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Water Supply and Sanitation in Cambodia

Turning Finance into Services for the Future

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This report is the product of extensive collaboration and information sharing between many government agencies and organisations in Cambodia. A core team drawn from the Ministry of Rural Development (Department of Rural Health Care, Department of Rural Water Supply and Department of Planning and Public Relations), and the Ministry of Industry and Handicraft, as well as the Ministry of Public Works and Transport have been key partners with the Water and Sanitation Program (WSP) of the World Bank in analyzing the sector. The authors acknowledge the valuable contributions made by these organizations, as well as other sector stakeholders, including development partners and NGOs partners in the sector that participated in the workshops and have shared their information, such as UNICEF, ADB, JICA, UN-Habitat, SNV, and others.

The Task Team Leader for the Regional Service Delivery Assessment (SDA) in East Asia and Pacific is Susanna Smets. The following World Bank staff and consultants have provided valuable contributions to the Service Delivery Assessment process and report for Cambodia: Phyrum Kov, Sopheap Ly, Virak Chan, Kuysrorn Seng, Sandra Giltner and Almud Weitz. This report was peer reviewed by World Bank staff Lixin Gu and Claire Grisaffi, as well as Belinda Abraham from UNICEF.

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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

Against a backdrop of strong economic growth and increasing household consumption over the past decade, Cambodia has made considerable progress to help people gain access to improved water and sanitation services, most notably in urban areas, where around one fifth of the population lives. As of 2012, according to Joint Monitoring Program (JMP) data, access to improved water supply in Cambodia reached 71%, up from 42% in 2000 and already having met the Millennium Development Goal (MDG) target of 66%. For sanitation, improved access increased from 16% in 2000 to 37% in 2012, however, remains not on track to meet the MDG target of 55%.[1] Based on these figures, some 4.3 million people are still without access to improved water supply and 9.4 million lack access to improved sanitation.

The Royal Government of Cambodia has adopted alternative national goals, known as the Cambodian MDGs, with 2015 targets set for each subsector. In the case of rural sanitation the target is very modest at 30%, however this target could probably be met as rural access was estimated to be 25% in 2012. The National Strategic Development Plan 2014-18 contains more ambitious targets of 60% improved access for rural and 85% of piped access for urban water supply respectively, and 60% for rural sanitation by 2018. Universal access targets have officially been adopted by 2025 for the rural sectors in the National Strategic Plan for Rural Water Supply, Sanitation and Hygiene (RWSSH) 2014-2025.[2]

Despite recent impressive gains in access, disparities remain especially between urban and rural populations, illustrated by only 25% of rural people having access to sanitation, as compared to 82% in urban areas. Moreover, inequalities between the poorest and better-off groups of society remain large. For example, among the poorest income quintile of the rural population only 12% has access to improved sanitation, while in the richest rural quintile this is five times as much at 59%. In urban areas, with overall good levels of improved access, 86% of the population in the richest quintile enjoys piped water supply services, as compared to 34% for the poorest quintile, while overall levels of service in rural areas are much lower with only 5% access to piped services.[3]

Over the past decade, government has initiated a decentralization and deconcentration (D&D) process, with the aim of increasing responsiveness of service delivery, improve efficiencies and enhance accountabilities. While reforms are progressing, the respective mandates of the three tiers of government are not yet clearly defined, accountability systems are unclear and the real empowerment of citizens has not, so far, become a reality.[4] The endorsement of the policy framework for social accountability in July 2013[5] and its consequent implementation plan is expected to enhance citizen empowerment, accountability and local service delivery. A positive recent development within this context is the current investigation, with support of ADB and WSP, to assign rural sanitation and rural water scheme maintenance to sub-national administrations as a mandatory function, however, implementation[6] of pilots has not yet started.

The National Strategic Plan for RWSSH has not yet been operationalized into a National Action Plan. This multi-year operational plan with budget for funding by government and development partners under a programmatic approach[7] is expected to be realized by mid 2015. Major bottlenecks in the

[1] JMP (2014) Progress on Drinking Water and Sanitation – Update 2014.
[2] The NSDP 2014-2018 specifies a target of 80% access to improved sanitation for the urban population, however as per JMP (2014) estimates this is already achieved (82% by 2012); the NSDP is not clear about the definition that applies to this target.
[3] CSES (2011) Cambodia Socio-Economic Survey 2011
[4] World Bank (2013) Voice, Choice and Decision: A Study of Local Governance Processes in Cambodia.
[5] World Bank (2014) Demand for Good Governance Policy Note, January 2014 - The Strategic Plan for Social Accountability in Sub-National Democratic Development; and
[6] World bank (2014) Demand for Good Governance Policy Note, August 2014 - An Implementation Plan for Subnational Social Accountability in Cambodia
[7] World Bank (2012) Cambodia Water and Sanitation Sector Review

rural subsectors relate to both inadequate capital and operational resources, leaving the Ministry of Rural Development mandate for rural water supply and sanitation largely unfunded. Robust and adequate systems, resources and human capacities are lacking for monitoring, community mobilization, and the required comprehensive technical and managerial post-construction support to sustain rural water scheme operation.

