority of toilets in these urban centers are water flush toilets, but few households ever empty their pit or septic tank suggesting widespread leaching of septage into the ground.⁸⁴ Very little urban wastewater is treated with only Dili and three of the thirteen district capitals having treatment ponds to receive septage and those that do exist in Manatuto, Baucau and Suai are not well maintained.

Between 1995 and 2011 access to improved sanitation increased by 17%, and in absolute terms, the number of people with access to improved sanitation has more than doubled from an estimated 97,920 in 1995 to 222,360 in 2011. However the increase in number of people gaining access during the period (124,000) has not quite kept pace with urban population growth (135,000).⁸⁵

The country is off-track in meeting the urban sanitation target of 93% by 2020. Meeting this target requires about 26,960 people gaining access to improved sanitation each year between 2011 and 2020. This is more than three times higher than the rate of annual increase (7,778 people per year) reported for 1995 to 2011.

Figure 10.1 Timor-Leste: Urban Sanitation Coverage and Targets



Sources: SDA financial model, JMP (2013), MOH and LSB (2012a)
Targets agreed by national experts for the purposes of SDA.

⁸³ In Timor-Leste sharing of toilets occurs between related family households.

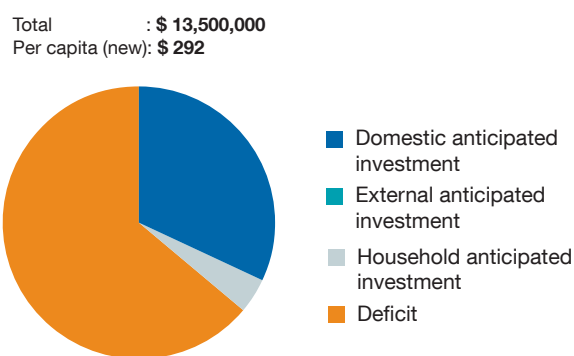
⁸⁴ From survey results in 2010, 97% of Dili's and 88% of Baucau's toilets were pour flush, however only 16% and 20% of these households respectively had ever emptied their pit. Dutton, P and Siregar, R (2010). Timor-Leste Urban Sanitation Assessment, WSP.

⁸⁵ Authors' calculations using JMP access and population data.

An average of US\$13.5 million needs to be spent every year to 2020 to meet the urban sanitation target; some US\$9.8 million for new investments and US\$3.2 million to replace new and existing stock, and US\$0.5 million for other infrastructure. The anticipated domestic investment is largely for sewerage treatment in Dili. It is estimated that this investment could serve some 9,000 households or 55,000 people at a capital cost that is high because almost all capital components must be imported.⁸⁶ In addition, this anticipated

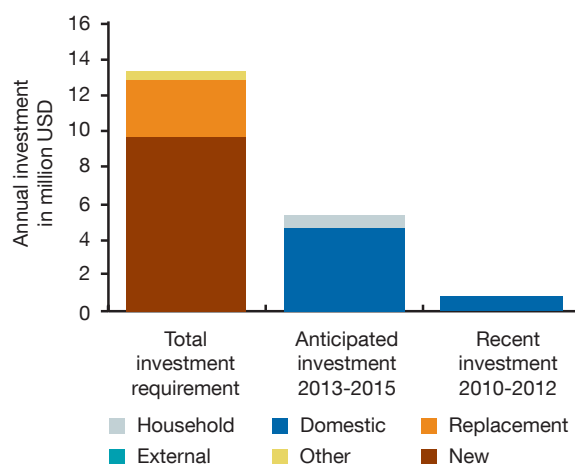
investment in Dili does not necessarily translate to greater access to improved sanitation, and largely represents an improvement of existing sanitation. The anticipated household investments are expected self-investments from urban households in their own on-site technologies (pour flush/septic tank) and depend on household willingness to invest as well as any mandatory regulations for proper onsite treatment (tanks).

Figure 10.2 Timor-Leste: Estimates of Annual Urban Sanitation Capital Expenditures and Anticipated Sources Necessary to Meet 2020 Target



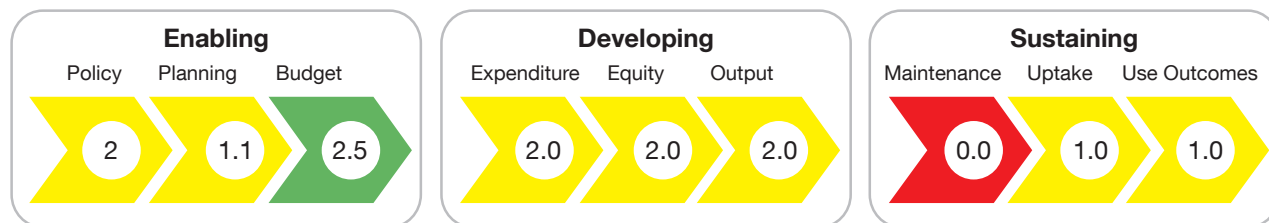
Source: SDA Estimates

Figure 10.3 Timor-Leste: Estimates of Required and Anticipated Urban Sanitation Capital Expenditures to meet 2020 Target; Recent Capital Expenditure Investment Estimates



Source: SDA Estimates

Figure 10.4 Timor-Leste: Urban sanitation scorecard



⁸⁶ The number of households served is calculated to the end of Stage 2 development from Table 77, Dili Sanitation and Drainage Master Plan, Summary Report, 2012. At the time of writing Stage 1 was yet to commence.

The urban sanitation service delivery pathway has a relatively strong enabling environment. Access targets are stated in national planning documents, although sewerage and septage management targets do not exist. Responsibilities in the subsector are defined through the 2012 National Basic Sanitation Policy, yet there is work to be done on operationalizing the roles at district level and clarifying the roles of SAS, Ministry of State Administration, and Ministry of Health. Planning of urban sanitation is one of the weaker building blocks with room for improvement in coordination of planning processes and budgeting (between both the district and central level, and between multiple stakeholders). There is no annual multi-stakeholder review that includes participation of district and central government, and development partners, to agree on needs for urban sanitation and review progress. Although a review of the WASH human resources capacity was conducted in 2009, there are simply not enough staff and not enough staff skilled in urban sanitation to support the sector.⁸⁷ To improve fecal waste collection and management, skills will be needed in the areas of planning and engineering design; construction; management, operations, and maintenance of sewage systems and sewerage/septage treatment facilities. Some resources and services could be sourced and/or contracted out to the private sector.

Development and delivery building blocks of urban sanitation require some attention. Under the expenditure building block, budget execution is good but reporting of spending on urban sanitation against budget in a consolidated format is needed for all sources of expenditure, including donor contributions. This would help improve tracking of finances. The equity building block would score better if there were plans developed and implemented for serving the urban poor with sanitation, and there is good monitoring to track this, eg. the National Census of Population, however the quality of sanitation is not monitored and the quantity of fecal waste collected has no target and is difficult to monitor.

The sustaining pillar is the weakest for urban sanitation. The maintenance building block scores low as much of the fecal waste generated in urban areas is not collected. None of the urban areas of Timor-Leste have centralized sewage treatment facilities, and there are only four urban centers with simple septage treatment facilities, and these are not well maintained. Existing septic tanks and pit latrines in urban areas pollute shallow aquifers, particularly in Dili where the urban populations are most dense and many parts of the city have a very high water table. To improve fecal waste collection and septage treatment in all urban areas, additional budget will be required.

The Dili Sanitation and Drainage Master Plan provides for a staged approach to a sewerage system development with the addition of new infrastructure. However this is expensive and will require significant up skilling to operate and maintain effectively, and is unlikely to lead to any new access in the short term.⁸⁸ The Dili Sanitation and Drainage Master Plan proposes by 2030: that water and sanitation and drainage operations are managed by the same entity preferably a utility (with water) under an operating licence; better planning controls exist; the sanitation system is self funding with revenues from customers paying for operations, maintenance and depreciation; and an independent regulator exists for reviewing economic performance of utility and setting prices. O&M costs are not currently covered by user fees (except payments collected by the private sector for septic tank desludging) but charging tariffs will become important as more sophisticated networked infrastructure is adopted.

While wastewater standards exist for treatment plants, these are not monitored.⁸⁹ Expansion of services is hampered by the lack of business plans for expanding fecal waste collection and treatment in towns, and low level of encouragement for households in urban areas to take up or improve their sanitation, and the absence of the pri-

⁸⁷ FHDesigns, 2009. Human Resource Capacity in the Water, Sanitation and Hygiene Sector in East Timor, DFID. Lack of technical capacity was a key issue raised by stakeholders at the Sanitation Workshop June 2013.

⁸⁸ Dili Sanitation and Drainage Master Plan, Summary Report, 2012

⁸⁹ Private contractors are not charged for disposing of septage in Tibar treatment facility. A proposal for charging users was developed by DNSB and signed off by Ministry of Health however the Ministry of Justice did not approve it. Pers. comm. Joao de Piedade, DNSB, 6/6/2013.

vate sector in district towns other than Dili. The subsector could meet the access target for households in 2020 with more attention to low income households. Currently 32% of urban households do not use improved toilets with the lowest income quintile being three times less likely to have improved sanitation.

ADB has a proposal for preparing water supply and sanitation masterplans for district capitals to produce demand-responsive investment plans for Baucau, Los Palos, Mana-

tuto and Viqueque over the period 2013-2030 in line with national development targets. The master planning process will include a social and technical assessment to produce investment plans based on the best options for sanitation. Once the master plans are completed, significant funding will be needed for implementation, and another eight district towns will still require similar planning and infrastructure development. In the longer term, such investment plans might attract more external financing in addition to domestic financing.