In the urban sector, Phnom Penh Water Supply Authority, which has extended reliable and affordable services to 85% of Phnom Penh residents, has been the main driver of progress in the sector. The NSDP 2014-2018 sets out an ambitious reform agenda to develop the necessary legal and regulatory framework, and support public utilities—other than Siem Reap and Phnom Penh—to become autonomous, operate on commercial principles and expand services. However, to date, the implementation of previous policies has been limited. With support of development partners, the focus is shifting from project investments towards a complementary focus on building institutional and human capacities of water service providers. While the private water operators sector is growing, challenges remain concerning their technical and managerial performance, as well as accessing finance for expansion and new scheme development. Regulation and sector monitoring remains weak with limited capacities and available resources within the Department of Potable Water Supply of the Ministry of Industry and Handicraft, the de-facto regulator. While appreciating good service delivery in Phnom Penh, the scorecard focusses on the challenges in other urban areas in view of government targets, and hence reflects key bottlenecks in developing and sustaining services through both public and private water providers.

The urban sanitation sector has been characterized by project-based investments in critical flood protection measures, as well as sewer systems in Phnom Penh and two other towns. As indicated in the Cambodia Water and Sanitation Sector Review,[8] a strategic vision and coherent institutional framework—at national and service provider level—is required to address the entire sanitation value chain: collection, management, treatment and disposal of fecal waste, including networked sewers, waste water and septage treatment, and fecal sludge management solutions for on-site solutions. The fact that the urban sanitation sector is still in early stages of development is reflected in a scorecard that illustrates the key bottlenecks in terms of the enabling policy environments, as well as the challenges to expand and increase service levels in a sustainable way.

As part of this Service Delivery Assessment, unofficial targets were developed for the urban subsectors namely universal access by 2025,[9] as the rural subsector already have such officially endorsed targets. In order to reach the 2025 goals for rural and urban subsectors, about US$92 million would be required each year for capital spending in water supply infrastructure and about US$119 million annual on capital spending for sanitation, which includes the development of new facilities, as well as replacement of existing infrastructure. For water supply, this is about 2.7% of the 2014 national budget of US$3.4 billion, and for sanitation about 3.5%.[10] The total for water supply and sanitation of US$211 million per year in order to reach 100% coverage by 2025 is about 1.4% of total 2013 GDP of $15.25 billion.[11] About US$24 million per year on average would be needed to finance operation and maintenance of current and future infrastructure. Moreover, additional software financing is needed, especially in the rural subsectors, for community mobilization, capacity building, promotion and operational expenditures.

This SDA has been conducted as a multi-stakeholder process under the joint leadership of the Ministry of Rural Development (MRD), the Ministry of Public Works and Transport (MPWT), the Ministry of Industry and Handicraft (MIH). These discussions led to a set of recommended priority actions required to meet water supply and sanitation challenges, reach the goals, and ensure that finance is effectively turned into services. Indicative implementation horizons are provided to guide the sequencing of the priority actions.

[8] World Bank (2012) Cambodia Water and Sanitation Sector Review
[9] This includes 90% access to piped water supply services and an ambitious 50% to sewer and treatment for sanitation
[10] 2014 annual approved budget of US$3.4 billion (source: IMF)
[11] 2013 estimated GDP US$15.25 billion (source: http://data.worldbank.org/country/cambodia)

Sector-wide

	short term	medium term	long term
Strengthen decentralization in the water and sanitation sector by clarifying functions for sub-national administrations, providing operational guidance and developing the required legal framework	√	√	
Develop an overall legal and institutional framework (water law) for the water and sanitation sector which redefines the institutional mandate for urban sanitation and establishes an independent regulator	√	√	√
Adopt and implement a capacity building strategy hosted with local institutions and design a pooled financing mechanism for development partners support		√	√
Establish better monitoring systems, reporting access and usage of services, service quality, sustainability, institutional WASH, and equity, and publish information through ministerial websites	√	√	
Carry out high-level advocacy using platforms such as Technical Working Groups and Cambodia Development Council to increase funding allocations, especially for the rural sector	√		
Improve the tracking of budget allocations and expenditure on water supply and sanitation for rural and urban sub-sectors through program-based budgeting and the government's Financial Management Information System, including better tracking at sub-national level over time		√	√
Institutionalize coordination and planning between Ministries of Health, Education and Rural Development to improve WASH facilities in institutions, such as health centers and schools	√	√	

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Priority actions for rural water supply

	short term	medium term	long term
Clarify the roles of government agencies and sub-national administrations at provincial, district and commune level under the decentralization reform and test this through a pilot	√	√	
Develop a National Action Plan for rural water supply with focus on sustainability and cost-effectiveness of different technology options (based on a review of technologies)	√		
Establish district rural water supply functionality plans linked to local and national investment planning process		√	
Develop professional post-construction technical and managerial support systems to ensure sustainability of community-managed schemes, possibly involving the private sector		√	√
Promote expanded role of private sector in piped water service delivery in rural growth centers, through facilitating access to finance and leveraging private sector investment grants	√	√	
Safeguard water quality through treatment, water quality management and risk assessment at source, as well as household water treatment and storage programs	√	√	√
Increase enforcement for water quality regulations and carry out point-of-consumption water quality surveys		√	√
Develop national management information system for rural water supply and sanitation	√	√	