11. Conclusion

About 69% of Timor-Leste people have access to improved water, and only 39% have access to improved sanitation. Remarkable progress in water supply and sanitation coverage has been achieved in the last 10 years. However, rural sanitation continues to lag behind. To achieve the government's targets for 2030, by 2020 access to water should be at 87% and sanitation 76%. Spending to reach the 2020 access targets requires an average of US\$39.4 million each year for water supply and US\$16.4 million per year for sanitation, as well as US\$7 million per year to finance O&M of current and future water and sanitation infrastructure, and about US\$1 million for rural sanitation software. For water supply, the estimated necessary capital expenditures amount to approximately 2.4% of the 2013 national combined sources budget of US\$1.6 billion. Estimated operations and maintenance costs are 0.4% of the 2013 budget.

Estimated annual capital expenditure for the next three years (2013-15) by government and development partners is US\$29.4 million for water supply, and with assumed household investments of around US\$7 million, the financing gap for water supply is limited to less than 10% of that required to meet targets.

Estimated annual capital expenditure on sanitation for the next three years (2013-2015) is US\$4.7 million by government, with assumed household investments of US\$1.7 mil-

lion. The annual financing gap to meet targets is US\$10.0 million. Capital spending on sanitation planned by either government or development partners is largely for major capital works in Dili only, yet there is a need for improved septage collection and treatment in other urban centers. No capital expenditure by government or donor is planned for rural areas as sanitation is considered to be a household investment.

In terms of the service delivery scorecard, Timor-Leste performs adequately in the 'enabling' area across all subsectors due to the presence of policy guidelines, national and subsector targets, and relatively clear institutional roles. Budget structures and processes are in place, however funding is unpredictable and fluctuates considerably from year to year, and non-existent for essential rural sanitation software. Timor-Leste's scores in 'developing' services, which relate to expenditure of funds, systems for allocating them equitably, and securing value-for-money outputs, indicate that some improvements are required in the areas of contract documentation, budget execution for major capital works, prioritizing budget allocation and reporting on expenditure as well as reducing inequality and improving consistent local participation in all subsectors. At the end of the service delivery pathway, Timor-Leste's scores show poor performance in 'sustainability' for all subsectors, especially for maintenance (refer to Figure 11.1).

The key bottlenecks that currently impede progress in Timor-Leste's water and sanitation sector are:

- lack of autonomy and incentives for urban water service providers to improve service delivery
- lack of funding for rural and urban water supply operations and maintenance
- absence of a strategy for technical support and maintenance services to sustain functionality of rural water supply schemes
- lack of promotion (“software”) for households to take up sanitation in rural areas
- difficulty in obtaining sanitation goods and services, water supply spare parts and repair services in rural areas
- shortages of human resources, especially skilled technical staff
- poor coordination, planning and communication between central and district levels
- inadequate septage collection and treatment facilities in urban areas.

Charging of user fees in the urban water sector and development of a clear strategy to effectively support operations and maintenance in the rural water sector would unlock this sustainability bottleneck. Tariff reform would need to

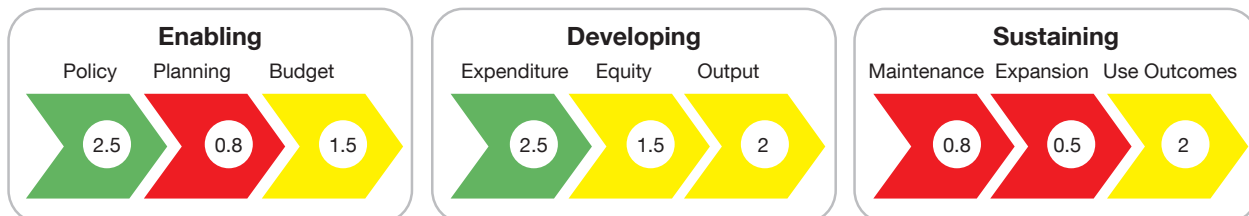
address greater autonomy and incentives for urban water providers to retain and control revenues so that O&M can be effectively addressed. With improved operations and maintenance, water supply systems could last longer, save on replacement costs, and be a more cost effective investment. The development of a roadmap for longer term reform in urban areas as well as the possibility to engage the private sector as part of the solution to deal with weak capacities and poor O&M practices needs to be considered.

Public funding is necessary for “software”, such as behavior change communication campaigns, monitoring and regulation, and private sector development to induce households to invest in their sanitation facilities. In the urban sector capital investment is needed to implement the Dili Sanitation and Drainage Master Plan, plan and improve sanitation in district capitals, and improve septage collection and maintenance of septage facilities in all towns.

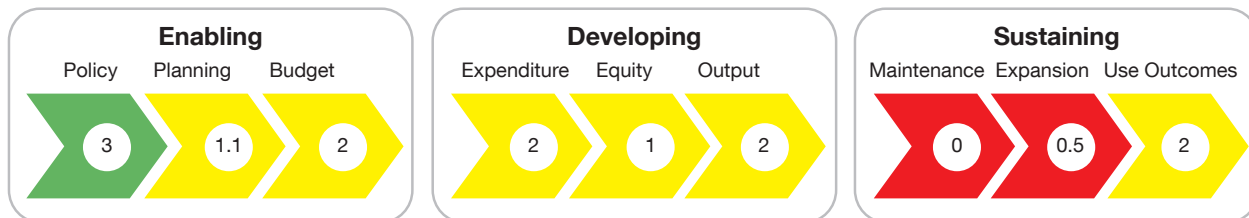
Improvements in monitoring—improved data quality and analytical use of SIBS; performance monitoring and public disclosure for urban water supply; and synchronization of data from different sources into robust national monitoring system—would improve sector planning, accountability, and public support.

Figure 11.1 Timor-Leste: Subsector Scorecards

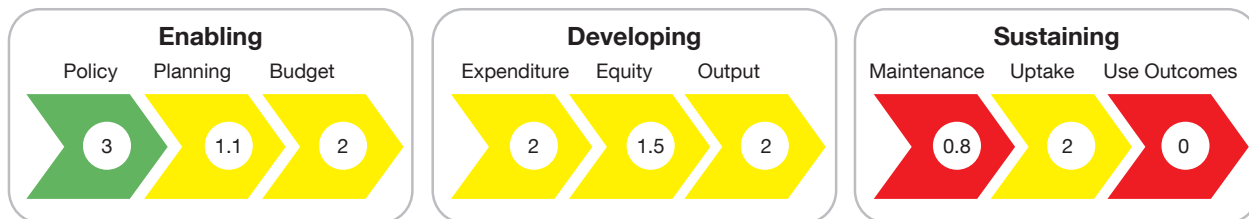
RURAL WATER SUPPLY



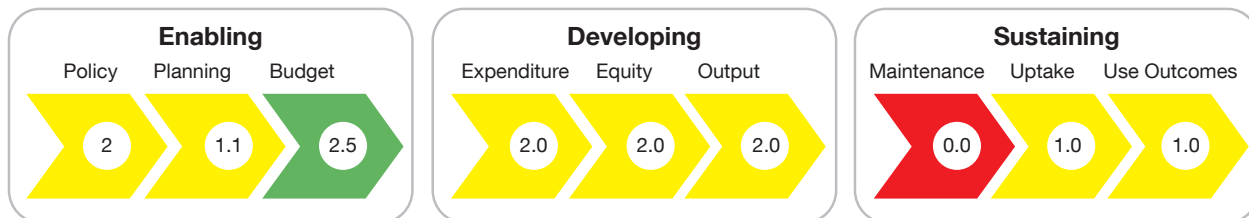
URBAN WATER SUPPLY



RURAL SANITATION AND HYGIENE



URBAN SANITATION AND HYGIENE



Annex 1: Scorecard and Evidence for Scoring

The following table presents the scores and evidence for each service delivery indicator. Each indicator can score 0, 0.5 or a maximum of 1. These scores are combined to form a total score for each of the nine service delivery building blocks – policy, planning, budget, expenditure, equity, output, maintenance, expansion, user outcome. The overall building block scores for each subsector are presented in the relevant subsector sections of the report. The scores were derived from a series of workshops with the participation of several stakeholders: DNSA, SAS district staff, DNSB, Ministry of Education, ADN, district administration staff (Manututo, Liquica, Baucau, Dili), Ministry of Health, Chief Cabinet office, BESIK program, ADB, WaterAid, Red Cross, UNICEF, HTL.

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
RURAL SANITATION									
ENABLING									
Policy	RWS 1	Sector targets	Are there RWS access targets in the national level development plan?	Yes, there are targets for rural water supply in the development plan	There are national targets in the development plan but none for rural water	No targets in the development plan	1	National Strategic Development Plan refers to 75% of rural households having access to safe, reliable and sustainable water by 2020	National Strategic Development Plan (2011-2030) - Office of the Prime Minister
Policy	RWS 2	Sector policy	Is there a rural water policy that is agreed by stakeholders, approved by government, and is publicly available?	Policy officially approved and publicly available	Policy drafted and agreed but not officially approved	No policy	1	2004 Decree publicly available. Draft policy format. Applies to both urban and rural.	Water Supply Policy (Draft 3 Dec 2010); Decree Law No. 4/2004
Policy	RWS 3	Institutional roles	Are the institutional roles of rural water subsector players (national/state & local government, service provider, regulator etc) clearly defined and operationalized?	Defined and operationalized	Defined but not operationalized	Not defined	0.5	Defined in Decree and draft policy (rural and urban). Institutions are carrying out assigned roles but insufficient budget and resources to fully operationalize. No regulator	Water Supply Policy (Draft 3 Dec 2010); Decree Law No. 4/2004; Water workshop March 2013
Planning	RWS 4	Fund flow coordination	Does government have a process for coordinating multiple investments in the subsector (domestic or donor, eg. National grants, state budgets, donor loans and grants etc.)?	Coordination process defined and operationalized	Coordination process defined but not operationalized	Not defined/no process	0.5	Investments coordinated at the Ministry of Finance level. Donor funds not actively coordinated by government.	SDA financial analysis; Water workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Planning	RWS 5	Investment plan	Is there a medium-term investment plan for rural water based on national targets that is costed, prioritizes investment needs, is published and used?	Investment plan based on priority needs exists, is published and used	Exists but not used, or under preparation	Does not exist	0	No Sector Investment Plan currently. One was prepared with the first National government but nothing since.	Water workshop March 2013
Planning	RWS 6	Annual review	Is there a annual multi-stakeholder review in place to monitor subsector performance, to review progress and set corrective actions?	Review of performance and setting of corrective actions	Review of performance but no setting of corrective actions	No review or setting of corrective actions	0	No annual review process	Water workshop March 2013
Planning	RWS 7	HR capacity	Has an assessment been undertaken of the human resource needs in the sub sector to meet the subsector target and is the action plan being implemented?	Assessment undertaken and actions being implemented	Assessment undertaken but no action being taken	No assessment undertaken	0.5	Assessment done including by subsector, with some action taken to address skill shortages although no follow up since.	DFID Human Resource Capacity in the WASH sector in TL 2009; Water workshop March 2013
Budget	RWS 8	Adequacy (of financing)	Are the public financial commitments to the rural water subsector sufficient to meet the national targets for the subsector?	More than 75% of what is needed	Between 50-75% of needs	Less than 50% of needs	1	In recent years enough money going towards new capital to meet national targets	Pers comm K Clark; SDA Financial analysis; Budget Books for 2011, 2012, 2013
Budget	RWS 9	Structure	Does the budget structure permit the investments and subsidies (operational costs, administration, debt service, etc) for the rural water sector to be clearly identified?	Yes for investment and for subsidies	Yes for investment but not subsidies	No	0.5	May be clear at national level but budget comes in a package at District level so it is not clear if money is for rural or urban; also budgets published at district level do not disaggregate between rural and urban	Water workshop March 2013; SDA financial analysis
Budget	RWS 10	Comprehensive	Does the government budget comprehensively cover domestic and official donor investment/ subsidy to rural water?	More than 75% of funds to sub-sector on budget	Between 50-75% of funds to sub-sector on budget	Less than 50% of funds to sub-sector on budget	0	Donor funding eg BESK and NGOs not in budget	Water workshop March 2013; SDA financial analysis

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
DEVELOPING									
Expenditure	RWS 11	Utilization of domestic funds	What percentage of domestic funds budgeted for rural water are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	1	No problem spending budget	Government budget records
Expenditure	RWS 12	Utilization of external funds	What percentage of external funds budgeted for rural water are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	1	No problem spending budget	Water workshop March 2013 as reported by BESIK and UNICEF
Expenditure	RWS 13	Reporting	Is rural water expenditure versus budget audited and reported on in a consolidated format for all sources of domestic and official donor expenditure?	Yes for domestic and donor expenditure	Yes for domestic expenditure	No	0.5	Not consolidated. Government does public audit. Donors may do audit but results are not disclosed.	Water workshop March 2013
Equity	RWS 14	Local participation	Are there clearly defined procedures for informing, consulting with and supporting local participation in planning, budgeting and implementing for rural water developments?	Yes and systematically applied	Yes, but not systematically applied	No	0.5	Community role clearly defined in Decree and Policy, and also CAP process to establish Community Group Managers (GMFs), • Project Cycle and Community Management Process in Timor Leste Rural Water Supply Guidelines • PDL/PDD/PDID legislations	Water Supply Policy (Draft 3 Dec 2010), Decree Law No. 4/2004; CAP guidelines, PDD/PDL program legislation
Equity	RWS 15	Budget allocation criteria	Have criteria (or a formula) been determined to allocate rural water funding equitably to rural communities and is it being applied consistently?	Yes, applied consistently	Yes, but not applied consistently	No	0.5	Possibly a criteria in terms of population but not applied consistently.	Water workshop March 2013
Equity	RWS 16	Reducing inequality	Is there periodic analysis to assess whether allocation criteria and local participation procedures set by government have been adhered to and are reducing disparities in access?	Yes periodic analysis published and acted upon	Yes periodic analysis published but not acted upon	No	0.5	Action plan for community exists	Water workshop March 2013
Output	RWS 17	Quantity	Is the annual number of new systems built (and systems replaced) sufficient to meet sector targets? (including output by government directly as well as through contractors and NGOs)	Over 75% of that needed to reach sector targets	Over 50% of that needed to reach sector targets	Less than 50% of that needed to reach sector targets	1	Enough schemes are being built to keep up with national targets, provided that O&M is applied to sustain the schemes. If O&M is lacking then targets will slip	Pers. comm. J Yoder BESIK; Water workshop March 2013
Output	RWS 18	Capacity for promotion	Are there drinking water quality standards for rural water and are all new installations tested?	Standards exist and new installations tested	Standards exist but new installations not tested	No	0.5	Standards exist, but testing not carried out	Pers. comm. DNSA Water laboratory staff; J Yoder BESIK
Output	RWS 19	Reporting	Is the number of new schemes and their locations reported in a consolidated format each year?	Yes with full listing of locations	Yes but without a full listing of locations	No	0.5	A listing exists that includes SAS government schemes and those by development partners but does not include schemes built under district decentralization programs eg. PDL	Water workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
SUSTAINING									
Maintenance	RWS 20	Functionality	Are there regular asset register updates of rural water infrastructure including their functional status?	Asset register and regular updating of functionality	Asset register but no updating of functionality	Neither	1	SIBS water and sanitation information systems includes scheme functionality. Updated quarterly.	SIBS; Water workshop March 2013
Maintenance	RWS 21	Cost recovery	Is there a national policy on O&M costs and are O&M costs known and covered from subsidies and/or user fees?	O&M policy exists, costs are assessed and >75% covered	O&M policy exists, costs are estimated and >50% covered	No O&M policy, costs not known	0	No specific policy or known costs	Water workshop March 2013
Maintenance	RWS 22	Spare parts chain	Is there a system defined for spare parts supply chain that is effective in all places?	Systems defined and spares available in >50% of villages	Systems defined but spares not available up to 50% of villages	Systems not defined	0	Nothing for rural	Water workshop March 2013
Maintenance	RWS 23	Management of Disaster Risk and Climate Change	Do rural service providers have plans for coping with natural disasters and climate change?	Yes, the majority of rural service providers have a plan for disaster risk management and climate change	No. Only some service providers have a plan for disaster risk management and climate change or most service providers have undertaken a vulnerability assessment.	No service provider has a climate action plan or has undertaken a vulnerability assessment.	0	National assessment of risks from climate change and natural disaster includes water shortages. No local level planning.	National Adaptation Programme of Action to Climate Change (2010)
Expansion	RWS 24	Investment support	Are piped systems in rural areas recognized as management entities and given technical and financial support to expand their systems either by government or larger utilities?	Recognized and supported	Recognized but not supported	Neither	0.5	Management groups "do not acquire any juridical personality" but are required to sign agreements. DNSA is responsible for providing technical assistance to management groups.	2004 Water Decree
Expansion	RWS 25	Plans	Are there scheme-level plans for the expansion of piped systems in rural areas?	Yes in most rural areas	Yes in around half of rural areas	In a small proportion, or no rural areas	0	Communities have the option to expand but rarely do so	Water workshop March 2013
Expansion	RWS 26	Investment finance	Are expansion costs for rural water being covered by user fees and/or public grants?	Yes in most rural areas	Yes in around half of rural areas	In a small proportion, or no rural areas	0	PDL includes some extension to existing schemes. Covered by public grants	PDL project records
User outcomes	RWS 27	Sub-sector progress	Is the sub-sector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	1	On track, if investment made in O&M. Recent progress and efforts to improve sustainability indicate a more positive outlook than JMP data.	Water workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
User outcomes	RWS 28	Equity of use	What is the ratio of improved drinking water access between the lowest and highest quintile in rural areas?	Less than 2 times	Between 2 and 5 times	More than 5 times	1	JMP shows 1.8 ratio	UNICEF/WHO equity analysis for EAP (2012)
User outcomes	RWS 29	Quality of user experience	Of the households using an improved drinking water source, what proportion are using piped drinking water in the dwelling and yard/plot?	More than 50% of households	More than 25% of households	Less than 25% of households	0	Current government policy is to provide public standpipes as this is appropriate and workable.	Paris. comm. K Clark BESIK
URBAN SANITATION									
ENABLING									
Policy	UWS 1	Sector targets	Are there UWS access targets in the national level development plan?	Yes, there are urban water supply targets in the development plan	There are national targets in the development plan but none for urban water.	No targets in the development plan	1	Strategic Development Plan refers to 12 urban centers having access to safe 24 hour piped water by 2020. Approved Water Action Plan refers to 100% access by 2020 for DfI and district centres	National Strategic Development Plan (2011-2030); Ministry of Public Works Water Plan of Action 2012-2017 (2012); Water workshops March and June 2013
Policy	UWS 2	Sector policy	Is there an urban water policy that is agreed by stakeholders, approved by government, and publicly available?	Policy officially approved, and publicly available	Policy drafted and agreed but not officially approved	No policy	1	Decree law applies. Draft policy format. Applies to both urban and rural.	Water Supply Policy (Draft 3 Dec 2010); Decree Law No. 4/2004
Policy	UWS 3	Institutional roles	Are the institutional roles of urban water subsector players (national/state & local government, service provider, regulator etc) clearly defined and operationalized?	Defined and operationalized	Defined but not operationalized	Not defined	1	Defined in Decree and policy. Operationalized. Ministry of Health responsible for water quality, SAS for water supply. No separate regulator role.	Water Supply Policy (Draft 3 Dec 2010); Decree Law No. 4/2004
Planning	UWS 4	Fund flow coordination	Does government have a process for coordinating multiple investments in the subsector (domestic or donor, eg. National grants, state budgets, donor loans and grants etc.)?	Coordination process defined and operationalized	Coordination process defined but not operationalized	Not defined/ no process	0.5	Investments coordinated at the Ministry of Finance level.	SDA financial analysis
Planning	UWS 5	Investment plans	Is there a medium term investment plan for urban water based on national targets that is costed, prioritizes investment needs, is published and used?	Investment plan based on priority needs exists, is published and used	Exists but not used, or under preparation	Does not exist	0.5	Annual action plan prepared that is reactive to necessities. Current Five-year plan to 2017, but because there is no budget the plan is not costed	Ministry of Public Works Water Action Plan 2012-2017; Water workshop March 2013
Planning	UWS 6	Annual review	Is there an annual multi-stakeholder review in place to monitor subsector performance, to review progress and set corrective actions?	Annual review of performance and setting of corrective actions	Annual review of performance but no setting of corrective actions	No review or setting of corrective actions	0	Possibly a review at national level, but not district level. Lack of coordination and information dissemination to districts.	Water workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Planning	UWS 7	HR capacity	Has an assessment been undertaken of the human resource needs in the sub sector to meet the subsector target and is the action plan being implemented?	Assessment undertaken and actions being implemented	Assessment undertaken but no action being taken	No assessment undertaken	0.5	Assessment done including by subsector, but limited follow up action taken to address skill shortages.	DFID Human Resource Capacity in the WASH sector in TL 2009
Budget	UWS 8	Adequacy	Are the public financial commitments to the urban water subsector sufficient to meet the national targets for the subsector?	More than 75% of what is needed	Between 50 and 75% of needs	Less than 50% of needs	0	Seriously underfunded for achieving piped water targets. Millions of \$ required.	Water workshop March 2013. Budget Books for 2011, 2012, 2013
Budget	UWS 9	Structure	Does the budget structure permit investments and subsidies (operational costs, administration, debt service, etc) for the urban water sector to be clearly identified?	Yes for investment and for subsidies	Yes for investment but not subsidies	No	1	Structure is clear but not broken out to subsector	SDA financial analysis
Budget	UWS 10	Comprehensive	Does the government budget comprehensively cover domestic and official donor investment/ subsidy to urban water?	More than 75% of funds to sub-sector on budget	Between 50-75% of funds to sub-sector on budget	Less than 50% of funds to sub-sector on budget	1	Funds are on budget, but budget is highly centralized	SDA financial analysis
DEVELOPING									
Expenditure	UWS 11	Utilization of domestic funds	What percentage of domestic funds budgeted for urban water are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	1	High budget execution in Timor-Leste generally	SDA financial analysis
Expenditure	UWS 12	Utilization of external funds	What percentage of external funds budgeted for urban water are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	1	High budget execution eg. ADB budget and actual: 87% in 2010, 71% in 2011, and 147% in 2012	ADB Budgets 2010-2012
Expenditure	UWS 13	Reporting	Do urban utilities (national or 3 largest utilities) have audited accounts and balance sheet?	Audited accounts and balance sheet	Balance sheet but not audited	No balance sheet	0	No utilities. No balance sheet. Dili district does have a list of assets but entity is not independent so has no liabilities and there is no independent audit (only internal government audit only).	SDA financial analysis; DNSA reports
Equity	UWS 14	Local participation	Are there clearly defined procedures for informing, consulting with and supporting local participation in planning, budgeting and implementing for urban water developments?	Yes and systematically applied	Yes, but not systematically applied	No	0.5	Participation guidelines not clearly defined for urban sector, usually as a requirement from donors eg. ADB projects.	SDA assessment