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Priority actions for urban water supply

	short term	medium term	long term
Develop full legal framework (water law) that clarifies and redefines institutional roles, including that of regulator	√	√	√
Develop policy, guidelines and instruments for economic regulation, including pro-poor tariff setting and connection policies (beyond those existing at project level)	√		
Following the model of Phnom Penh Water Supply Authority, transform public water works into autonomous utilities and transition all investment and service provision responsibilities		√	
Develop a long-term sector development and investment plan, with emphasis on equity considerations (e.g. social connection fund)		√	
Improve service performance and efficiencies of public and private operators through at-scale training programs by - to-be-established - utility training center and Cambodia Water Association's training services	√	√	
Introduce competitive granting of licenses for private operators to increase transparency, leverage commercial finance, and ensure value for money	√		
Develop capacities of Department of Potable Water Supply for expediting licensing and economic regulation regime, bringing all unlicensed operators under its supervision	√	√	
Develop an umbrella association for all public and private operators to promote best practices and continued support to professionalizing of the sector		√	√

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Priority actions for rural sanitation and hygiene

	short term	medium term	long term
Establish National Action Plan for rural sanitation and hygiene, that includes community-wide targets, and pro-poor implementation guidelines (e.g. on use of smart subsidies/incentives)	√		
Based on pilot, develop necessary legal framework, implementation guidance, and financial management mechanisms and sources for functional assignment of sanitation to subnational level	√	√	
Carry out high-level advocacy to increase funding allocations, especially for program and operational costs (software) such as for community-led total sanitation, behavior change, and monitoring	√	√	
Develop and implement a roadmap for government to facilitate and strengthen the private sector role in sanitation service delivery		√	
Test and scale-up approaches for integration of sanitation and hygiene in nutrition and social protection programs	√	√	
Carry out evaluations and facilitate sector learning on poor-inclusive sanitation service delivery and develop harmonized financing guideline	√		
Continue innovation and R&D for low-cost product and services especially for challenging environments, waste collection and emptying and other WASH products		√	√
Develop a national management information system for rural sanitation and water supply	√	√	

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Priority actions for urban sanitation and hygiene

	short term	medium term	long term
Carry out options study and high-level dialogue to build consensus on urban sanitation institutional framework (e.g. look at combined utility for urban water and wastewater)	√		
Develop comprehensive urban sanitation strategy, focused on low-cost solutions for collection, management, treatment and disposal of fecal waste (wastewater treatment, as well as fecal sludge management)	√		
Develop a long-term urban sanitation investment plan, identify funding sources, and support city-wide sanitation master planning (including drainage and flood protection)	√		
Test and develop policy instruments for improved fecal sludge management, including promotion of private sector in septage collection, incentives and regulations for disposal		√	√
Build capacity of relevant actors in urban sanitation value chain, including for city-wide sanitation master planning, management of wastewater treatment plants and fecal sludge management		√	√
Tackle the elimination of open defecation among the poorest households in informal slum areas through targeted approaches		√	
Improve sector coordination and programmatic support using a combined urban water supply and sanitation/waste water sub-Technical Working Group as platform	√		

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Contents

Abbreviations and Acronyms

ADB	Asian Development Bank
AFD	Agence Francais de Developpement (French Development Agency)
BORDA	Bremen Overseas Research and Development Association
CAPEX	Capital Expenditure
CLTS	Community-Led Total Sanitation
CMDGs	Cambodia Millennium Development Goals
D&D	Decentralization and Deconcentration
DEWATS	Decentralized Wastewater Treatment System
DP(s)	Development Partner(s)
FSM	Fecal Sludge Management
GDP	Gross Domestic Product
GSF	Global Sanitation Fund
JICA	Japan International Cooperation Agency
JMP	UNICEF-WHO Joint Monitoring Program
MDG	Millennium Development Goals
MEF	Ministry of Economy and Finance
MIH	Ministry of Industry and Handicraft (formerly Industry, Mines and Energy)
MOE	Ministry of Environment
MOH	Ministry of Health
MOI	Ministry of Interior
MOWRAM	Ministry of Water Resources and Meteorology
MOEYS	Ministry of Education, Youth and Sport
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
NCDD	National Committee for Sub-National Democratic Development
NGO(s)	Non-government Organization(s)
NSDP	National Strategic Development Plan (2014-18)
ODA	Official Development Assistance
PDIH	Provincial Department of Industry and Handicraft (formerly Industry, Mines and Energy)
PDRD	Provincial Department of Rural Development
PEFA	Public Expenditure and Financial Accountability
PIP	Project Investment Plan
PPWSA	Phnom Penh Water Supply Authority
RGC	Royal Government of Cambodia
SDA(s)	Service Delivery Assessment
SIP	Sector Investment Plan
SNV	Netherlands Development Organization
SRWSA	Siem Riep Water Supply Authority
TA	Technical Assistance
WASH	Water, Sanitation, and Hygiene
WB-WSP	World Bank's Water and Sanitation Program

1. Introduction

Water and sanitation Service Delivery Assessments (SDAs) are taking place in seven countries in the East Asia 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.