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Equity	UWS 15	Budget allocation criteria	Have criteria (or a formula) been determined to allocate urban water funding equitably to urban utilities or service providers and among municipalities and is it being consistently applied?	Yes, applied consistently	Yes, but not applied consistently	No	0.5	Priority towns exist and there are believed to be equity criteria at the National level, but unclear if funding is consistently allocated to district towns equitably.	SDA assessment: Water workshop March 2013
Equity	UWS 16	Reducing inequality	Have urban utilities or service providers (national or in 3 largest cities) developed and implemented specific plans for serving the urban poor?	Plans developed and implemented	Plans developed but not implemented	No plans documented	0	No evidence of this.	SDA assessment
Output	UWS 17	Quantity	Is the annual expansion of HH connections and stand posts in urban areas sufficient to meet the subsector targets?	Over 75% of that needed to reach sector targets	Over 50% of that needed to reach sector targets	Less than 50% of that needed to reach sector targets	0.5	Urban water appears on track to meet targets but not for piped water access	JMP 2013 report
Output	UWS 18	Quality of water	Are there drinking water quality standards for urban water that are regularly monitored and the results published?	Standards exist, there is a surveillance program, and results are published	Standards exist and there is a surveillance program but there is no publication of results	No standards, or standards exist but are not monitored	0.5	GoTL Water quality standards exist (WHO standards until 2012). Monitoring for Dili: bacteriological testing monthly, chemistry testing 6-monthly, physical annually – but results not published. District towns only when outbreak or problem. Dili monitored at public tap - sample 10 out of 500 monthly. In Manututo each of 4 zones has 3 samples done every time.	DNISA testing laboratory. Water workshop March 2013
Output	UWS 19	Reporting	Is the number of additional household connections made and stand posts constructed reported on in a consolidated format for the nation each year?	Yes with full listing of connections	Yes but without a full listing of connections	No	1	Every year the number of new connections is reported	Water workshop March 2013
SUSTAINING									
Maintenance	UWS 20	Functionality	What is the weighted average percentage of non revenue water across urban utilities (national or 3 largest utilities) (last 3 years average)?	Less than 20%	20% to 40%	More than 40%	0	Significant water losses in district towns; non-revenue water almost 100%	Pers. comm. ADB Consultant Graham Jackson
Maintenance	UWS 21	Cost recovery	Are all O&M costs for utilities (national or 3 largest utilities) being covered by revenues (user fees and/ subsidies) (last 3 years average)?	Operating ratio greater than 1.2	Operating ratio between 0.8 and 1.2	Operating ratio below 0.8	0	No user fees charged. Insufficient budget for O&M	DNISA; Water workshop March 2013
Maintenance	UWS 22	Tariff reviews	Are tariff reviews regularly conducted using a process and tariffs adjusted accordingly and published?	Conducted, adjusted and published	Conducted but not adjusted	Not conducted	0	Tariffs published in 2004 decree but not updated as charging is introduced in limited subzones in Dili during 2013.	2004 Decree; Water workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Maintenance	UWS 23	Management of Disaster Risk and Climate Change	Do utilities (national or 3 largest utilities) have plans for coping with natural disasters and climate change?	Yes, the majority of urban service providers have a plan for disaster risk management and climate change	No. Only some service providers have a plan for disaster risk management and climate change or most service providers have undertaken a vulnerability assessment.	No service provider has a climate action plan or has undertaken a vulnerability assessment.	0	National Assessment of risks from climate change and natural disaster includes water shortages. Procedures exist for emergency response at local level and responsibility allocated to district management committee. Emergency funding available if a natural disaster occurs eg. landslide destroying pipes, however the response is reactive and there is no forward planning.	National Adaptation Programme of Action to Climate Change (2010)
Expansion	UWS 24	Autonomy	Do utilities or service providers (national or 3 largest) have operational decision-making autonomy in investment planning, HR, finance (separate balance sheet) and procurement management?	Yes in all aspects	In all aspects except investment planning	No	0	Autonomy only in minor administrative matters	ADB Sector Assessment 2011 (District Towns PPTA)
Expansion	UWS 25	Plans	Do service providers (national/state or 3 largest utilities) have business plans for expanding access to urban water?	Business plans for increasing access being implemented	Business plans for increasing access being prepared	No business plans	0.5	Some "business" planning in connection with projects eg. Koica desalination plant. There are plans for expansion but these are not really business plans.	Water workshop March 2013
Expansion	UWS 26	Borrowing	Are utilities allowed by law to access and are they accessing commercial finance for expansion?	Allowed and accessing	Allowed but not accessing	Not allowed	0	DNSA is not an independent utility. Not allowed.	Paris. comm. DNSA staff
User Outcomes	UWS 27	Sub-sector progress	Is the sub-sector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	1	On track for access to improved water supply (93%) but not for piped water which was 45% in 2011.	JMP 2013 report
User Outcomes	UWS 28	Equity of use	What is the ratio of improved drinking water access between the lowest and highest quintile in urban areas?	Less than 2 times	Between 2 and 5 times	More than 5 times	1	Ratio is around 1.4 times, which is supported by the high coverage figures	UNICEF/JMP analysis of 2009 DHS data
User Outcomes	UWS 29	Quality of user experience	What is the average number of hours of service per day across urban utilities? (Weighted by number of HH connections per utility)?	More than 12 hours per day	6 to 12 hours per day	Less than 6 hours per day	0	Less than 30% of Dili's population has access to continual water supply; hours of supply 3-16/day. Frequent outages and limited hours of supply for district towns.	ADB Sector Assessment; WSP Urban Sanitation Assessment (2010)

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
RURAL WATER SUPPLY									
ENABLING									
Policy	RSH 1	RSH sector targets	Are there RSH access targets, for households and/ or communities, in the national level development plan?	Targets for rural household access and communities becoming ODF in the development plan	Targets for rural household access in the development plan	No rural sanitation targets in the development plan	1	Separate targets in National Strategic Development Plan but more specific targets developed in draft Sanitation Strategy: rural household coverage and ODF communities 100% by 2030, 68% households plus 3% shared targets for 2020 and 77% ODF sucos and Districts	National Strategic Development Plan 2011-2030; draft National Sanitation Strategy 2012
Policy	RSH 2	Sector policy	Is there a rural sanitation policy, that is agreed by stakeholders, approved by government, and publicly available?	Policy officially approved and publicly available	Policy drafted and agreed but not officially approved	No policy	1	National Sanitation Policy approved by Council of Ministers 2012. Widely consulted.	National Sanitation Policy 2012
Policy	RSH 3	Institutional Roles	Are the institutional roles of rural sanitation subsector players (national/state & local government, service provider, regulator etc) clearly defined and operationalized?	Defined and operationalized	Defined but not operationalized	Not defined	1	Roles of subsector actors are described in the National Sanitation Policy and are operationalized.	National Sanitation Policy 2012
Planning	RSH 4	Fund flow coordination	Does government have a process for coordinating multiple investments in the subsector (domestic or donor, eg. national grants, state budgets, donor loans and grants etc)?	Coordination process defined and operationalized	Coordination process defined but not operationalized	Not defined/ no process	0.5	Based on talk with Sr. Mario Abel from DNSA Planning Department, there seemed to be no specific process for coordinating multiple investments in the subsector. Stakeholders feel ministerial coordination is not ideal, better cross sector coordination needed	Pers. comm. Sr Mario Abel (DNSA); Sanitation workshop March 2013
Planning	RSH 5	Investment plan	Is there a medium-term investment plan for rural sanitation based on national targets that is costed, prioritizes investment needs, is published and used?	Investment plan based on priority needs exists, is published and used	Exists but not used, or under preparation	Does not exist	0.5	Arbitrary plan exists but not based on targets	Sanitation workshop March 2013
Planning	RSH 6	Annual review	Is there a annual multi-stakeholder review in place to monitor subsector performance, to review progress and set corrective actions?	Review of performance and setting of corrective actions	Review of performance but no setting of corrective actions	No review or setting of corrective actions	0	Some multi stakeholder reviews eg. Joint Sanitation Evaluation 2009, CLTS review. Health does have a multistakeholder annual review but across entire health sector. Annual reviews tend to be project related.	Sanitation workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Planning	RSH 7	HR Capacity	Has an assessment been undertaken of the human resource needs in the sub sector to meet the subsector target and is the action plan being implemented?	Assessment undertaken and actions being implemented	Assessment undertaken but no action being taken	No assessment undertaken	0.5	Assessment done including by DFID Human Resource subsector, but follow up action has been weak to address skill shortages. in TL 2009	
Budget	RSH 8	Adequacy (of financing)	Are the public financial commitments to the rural sanitation subsector sufficient to meet the national targets for the subsector?	More than 75% of what is needed	Between 50-75% of needs	Less than 50% of needs	0	Not sufficient according to stakeholders. At least \$1m needed in subsidies	Sanitation workshop 2013. Budget Books for 2011, 2012, 2013
Budget	RSH 9	Structure	Does the budget structure permit investments and subsidies (operational costs, administration, debt service, etc) for the rural sanitation sector to be clearly identified?	Yes for investment and for subsidies	Yes for investment but not subsidies	No	1	Yes can be clearly identified but not disaggregated by rural and urban sanitation	SDA financial analysis
Budget	RSH 10	Comprehensive	Does the government budget comprehensively cover domestic and official donor investment/ subsidy to rural sanitation?	More than 75% of funds to sub-sector on budget	Between 50-75% of funds to sub-sector on budget	Less than 50% of funds to sub-sector on budget	1	Disaggregation by rural and urban not clear but clear in budget.	SDA financial analysis
DEVELOPING									
Expenditure	RSH 11	Utilization of domestic funds	What percentage of domestic funds budgeted for rural sanitation are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	1	High budget execution in Timor-Leste generally, although stakeholders said it was difficult to disburse funds because of up to three sources including PDL.	SDA financial analysis
Expenditure	RSH 12	Utilization of external funds	What percentage of external funds budgeted for rural sanitation are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	0.5	Difficult to answer for donor sources but likely to be satisfactory.	SDA financial analysis
Expenditure	RSH 13	Reporting	Is rural sanitation expenditure versus budget audited and reported on in a consolidated format for all sources of domestic and official donor expenditure?	Yes for domestic and donor expenditure	Yes for domestic expenditure	No	0.5	Unable to answer for donor sources	Sanitation workshop March 2013
Equity	RSH 14	Local participation	Are there clearly defined procedures for informing, consulting with and supporting local participation in planning, budgeting and implementing for rural sanitation developments?	Yes and systematically applied	Yes, but not systematically applied	No	0.5	Community responsibilities and participation documented. Stakeholders felt participation processes were systematically applied if introduced by a donor. There is a process but not systematically applied the way it is for water supply.	PAKSI Process, RWASH Sector Strategy to 2011, Sanitation Strategic Plan; Sanitation workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Equity	RSH 15	Budget allocation criteria	Have criteria (or a formula) been determined to allocate rural sanitation funding equitably across rural communities and is it being applied consistently?	Yes, applied consistently	Yes, but not applied consistently	No	0.5	Have heard this exists but not coordinated or applied consistently. Criteria have been developed for vulnerable households for sanitation but they don't work--funding doesn't always go to poorest. No district distribution in budget but some sensitivity to look at vulnerable, disabled, low income people	Sanitation workshop March 2013
Equity	RSH 16	Reducing inequality	Is there any (periodic) analysis carried out to assess disparities in access and are measures (policy or programmatic actions) to reduce inequalities taken as a result?	Yes periodic analysis published and acted upon	Yes periodic analysis published but not acted upon	No	0.5	No specifically periodic but analysis of disparities as part of the Sanitation Strategic Plan. Yet to be acted on.	Sanitation Strategic Plan
Output	RSH 17	Quantity	Is the annual expansion of rural households gaining access to safe sanitation sufficient to meet the subsector targets?	Over 75% of that needed to reach sector targets	Between 75% and 50% of that needed to achieve targets	Less than 50% of that needed to reach targets	0.5	Difficulty in calculating due to variance between JMP 2010 and JMP 2011 data that show a decrease in access. Sanitation unlikely to meet MDGs. Open defecation has been reducing and recent increased uptake of improved sanitation. To achieve target requires consistently high annual expansion.	SDA analysis. Pers. comm. K. Clark.
Output	RSH 18	Capacity for promotion	Is there enough capacity - staff, expertise, tools, materials - to deliver a sanitation program at scale, using tailored community-based and/or other approaches?	Yes, capacity exists and approaches are being used at scale	Gaps in capacity but approaches generally being used at scale	Deficits in capacity and no community-based approaches at scale	0.5	Enough capacity (numbers of staff) but the effectiveness of process not well developed, although this is currently being addressed through training. Enough materials exist	BESIK Strategic Plan (2008-2011) Evaluation Report. Sanitation workshop March 2013
Output	RSH 19	Reporting	Does the government regularly monitor and report on progress and quality of rural sanitation access, including settlement-wide sanitation, and disseminate the results?	Quality, quantity and disseminated	Quality or quantity	Neither	1	SIBS database tracks sanitation facilities up to aldeia level, including household and community ODF. Some problems with lack of timely data collection in certain localities. Reports given to district managers each month. Health promotion and sanitation also has kubasa reporting system.	SIBS system documents; pers. comm. K. Clark. Sanitation workshop March 2013, including SIBS presentation.