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. 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. Bottlenecks can in fact 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, investment requirements may be gross underestimates because additional investment may be needed to 'unblock' the bottlenecks in the pathway.

The scorecard looks at nine building blocks of the service delivery pathway, which correspond to specific functions classified in three categories: three functions that refer to enabling conditions for putting services in place (policy development, planning new undertakings, budgeting), three actions 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 against specific indicators and is scored from 0 to 3 accordingly. 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 that 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).

Since this is a national assessment, an attempt has been made to present a balanced picture taking in to account the fact service provision in Phnom Penh is much better than in the rest of the country. For the urban subsector, this means that often the scoring is reflective of the situation outside of Phnom Penh, to clearly articulate the bottlenecks.

The SDA analysis relies on an intensive, facilitated consultation process, with government ownership and self-assessment at its core. Through the SDA process, an evidence-based analysis has been conducted to better understand what undermines progress in water supply and sanitation and what the Royal Government of Cambodia can do to accelerate progress. A series of meetings throughout 2013 and urban and rural subsector workshops with core stakeholders, together with reviews of available data, budgets and reports has provided the information on which the analysis in this report is based. Sources of evidence are referenced at the end of this report.

The analysis aims to help the RGC to assess how it can strengthen pathways for turning finance into water supply and sanitation services in each of four subsectors. Specific priority actions were identified and have been presented for validation to government decision makers and other sector stakeholders. This report, produced by WSP in collaboration with the Government and other stakeholders, evaluates the service delivery pathway in its entirety, locating the bottlenecks and presenting priority actions to help address them during the current five year National Strategic Development Plan 2014-2018.

2. Sector Overview: Coverage Trends

Context

The recent Cambodia Inter-Census Population Survey (2013)[12] estimated the total population in 2013 to be 14.7 million people, of which around 21% or 3.2 million were living in urban areas and 11.5 million in rural areas. Urbanization is taking place at considerable speed and is expected to further accelerate over time, with more than a third of Cambodians living in towns and urban centers by 2025, as indicated by population analysis study of the National Institute of Cambodia in 2011.[13] Between 2004 and 2011, Cambodia's GDP per capita (in constant 2000 US$) grew 54.5 per cent, while the poverty rate dropped from 52.5% to 20.5 %.[14] The most important drivers of poverty reduction have been better prices of rice for farmers, better wages for agricultural workers, increases in salary jobs for urban workers and better income for non-agricultural businesses for rural households. Despite this tremendous achievement, the majority of people escaped poverty only slightly and remains highly vulnerable, even to small shocks, which could quickly bring them back in poverty. Poverty remains highest in rural areas, where it stood at an estimated 22% in 2012, as compared to 4% in Phnom Penh and 9% in other urban areas. Cambodia's estimated Gross Domestic product for 2013 is US$15.3 billion, with a Gross Net income per capita of around US$950.[15] Investments and public expenditure in health and education improvements have also provided a favorable environment for the poor, resulting in an impressive relative improvement of its Human Development Index. However in absolute terms, as of 2011 with an HDI of 0.523, it remains to rank among the worst in the region and the 139th worst in the world.[16] One of the persistent challenges related to poor water, sanitation and hygiene is stunting, which continues to prevail in Cambodia, especially in rural areas and among the poor. As of 2010, 40% of under-five year old children remained stunted.[17]

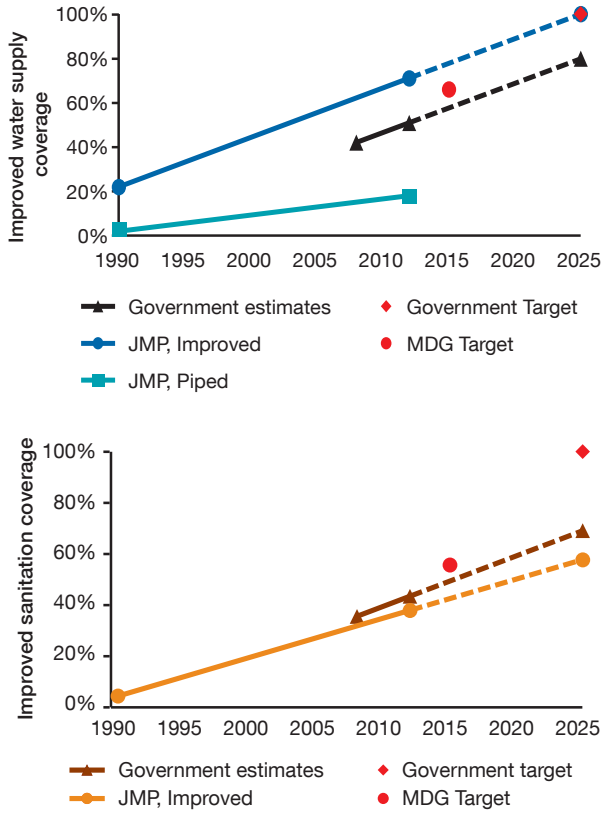
Coverage: Assessing Past Progress

The positive developments in terms of economic growth and poverty reduction have been accompanied by an increase in access to water supply and sanitation in both rural and urban settings (See Figure 2.1). In the case of urban water supply, access to an improved source rose from 48% in 1990 to 94% by 2012, with two thirds having a house connection. Regarding sanitation, urban access to improved

[12] Ministry of Planning, National Institute of Statistics, Cambodia Inter Census Population Data (2013). Final Report.
[13] Ministry of Planning, National Institute of Statistics, Jan 2011 Analysis of Census Results, Population Projections of Cambodia p.19; other sources of population estimates, such as World Bank puts the expected 2013 population at 15.14 million. http://data.worldbank.org/country/cambodia
[14] World Bank (2013). Where have all the poor gone? Cambodia Poverty Assessment 2013. Phnom Penh. World Bank.
[15] http://data.worldbank.org/country/cambodia, viewed Aug 2014.
[16] World Bank (2013). Where have all the poor gone? Cambodia Poverty Assessment 2013. Phnom Penh. World Bank.
[17] Demographic Health Survey (2010) National Institute of Statistics, Directorate General for Health, and ICF Macro. 2011. Cambodia Demographic and Health Survey 2010. Phnom Penh, http://www.measuredhs.com/publications/publication-FR249-DHS-Final-Reports.cfm

facilities rose from 18% to 82% over the same period, while open defecation dropped from 66% to 7%. In rural areas, access to an improved water source rose from 20% in 1990 to 66% in 2012, while for sanitation it increased from no access at all to 25%, as per the latest JMP data for 2012.[18]

Figure 2.1 Progress in water supply and sanitation access



Source: JMP (2014), NSDP 2014-2018;
Note: Government estimates have been calculated using reported access figures for urban and rural, assuming 80% of the population is rural based; it should be noted that urban access rates reported in NSDP seem to refer to piped supply, and do not include other forms of improved access; 80% urban sanitation access was used for this calculation.

Overall improved water supply in Cambodia reached 71% in 2012, up from 22% in 1990, already having met the Millennium Development Goal (MDG) target of 66%. For sanitation, total improved access increased from 3% in 1990 to 37% in 2012; however, it remains not on track to meet the MDG target of 55%, while open defecation rates have dropped from 88% to 54% in the same period. The Royal Government of Cambodia has adopted alternative national goals, known as the Cambodian MDGs, with 2015 targets set for each subsector. In the case of rural sanitation the target is very modest at 30% and could probably be met as rural access was estimated to be 25% in 2012. The most recent targets—defined at the subsectoral level—are reflected in the National Strategic Development Plan 2014-18 and are more ambitious: 60% improved access for rural water supply and 85% of piped access for urban water supply respectively by 2018. For sanitation, only the rural access target of 60% by 2018 has been identified, while for urban sanitation it is reported that access is expected to stay at least 80% (> 80%). Universal access targets have officially been adopted by 2025 for the rural sectors in the National Strategic Plan for Rural Water Supply, Sanitation and Hygiene 2014-2025.[19] Participants in this Service Delivery Assessment—most of whom were from government agencies—agreed that the target of universal access by 2025 should be applied to both urban and rural subsectors for the purposes of the SDA analysis. Although not formally endorsed, they are reflected in the graphs throughout this report.

As can be seen in Figure 2.1, and also in the subsector chapters, official government reported data tend to be different as JMP reported data, which relies on a statistical analysis using country survey data and uses slightly different definitions.[20] The most recent government reported data is found in the National Strategic Development Plan 2014-2018 and has been reflected in the Table 2.1. Although not explicitly mentioned in the NSDP, reported progress and planned access for urban water supply mainly refers to piped supply,

[18] JMP (2014) Progress on Drinking Water and Sanitation – 2014 update
[19] The NSDP 2014-2018 specifies a target of 80% access to improved sanitation for the urban population, however as per JMP (2014) estimates this is already achieved (82% by 2012); the NSDP is not clear about the definition that applies to this target, however it seems that this refers to piped water supply access
[20] The JMP definition for improved water supply includes all rainwater sources to be improved, although the Cambodia definition only considers rainwater to be improved if it is stored in a tank of more than 3000 litres.

however, for rural the definitions of improved water supply are not described in detail. This difference in approach explains the higher access rates as reported by JMP. In addition to the pronounced disparities between urban and rural, there are also large inequalities in access by income status of the population. For example, among the poorest income quintile of the rural population only 12% has access to improved sanitation, while in the richest rural quintile this is five times as much at 59%. In urban areas, with overall good levels of improved access, 86% of the population in the richest quintile enjoys piped water supply services, as compared to 34% for the poorest quintile, while overall levels of service in rural areas are generally much lower with only 5% access to piped services.[21]

Investment Requirements: Testing the Sufficiency of Finance

Given the 2025 goals set by government in the National Strategic Plan for Rural Water Supply, Sanitation and Hygiene 2014-25 and the request to assume universal targets for 2025 in the urban subsectors, the SDA costing tool estimates the investments required to meet the targets of universal access to improved water and sanitation services by 2025. It also facilitates a comparison of these requirements with recent and projected sector investments in order to provide a big picture situation of the funding situations. Annex 2 provides a detailed description of the methodology of the costing as well as the input data that have been used as assumptions.