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
SUSTAINING									
Markets	RSH 20	Supply-chain	Does the supply-chain for sanitation products meet household needs (ready availability, quantity and cost), satisfy government standards and reach to unserved areas?	Yes for quantity, cost, standards and reach	Yes, but not for all of quantity, cost, standards and reach	No	0	Products unavailable in remote areas due to topography, transport, cost, product type, lack of businesses stocking products. Development of prototypes but not scaled up. Implementation begun on sanitation marketing to improve supply chain.	Sanitation Marketing Strategy Development Report (2012), Sanitation Suppliers in T-L Study (2010); WaterAid Lessons Learned from Sanitation Marketing in Timor-Leste (2011)
Markets	RSH 21	Private sector capacity	Is there sufficient mason/artisan/small business capacity to meet household needs (quantity, quality and cost)?	Yes for quantity and cost	Yes, for quantity but not for cost	Neither	0.5	Insufficient number of trained masons to meet targets, however there are currently people with construction skills available in districts. Problem is lack of available products and affordability.	DFID HR Study, Sanitation workshop March 2013
Markets	RSH 22	Private sector development	Does the government have programs to promote and guide the domestic private sector and facilitate innovation for the provision of sanitation services in rural areas?	Yes, with various components	Yes, but either being developed or has gaps	No promotion, guidance or encouragement	0.5	Some discussion and initiatives started with government on private sector and product development but not to scale, trials only.	Sanitation workshop March 2013
Markets	RSH 23	Management of Disaster Risk and Climate Change	Do local government or rural service providers have plans for coping with natural disasters and climate change?	Yes, the majority of rural service providers have a plan for disaster risk management and climate change	No. Only some service providers have a plan for disaster risk management and climate change or most service providers have undertaken a vulnerability assessment.	No service provider has a climate action plan or has undertaken a vulnerability assessment.	0	National Assessment of risks from climate change and natural disaster includes sanitation and health implications. Includes adaptation measures such as protection of water sources (including for sanitation purposes) and developing emergency preparedness plan for disease outbreak such as diarrhea. An emergency institutional structure is in place, but no budget for education and awareness/teaching people how to plan. Information missing at suco level. Policies need to be better coordinated.	National Adaptation Programme of Action to Climate Change (2010); Sanitation Workshop March 2013
Uptake	RSH 24	Support for expansion	Are expenditures at the local level in line with the national sanitation policy and are they sufficient to achieve national targets?	In line with policy and sufficient to achieve national targets	In line with policy but insufficient to achieve national targets	Not in line with policy and insufficient to achieve national objectives	0	Difficult to assess whether money is sufficient. Target has not filtered down to district level	Sanitation workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Uptake	RSH 25	Incentives	Has government (national or local) developed any policies, procedures or programs to stimulate uptake of rural sanitation services and behaviors by households?	Policies and procedures (instruments) developed and being implemented	Some policies and procedures (instruments) developed but not implemented	No policies or procedures (instruments) exist	1	Handwashing campaign and sanitation through the SISCa; also PAKSI program; suco rewards systems. In place and being implemented but needs greater scaling up	PAKSI program documents; SISCa Guidelines; Sanitation workshop March 2013; pers. comm. with Ministry of Health and BESIK staff
Uptake	RSH 26	Behaviors	Is the government generating and using evidence to monitor and analyze household sanitation behavior change and take action to improve sustainability?	Research used to understand behavior and take action across a variety of behaviors	Research used to understand behavior but no action	Research not used and no action	1	Several studies commissioned (not always by government, but in partnership with them) on handwashing, sanitation. Evidence is used to plan further interventions. Districts unaware of most research and results.	Joint Sanitation evaluation 2009; sanitation marketing studies; PAKSI trials; Handwashing with soap research. Sanitation workshop 2013
User outcomes	RSH 27	Sub-sector	Is the sub-sector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	0	Sanitation unlikely to meet MDG targets; intensive scaling up required to meet Strategic Development Plan targets and 2020 intermediate target	Pers. comm. K Clark
User outcomes	RSH 28	Equity of use	What is the ratio of improved toilet access between the lowest and highest quintile in rural areas?	Less than 2 times	Between 2 and 5 times	More than 5 times	0	Equity ratio of 12	UNICEF/WHO equity analysis for EAP (2012)
User outcomes	RSH 29	Hygienic use of quality facilities	What percentage of people living in rural areas use improved toilet facilities (excluding shared facilities)?	More than 75% of people use toilets	Between 50% and 75% of people use toilets	Less than 50% of people use toilets	0	Coverage in latest (2013) JMP update is 27%	JMP figures (2013)
URBAN WATER SUPPLY									
ENABLING									
Policy	USH 1	Sector Targets	Are there USH access targets (household level and sewerage/septage management) in the national level development plan?	Yes, targets for urban household access and sewerage/septage management included in the development plan	Targets for urban household access included in the development plan but no sewerage or septage management targets included	No urban sanitation targets in the development plan	0.5	Urban household coverage and ODF communities 100% by 2030, 100% Dili households and 82% district urban targets for 2020	National Strategic Development Plan 2011-2030, and draft National Sanitation Strategy 2012
Policy	USH 2	Sector policy	Is there an urban sanitation policy that is agreed by stakeholders, approved by government, and publicly available?	Policy officially approved and publicly available	Policy drafted and agreed but not officially approved	No policy	1	National Basic Sanitation Policy approved by Council of Ministers 2012. Widely consulted.	National Basic Sanitation Policy 2012

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Policy	USH 3	Institutional Roles	Are the institutional roles of urban sanitation subsector players (national/state & local government, service provider, regulator etc.) clearly defined and operationalized?	Defined and operationalized	Defined but not operationalized	Not defined	0.5	Roles of subsector actors are described in the National Basic Sanitation Policy but not operationalized at district level.	National Basic Sanitation Policy 2012. Sanitation workshop March 2013
Planning	USH 4	Fund flow coordination	Does government have a process for coordinating multiple investments in the subsector (domestic or donor, eg. National grants, state budgets, donor loans and grants etc.)?	Coordination process defined and operationalized	Coordination process defined but not operationalized	Not defined/ no process	0.5	Money is available but weak coordination and execution on sanitation, especially spending money at district level	Sanitation workshop March 2013
Planning	USH 5	Investment plans	Is there a medium-term investment plan for urban sanitation based on national targets that is costed, prioritizes investment needs, is published and used?	Investment plan based on priority needs exists, is published and used	Exists but not used, or under preparation	Does not exist	0.5	Investment plan exists for Dili as part of the masterplan but not other district capitals. Stakeholders at Sanitation workshop in March 2013 said a masterplan exists but is not implemented.	Sanitation workshop March 2013
Planning	USH 6	Annual review	Is there an annual multi-stakeholder review in place to monitor subsector performance, to review progress and set corrective actions?	Review of performance and setting of corrective actions	Review of performance but no setting of corrective actions	No review or setting of corrective actions	0	No annual multi stakeholder review of sector performance only personnel performance reviews.	Sanitation workshop March 2013
Planning	USH 7	HR Capacity	Has an assessment been undertaken of the human resource needs in the subsector to meet the subsector target and is the action plan being implemented?	Assessment undertaken and actions being implemented	Assessment undertaken but no action being taken	No assessment undertaken	0.5	Assessment done including by subsector, but unclear if follow up action taken to address skill shortages although the report did have an action plan for dissemination of results. Some confusion with between annual personnel performance review and sector HR assessment.	DFID Human Resource Capacity in the WASH sector in TL 2009. Sanitation workshop 2013.
Budget	USH 8	Adequacy	Are the annual public financial commitments to the urban sanitation subsector sufficient to meet national targets for the subsector?	More than 75% of what is needed	Between 50-75% of needs	Less than 50% of needs	0.5	Agreed by participants	Sanitation workshop March 2013. Budget Books for 2011, 2012, 2013
Budget	USH 9	Structure	Does the budget structure permit investments and subsidies (operational costs, administration, debt service, etc) for the urban sanitation sector to be clearly identified?	Yes for investment and for subsidies	Yes for investment but not subsidies	No	1	Structure is clear but not broken out to subsector	SDA financial analysis
Budget	USH 10	Comprehensive	Does the government budget comprehensively cover domestic and official donor investment/ subsidy to urban sanitation?	More than 75% of funds to sub-sector on budget	Between 50-75% of funds to sub-sector on budget	Less than 50% of funds to sub-sector on budget	1	Funds are on budget, but budget is highly centralized	SDA financial analysis

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
DEVELOPING									
Expenditure	USH 11	Utilization of domestic funds	What percentage of domestic funds budgeted for urban sanitation are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	1	No subsector disaggregation although no problem with budget execution	SDA financial analysis and Sanitation workshop March 2013
Expenditure	USH 12	Utilization of external funds	What percentage of external funds budgeted for urban sanitation are spent (3 year average)?	Over 75%	Between 50% and 75%	Less than 50%	0.5	Difficult to assess probably between 50-75%	Sanitation workshop March 2013
Expenditure	USH 13	Reporting	Is urban sanitation expenditure versus budget audited and reported on in a consolidated format for all sources of domestic and official donor expenditure?	Yes for domestic and donor expenditure	Yes for domestic expenditure	No	0.5	Donor expenditures may be audited but not disclosed	Sanitation workshop March 2013
Equity	USH 14	Local participation	Are there clearly defined procedures for informing, consulting with and supporting local participation in planning, budgeting and implementing for urban sanitation developments?	Yes and systematically applied	Yes, but not systematically applied	No	1	Participation processes exist	Sanitation workshop March 2013
Equity	USH 15	Budget allocation criteria	Have criteria (or a formula) been determined to allocate urban sanitation funding equitably to urban utilities or service providers and among municipalities and is it being consistently applied?	Yes, applied consistently	Yes, but not applied consistently	No	1	Some prioritization of urban sanitation.	Sanitation workshop March 2013
Equity	USH 16	Reducing inequality	Do local government or urban service providers (national or in 3 largest cities) have specific plans or measures developed and implemented for serving the urban poor?	Plans developed and implemented	Plans developed but not implemented	No plans documented	0	No evidence	Sanitation workshop March 2013
Output	USH 17	Quantity (access)	Is the annual expansion of urban households gaining access to safe sanitation sufficient to meet the subsector targets?	Over 75% of that needed to reach sector targets	Between 75% and 50% of that needed to achieve targets	Less than 50% of that needed to reach targets	1	Urban sanitation is increasing particularly in Dili, which represents 60% of the entire urban population	National census data
Output	USH 18	Quantity (treatment)	Is the annual increase in the proportion of fecal waste that is safely collected and treated growing at the pace required to meet the subsector targets (for both onsite and sewerage)?	For collection and for treatment	For collection but not for treatment	Not for collection or treatment (or if no target)	0.5	No subsector targets for fecal waste collection	Sanitation workshop March 2013
Output	USH 19	Reporting	Are there procedures and processes applied on a regular basis to monitor urban sanitation access and the quality of services and is the information disseminated?	Quality, quantity and disseminated	Quality or quantity	Neither	0.5	Census, health surveys measure quantity in terms of access to household sanitation	Census and health surveys