The analysis derives capital expenditure (CAPEX) requirements, representing hardware costs of new facilities as well as replacement costs of existing facilities (as an average annual amount over their economic life cycle). Estimated CAPEX requirements are further disaggregated between domestic funded, externally funded (by development partners) and investments that are assumed to be contributions by households. Key inputs in the estimation of investment requirements are (a) base year and target year access rates, (b) population projections, (c) unit costs of different technologies/facilities and (d) assumed technology mix at the base year and target year for each of the different subsectors.

Table 2.1 Cambodia: access to water supply and sanitation, current status and targets

	Status		Targets		
	2012 (NSDP)[a]	2012 (JMP)[b]	2015 (CMDG)[c]	2018 (NSDP)[a]	2025[d] (RWSSH Strategy/SDA target)
Water supply national	51%[e]	71%	-		100%
Rural	47%	66%	50%	60%	100%
Urban	69%	94%	80%	85%	100%
Sanitation national	36%[e]	37%	-		100%
Rural	25%	25%	30%	65%	100%
Urban	>80%	82%	74%	>80%	100%

[a] *Source: National Strategic Development Plan 2014-2018 Royal Government of Cambodia*
[b] *JMP Progress on Drinking Water and Sanitation – Update 2014*
[c] *RGC 2003. National Policy on Water Supply and Sanitation, Royal Government of Cambodia; MDGs are formulated for national level access*
[d] *For rural official targets as per the National Strategy; for urban subsectors these are targets agreed to be used in the SDA*
[e] *These are imputed figures using subsector reported progress and a 20%-80% population division between rural and urban. Urban sanitation has not been reported on other than >80% in its current progress and projections beyond 2012*

[21] CSES (2011) Cambodia Socio-Economic Survey 2011

Population estimates and the urban-rural split were derived from Cambodian government estimates for 2025 (17.5 million with 65% living in rural areas).[22] Access rates for the base year (2012) were derived from JMP (2014),[23] and the technology mix distribution was adopted from the Cambodia Socio-Economic Survey (2010). Unit costs were derived from estimates provided by government officials during the workshops, and informed by additional project documents. The analysis assumes government targets of universal access to improved water supply and sanitation by 2025. As per the discussion with government stakeholders, for urban water supply, the expected level of piped water supply coverage was 90%, with the remaining 10% using other improved sources. For rural water supply, there is not yet an aspirational vision for the level of services that governments would like achieve, and for this analysis the technology distribution was held constant.[24] For urban sanitation, stakeholders wished to assume that by 2025 50% of the urban population would not only have access to sewers, but also that wastewater treatment is taking place.[25]

Investment data was collected from publicly available documents and websites,[26] and subsequently validated through visits and direct communications with various stakeholders, in 2013. The collected information was divided between recent and anticipated investments, which represent the average annual budgets of government, development partners from 2010 to 2012 and 2013 to 2015, respectively. Expenditures were also disaggregated as follows: (a) sector - water supply or sanitation, (b) location – rural or urban, (c) nature – hardware or software, (d) year, and (e) budget versus actual. To calculate gaps in investment, the study estimated investments for 2013 to 2015 from various potential financing sources (government, development partners, private sector, and assumed household contribution) to derive an average annual anticipated investment per subsector (based on this 3-year average). This task proved to be challenging for as currently consolidated information on anticipated investment spending is not easily available, neither is it broken down for various subsectors.

Based on publicly available information, and corresponding with development partners, including the usage of the results of a comprehensive donor mapping exercise conducted in 2012/2013 in the rural sector produced estimates of capital spending by development partners.

Forming comprehensive estimates of government capital spending on water supply and sanitation was difficult. Three different ministries, several autonomous or nearly autonomous utilities have responsibility for capital spending on water supply and sanitation, and local and provincial governments can also spend on water and sanitation. In practice, however, it appears that national governments rather than local governments have the largest amount of capital spending in the subsectors, except for utilities such as the Phnom Penh Water Supply Authority (PPWSA), that publish their annual financial statement including capital spending. Information supplied by ministries in the form of their Project Investment Plans needed careful interpretation as sources of funds were not always well defined. Development partner spending projected for 2013-2015 probably reflects an underestimate since some pipelined projects were not yet confirmed at the time of data collection and hence were not yet included.

[22] RGC Ministry of Planning, National Institute of Statistics, Jan 2011 Analysis of Census Results, Rept. 12 Population Projections of Cambodia p.19. and 20.
[23] Using JMP access rates might have led to conservative estimates for rural water supply as government estimates report a lower access rate; for rural sanitation, it might have led to a slight overestimation of the costs as government estimates are higher than JMP. For urban sectors consistency between JMP and government estimates seems better.
[24] By keeping the technology mix constant, it is expected that piped services would increase linearly from 5% in 2012 to 8% of total access by 2025. However, it is to be expected that piped services provision will become increasingly viable in areas that are “characterized” as rural and hence this assumption could be adjusted for the purpose of scenario assessment
[25] Based on CSES (2011), current levels of urban access to septic tanks connected to combined sewer systems is around half. However, there is hardly any treatment capacity in place at this moment.
[26] The Council for the Development of Cambodia maintains an online database of Official Development Assistance (ODA) projects that has a wealth of information, listing projects as well as expected development partner expenditures;

Table 2.2 Coverage and investment figures[a]

	Coverage (base year 2012)	Target 2025	Population requiring access	Annual capital requirement		Anticipated public CAPEX 2013-2015			Anticipated household CAPEX	Annual deficit
				Total	Public	Domestic	External	Total		
	%	%	'000/year	US$ million/year						
Rural water supply	66%	100%	302	31.8	24.1	0.9	5.0	5.9	1.9	24.0
Urban water supply	94%	100%	260	60.1	52.7	2.2	21.5	23.7	3.3	33.1
Water supply total	**71%**	**100%**	**562**	**91.9**	**76.7**	**3.1**	**26.5**	**29.6**	**5.2**	**57.1**
Rural sanitation	25%	100%	658	32.5	3.5	0.4	2.5	2.9	23.9	5.7
Urban sanitation	82%	100%	275	86.7	71.4	1.6	4.3	5.9	1.5	79.4
Sanitation total	**37%**	**100%**	**933**	**119.2**	**74.9**	**2.0**	**6.8**	**8.8**	**25.4**	**85.1**

Note: Public Expenditures include domestic (government) and external (development partners and NGOs) sources. Totals may not sum due to rounding.
Source: SDA costing (see annex 2)

Table 2.2 presents the annual averages of the capital expenditure (CAPEX) requirements and anticipated investments that were estimated for Cambodia. It indicates that national universal access targets will be met if about 560,000 people per year gain access to improved water supply, and around 930,000 people per year gain access to improved sanitation facilities. Despite the expected urbanization, the majority of people requiring new services reside in rural areas, especially for sanitation where 70% of those requiring access live.

The people that will need access to improved services facilities translate to CAPEX requirements of US$92 million per year for water supply and US$119 million per year, for sanitation. Despite the larger service gaps in rural areas, over two third of the required CAPEX is expected to flow to urban areas. This is explained by the higher levels of services and unit costs assumed for urban areas. For water supply, 90% of urban households are expected to benefit from piped services in urban areas, as compared to 8% piped services in rural areas, at much lower unit costs. Similarly for urban sanitation, the 2025 target expects 50% of all urban residents to be connected to sewers with full waste water treatment capacity, while for rural sanitation the target assumes that all households will use low-cost improved on-site sanitation facilities.

Table 2.2 also shows that anticipated public (domestic and external) CAPEX are about US$30 million per year for water supply and almost US$9 million per year for sanitation, representing about 0.25% of 2013 GDP, as compared to a required level of CAPEX spending of 1.4% of GDP. Most of these anticipated funding is coming from external sources (around 80% for sanitation and 90% for water supply respectively), illustrating the low priority the sector receives in domestic fund allocation. This high reliance on development partner CAPEX funding in water and sanitation mirrors Cambodia's overall financing trend. While capital spending as a percentage of total budget expenditures is more or less steady since 2009 at around 40%, the percentage of financing for capital expenditure from external sources has shifted from about 30% in 2009 to about 70% in 2013, with loans as an increasing portion of overall external financing reflecting Cambodia's preference of using loans for infrastructure.[27]

[27] International Monetary Fund (2013). Cambodia 2012 Article IV Consultation. IMF Country Report no 13/2. page 24

Figure 2.2 Required vs anticipated (2013-2015) and recent (2010-2012) capital expenditure for water supply