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
SUSTAINING									
Maintenance	USH 20	Collection and treatment	What is the proportion of total fecal waste generated that gets safely collected and treated?	Over 75% of that generated is collected and treated	Over 50% of that generated is collected from the HH level	Less than 50% of that generated	0	While district capitals likely to have latrines, there are not collection or treatment facilities/disposal sites. Few HHs empty their latrines.	WSP Urban sanitation survey, Discussion with Joao Piedade
Maintenance	USH 21	Cost recovery	Are O&M costs of treatment systems (beyond household level facilities) assessed/known and fully met by either cost recovery through user fees and/or local revenue or transfers?	O&M costs known and >75% covered through cost recovery	O&M costs are known and 50% covered through cost recovery	O&M costs not known	0	O&M costs not known and policy has not been implemented	Sanitation workshop March 2013
Maintenance	USH 22	Discharge	Are there norms and standards for wastewater discharge for septic and sewerage treatment plants that are systematically monitored under a regime of sanctions (penalties)?	Exist and are monitored under a regime of sanctions	Exist and majority are monitored, but there are no sanctions	Standards exist but majority of plants are not regularly monitored	0	There are Indonesian regulations on septicage for Industrial, Hotel, Hospital, Oil & Gas and mining sectors:	Various Environmental Ministerial Diplomas on Wastewater Standards for Industries; Monitoring for sewage treatment plant effluent.
Maintenance	USH 23	Management of Disaster Risk and Climate Change	Do local government or service providers (national or in 3 largest cities) have plans for coping with natural disasters and climate change?	Yes, the majority of urban service providers have a plan for disaster risk management and climate change	No. Only some service providers have a plan for disaster risk management and climate change or most service providers have undertaken a vulnerability assessment.	No service provider has a climate action plan or has undertaken a vulnerability assessment.	0	National Assessment of risks from climate change and natural disaster includes sanitation and health implications. Includes adaptation measures such as protection of water sources (including for sanitation purposes) and developing emergency preparedness plan for disease outbreak such as diarrhoea. An emergency institutional structure is in place, but no budget for education and awareness/teaching people how to plan. Information missing at suco level. Policies need to be better coordinated. Districts rely on central level for information.	National Adaptation Programme of Action to Climate Change (2010). Sanitation workshop March 2013
Expansion	USH 24	Uptake	Has government (national or local) developed any policies, procedures or programs to stimulate uptake of urban sanitation services and behaviors by households?	Policies and procedures (instruments) developed and being implemented	Some policies and procedures (instruments) developed but not implemented	No policies or procedures (instruments) exist	0.5	Nothing specifically urban but national policies and procedures encourage. Implementation is lacking.	Sanitation workshop March 2013

Building block	No.	Areas of evidence for assessment	Question	High (1)	Medium (0,5)	Low (0)	Score	Explanation for score	Source of evidence
Expansion	USH 25	Plans	Do government/service providers have business plans for expanding the proportion of citywide fecal waste that is safely collected and treated?	Business plans for expansion of collection & treatment being implemented	Business plans for expansion of collection & treatment under preparation	No Business Plans	0	No business plans	Sanitation workshop March 2013
Expansion	USH 26	Private sector development	Does the government have ongoing programs and measures to strengthen the domestic private sector for the provision of sanitation services in urban or peri-urban areas?	Yes, various components	In development, few components	No	0.5	Unclear — maybe some program but evidence is lacking	Sanitation workshop March 2013
User outcomes	USH 27	Sub-sector progress	Is the sub-sector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	0.5	Anomaly that the sector is not getting enough money but access is increasing. Not quite on track for targets	Sanitation workshop March 2013. SDA analysis
User outcomes	USH 28	Equity of use	What is the ratio of improved toilet access between the lowest and highest quintile in urban areas?	Less than 2 times	Between 2 and 5	More than 5 times	0.5	Equity ratio of 3.2	UNICEF/WHO Equity analysis for EAP countries 2012 (Using 2009 DHS data)
User outcomes	USH 29	Use of facilities	What percentage of people living in urban areas use improved toilet facilities (excluding shared facilities)?	More than 90% of people	More than 75% of people	Less than 75% of people	0	Coverage in latest (2013) JMP update is 68%	JMP figures (2013)

Annex 2:

Assumptions and Inputs for Financial Model

This annex describes the key inputs that were used to generate estimates of the required expenditures to meet government targets and anticipated capital expenditures from 2013 to 2020. It discusses the sources, adjustments and assumptions of the following information: Exchange rates, demographic variables, sector-specific technologies and spending plans.

Exchange rates

The official currency in Timor-Leste is the US dollar. No exchange rate calculations were necessary.

Demographic and Access Estimates

The main demographic variables in the SDA financial model are rural and urban population estimates or projections for 1995, 2011, and the target year (2020). Combined with estimates of actual and target coverage rates for water and sanitation, this information assists in the calculation of the number of people who will be needing access to improved facilities from 2011 to the target year. The second set of information refers to the average size of households. This is used to convert costs of facilities, which are generally expressed on a per household basis, into per capita terms.

Table A2.1 shows the key demographic variables used in the analysis. Population and coverage data for 1995 was based on JMP 2013a that used estimates from the United Nations Department of Economic and Social Affairs, Popu-

lation Division.⁹⁰ Population estimates for 2011 were made by using official Timor-Leste census results for 2010 (Government of Timor-Leste 2011 p. xxi) and applying the average annual growth rate of 2.41% during intercensal period 2000-2010.⁹¹ 2011 population projections used the same rural/urban percentages in the 2010 census. 2011 access figures for water supply and sanitation are from JMP 2013 (pp. 30 and 31). Population projections for 2020 are from the United Nations Department of Economic and Social Affairs Population Division.⁹² The percentage estimates for rural and urban population in 2020 are from Google Earth “Environments of the Poor”; these were applied to the UN total population estimates. Access targets for overall national and sub-sectors of rural and urban water supply and rural and urban sanitation were also agreed in stakeholder meetings. For both rural and urban water supply, the target is drawn from the Ministry of Public Works Five Year Action Plan 2013 -2017 (pp. 2 and 7), and the national figure is calculated based on population estimates. For sanitation, the rural percentage is drawn from the draft national Sanitation Strategic Plan which calculates the 2020 target from the Strategic Development Plan target for 2030, while the urban percentage is calculated from the draft national Strategic Sanitation Plan which targets district towns having 82% coverage and Dili having 100% coverage by 2020. National sanitation coverage in 2020 was calculated based on projected population. It does not include shared facilities.

The average household size (5.8 persons) was drawn from the 2010 census.

⁹⁰ Population data are available at <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>.

⁹¹ See <http://timor-leste.gov.tl/?p=4144&lang=en>.

⁹² World Population Prospects: The 2010 Revision, <http://esa.un.org/unpd/wpp/index.htm> Medium variant 2015-2025 viewed 21 Feb 2013.

Table A2.1. Timor-Leste: Population (millions) and Access to Improved Water Supply and Sanitation 1995, 2011, and 2020 used for SDA Financial Model

Region	1995 Estimated			2011 Estimated			2020 Target		
	Pop.	Access		Pop.	Access		Pop.	Access	
		Wat.	San.		Wat.	San.		Wat.	San.
Rural	0.7	49%	33%	0.8	60%	27%	1.0	80%	68%
Urban	0.2	67%	51%	0.3	93%	68%	0.5	100%	93%
National	0.9	53%	37%	1.1	69%	39%	1.5	87%	76%

Table A2.2 Timor-Leste: Distribution, Unit Costs, and Lifespans of Water Supply Technologies Among Households with Access to Improved Water Supply (Used for SDA Financial Model)

Technology	Estimated Distribution 2011		Projected Distribution 2020		Unit capital cost (US\$/capita)	Lifespan (years)	Assumed user share of unit cost
	Rural	Urban	Rural	Urban			
Piped into dwelling or premises	26%	46%	28%	70%	190 (rural) 379 (urban)	9 (rural) 20 (urban)	10%
Public tap	40%	26%	52%	13%	140	9	10%
Tube/piped well or borehole	27%	9%	5%	10%	190	8	99%
Protected dug well/spring	27%	9%	14%	7%	35	10	99%
Improved Rainwater Collection	1%	0%	1%	0%	34	10	99%
Total	100%	100%	100%	100%			

Water Supply Technology Distribution, Unit Costs and Lifespan

Information on the distribution of technologies is used to calculate capital investment required to meet national targets. Table A2.2 presents information on the estimated household distribution, per capita costs, and lifespans of key water supply technologies. The technology distribution is for households that already have access to improved water supply.

The relative distribution of water supply technologies for 2011 were assumed to be identical to 2010, for which evidence is available. The distributions were based on the 2010 census.⁹³ The projected technology distribution for 2020 was based on stakeholder discussions at a workshop on 5 June 2013 plus subsequent discussion with experts from the AusAID-funded BESIK project on 17 June 2013.

⁹³ Population and Housing Census Data of Timor-Leste, Vol 3 social and Economic Data Summary p. xx.

Evidence for unit capital costs for water piped into premises represent expenditures for materials and labor and were derived from data supplied by the AusAID-funded BESIK project for rural water supply and from estimates from Asian Development Bank projects in urban water supply. For all other technologies, estimates from the BESIK project were used, based on actual costs, with the major assumption being that costs for rural and urban water supply technologies are similar except for water piped onto premises (for which urban systems are more complex and expensive). The same assumption was made for lifespans. The difference in lifespans for rural and urban water supply piped onto premises was estimated in part from functionality studies conducted by Oxfam and Triangle in 2008.⁹⁴ It should be noted, however, that functionality of water supply systems is not an absolute (either functioning or non-functioning). Especially in the case of rural water supply systems, the supply may be partially functional or a small repair such as a valve or pump would make systems functional. The SDA model however assumes that all capital investment must be fully replaced after its functional lifespan, which has been set fairly low for rural piped water supply schemes.

Sanitation Technology Distribution, Unit Costs, and Lifespan

Table A2.3 presents information on the estimated household distribution, costs, and lifespans of key sanitation technologies. These were used to calculate capital investment required to meet national targets.

The relative distribution of sanitation technologies for 2011 were assumed to be identical to 2010, for which evidence is available. The distributions were based on the 2010 census.⁹⁵ The projections for 2020 were based on stakeholder discussions at a workshop on 5 June 2013 plus subsequent discussion with a major stakeholder on 17 June 2013.

There is no mention of sewerage connections in the 2010 census as there is no networked sewerage system in Timor-Leste, although a Dili Sanitation and Drainage Master Plan envisions a system for the capital. For the financial model it is assumed that stage 2 of the master plan – completion of one decentralized wastewater treatment systems – would be completed by 2020.

Table A2.3 Timor-Leste: Distribution, Unit Costs, and Lifespans of Sanitation Technologies Among Households with Access to Improved Sanitation (Used for SDA Financial Model)

Technology	Estimated Distribution 2011		Projected Distribution 2020		Unit cost (US\$/capita)	Lifespan (years)	Assumed user share of unit cost
	Rural	Urban	Rural	Urban			
Pour flush/flush connected to sewerage	0%	0%	0%	10%	1,807	20	3%
Pour flush/flush connected to tank or pit	24%	30%	56%	70%	21	10 (rural) 15 (urban)	99%
Simple Improved Pit latrine	44%	46%	25%	10%	7	5	99%
VIP latrine	32%	24%	19%	3%	22	5	99%
Total	100%	100%	100%	100%			

⁹⁴ Oxfam Australia (2008) Covalima District Rural Water Supply Management Study and Triangle Génération Humanitaire (2008) Manatuto District Rural Water Supply Management Survey.

⁹⁵ Population and Housing Census Data of Timor-Leste, Vol 3 social and Economic Data Summary p. xx.

Unit costs for networked sewerage plus treatment were calculated from data and cost estimates presented in the Dili Sanitation and Drainage Master Plan. Estimates for other sanitation technologies were based on figures offered by experts from the AusAID-funded BESIK project, the Timor-Leste Red Cross, and WaterAid. Lifespan figures were presented at a stakeholder workshop on 5 June 2013 and modified by subsequent discussion with BESIK experts on 17 June 2013.

User Share

The planned spending of users is computed by specifying the proportion of investments that the authorities believe households should contribute. This could be an expressed policy, supported by documentation. In the absence of such a policy, however, the approach was to consult experts in the water and sanitation sector. It is through this consultation process that the user shares for urban and rural water supply were obtained. Hence, the approach used in the analysis is to assume a share that the household is likely to contribute for different technologies. The percentage of user investment in capital costs for rural sanitation, for example, was assumed to be 100% (the model calculations do not allow entering more than 99%) as it is assumed that households will bear the major costs of investment in rural sanitation “hardware” in the future. The model uses the same user share for urban and rural infrastructure.

The assumed contributions of the households for investments in water supply and sanitation are given in tables A.2.2 and A.2.3. In all cases, household investment is calculated based on a leverage ratio whose denominator is government investment. For example, for a leverage ratio of 1:2, for every dollar of government capital (hardware) investment, the household would invest two units. For onsite sanitation, this is difficult to conceptualize because in many countries the government is in fact contributing very little capital. Virtually all the cost of onsite sanitation is borne

by the household. However, this does not mean that the households will certainly invest 100% of the requirements in the future; their expenditures need to be mobilized by corresponding “software” expenditures by government and donors. Thus the high deficits displayed for sanitation household expenditure can be conceptualized as the amounts that should be leveraged in the future with “software” expenditures.

Investments

Assumptions about the country’s budget commitment to all capital investment have been taken from the government budget figures (refer table A2.4).

Population projections plus technology distributions, costs, and lifespans are the key ingredients in estimating capital investment needed to reach national targets. To get a sense of how short- to medium-term actual expenditures measure against investment requirements, planned investments of the government, donor agencies, NGOs, and private institutions from 2010 to 2012 were obtained from documents supplied by government agencies, published budgets, and interviews. An attempt was also made to estimate the contribution of households or users.

In 2011, about 20% of the total PDL budget of US\$ 3.5 million was allocated for water supply projects (new and rehabilitation), 2% in urban areas and 17% in rural areas, while in 2012, about US\$ 2.4 million—41% of a total \$5.3 million budget - was allocated to water supply. In 2011 about 7% was allocated for sanitation facilities, but all of these were public facilities that do not assist in reaching sanitation coverage goals and so were not included in SDA estimates or projections. SDA estimates adjusted these percentages and applied them to other funds to obtain an overall figure for rural water supply. Forecast budget for water and sanitation under the PNDS has not been included in the analysis because the total budget is not known.

Table A2.4. Timor-Leste: Budget and Capital Spending 2010-2015, US\$ millions

	2010 actual	2011 actual	2012 budget	2013 budget	2014 budget	2015 budget
Combined Sources Budget (Government + Development Partners)	--	1,379.8	2,028.3	1,850.9	2,088.5	2,078.4
Total Government Expenditure	760.8	1,095.9	1,806.5	1,647.5	1,949.0	2,045.8
Recurrent	506.1	507.8	757.3	841.8	870.5	908.8
Minor Capital	38.3	27.2	49.2	49.6	51.6	53.6
Capital and Development (Including all Infrastructure Expenditures)	215.9	561.0	1,000.0	756.9	1,026.9	1,083.3
Capital as percent of Government Budget	--	51%	55%	46%	53%	52.9%
Development Partner Commitments	--	283.9	221.8	203.4	139.5	32.6

Note: -- data not available. Source: RDTL 2013a p.43.

Given limitations on time and resources, the SDA investment estimates should not be regarded as in-depth or highly detailed, but a wide view of spending. Apart from the difficulties associated with collecting information from various sources, several other challenges were confronted in the process. The financial model uses information on only hardware costs (for example, construction costs of facilities) and excludes software costs (for example training and awareness programs, project implementation, and salaries). Moreover, such information must be disaggregated among the four sectors (that is, rural water supply, urban water supply, rural sanitation, and urban sanitation) and, in the case of multiyear projects, for each year. This disaggregation is usually not readily available, or even known, for projects. The SDA team consulted project funders, implementers, and other experts as well as examples of similar or previous projects to make informed estimates.

Table A2.5 shows the projected average annual spending of government and development partners, including NGOs from 2013 to 2015.

Table A2.5. Timor-Leste: Estimated Average Anticipated Annual Capital Investments in Water Supply and Sanitation 2013–2015 (Used for SDA Financial Model), US dollars, millions

Sub-Sector	Government	Development Partners including NGOs and private sector	Total
Rural water supply	13.0	1.7	14.7
Urban water supply	10.6	4.1	14.7
Rural sanitation	0	0	0
Urban sanitation	4.7	0	4.7
Total Anticipated Capital Investment	28.3	5.8	34.1

Source: SDA estimates

Operations and Maintenance

The estimates of operations and maintenance costs are derived from averaging a set percentage of existing technologies and expected future technologies to get an average cost. These are assumed to be 3% of the capital cost for water supply piped onto premises or public taps, and 1.5% of the capital cost of other types of water supply technologies. For sanitation, the estimate is 3% of the capital cost for networked sewerage and for pour flush/flush into tanks or pits, and 1.5% for other technologies. When estimating O&M costs, there is no distinction between urban and rural sanitation and water supply, however total O&M costs (in Table A2.6) are pro-rated according to the predicted technology distribution for 2020.

Table A.2.6 below presents annual estimates of O&M costs in 2011 and 2020, and the average.

Table A2.6. Timor-Leste: Estimated Operations and Maintenance Costs for Water Supply and Sanitation (Used for SDA Financial Model)

	2011 O&M	2020 O&M	Average O&M
Rural WS	1.2	2.6	1.9
Urban WS	2.2	4.5	3.4
WS total	3.4	7.1	5.3
Rural S&H	0.1	0.3	0.2
Urban S&H	0.1	2.7	1.4
S&H total	0.2	3.0	1.6

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