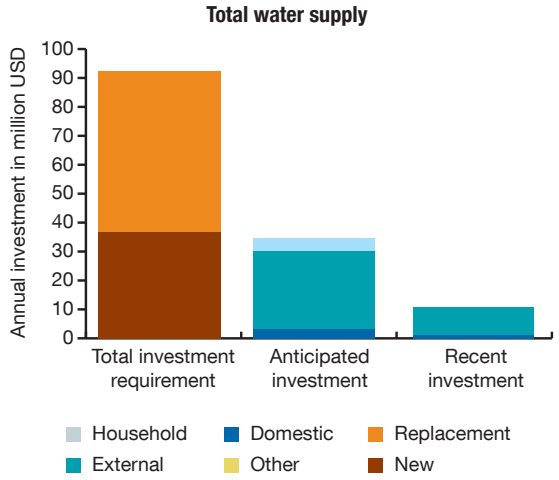
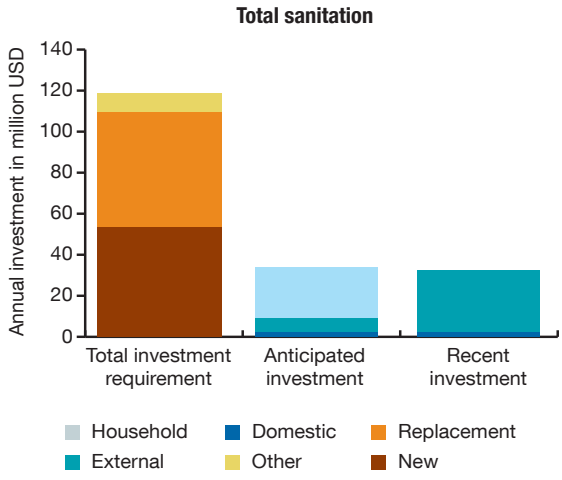


Figure 2.3 Required vs anticipated (2013-2015) and recent (2010-2012) capital expenditure for sanitation



Subtracting the sum of anticipated CAPEX contributions of the public and households from CAPEX requirements suggests deficits of US$57 million per year for water supply and US$85 million per year for sanitation. This implies that projected investments fall far short of the amounts required to meet targets. The expected deficits suggest the need for increasingly higher expenditures throughout the period 2015 to 2025 if the country wishes to achieve its universal targets for water supply and sanitation, especially its projected high levels of services for urban sanitation.

There is some uncertainty over the estimated deficits. Aggregate and sector-specific deficits could be reduced by accounting for expenditures of utilities and the private sector, as well as not accounted for development partner funds that were unconfirmed at the time of data collection. At the same time, the implied reduction in the deficits may also be partially or wholly offset when one considers the fact that the anticipated household CAPEX is an assumed estimate of the amounts that households are expected to contribute. However, it is important to note that encouraging households to invest in improved facilities also entails costs in terms of efforts by government and development partners in community mobilization and demand creation to solicit these assumed self-investments by households. This is especially relevant for rural sanitation where over three quarters of the funds is expected to come from households, domestic resources for recurrent expenditures and demand creation activities are minimal, leaving the subsector highly reliant on support from NGOs and development partners.

Figure 2.2 and 2.3 indicate that anticipated investments for 2013-15 in water supply are higher than recent investments[28] from 2010-12, although this is not the case for sanitation. While this is a good sign, anticipated investments still fall short of investment requirements. Annual CAPEX requirements are composed of new and replacement investments. Replacement investments, which represent expenditures for replacing worn-out facilities, are substantial amounts of total annual CAPEX requirements, and would in an ideal scenario

be covered through user fees that account for depreciation of the assets. However, in Cambodia, this is often not the case and thus replacement expenditure will be significant burden on the government budget.

The ADB has been the largest development partner in rural water supply, while preparing for future engagement in urban water. JICA and AFD are supporting large investments in the urban sectors, while KOICA has several projects in urban wastewater management, notably in Siem Riep. Though capital spending for rural sanitation from external sources has been limited, the ADB, World Bank, IMF (debt swap), and UNICEF have all had projects with some rural sanitation capital spending. Spending by NGOs on rural sanitation and water supply sanitation has focused mainly on software and to a more limited extent water supply schemes.

Table 2.3 presents estimates of additional funding necessary for the average annual operation and maintenance of water supply and sanitation facilities till 2025[29]. It indicates that water supply and sanitation require on average annual funds of US$10 million and US$14 million, respectively. Over two thirds is required for urban areas, increasing pressure on household finances on tariffs and maintaining household toilet facilities. These estimates also provide a sense of the extent to which utilities need to generate income to support their day-to-day operational expenses, notwithstanding their need to generate sufficient income to prepare for replacement and expansion investments.

Table 2.3 Annual operation and maintenance requirements

Subsector	O&M US$million/year
Rural water supply	3.4
Urban water supply	7.0
Water supply total	**10.4**
Rural sanitation	4.3
Urban sanitation	9.5
Sanitation total	**13.8**

Source: SDA costing (annex 2)
Note: Columns may not add up due to rounding.

[29] Due to increasing levels of service till 2025, the O&M costs will also increase over time. The figure shown in table 3 represents the average annual O&M from the base year (2012) and end year (2025).

3. Reform Context

National Development Strategy and Decentralization and Deconcentration Reforms

Broad policy direction for the water and sanitation sector is provided by the Rectangular Strategy for Growth, Employment, Equity, and Efficiency, which was launched in 2004 and recently updated for the period 2014-2018. The National Strategic Development Plan (NSDP) is the delivery vehicle for the Rectangular Strategy and has also been updated for the 2014-18 planning period.[30] Of particular significance to the sector it builds on the earlier Cambodian Millennium Development Goals and sets more ambitious targets for water supply and sanitation, as discussed in detail in Chapter 2.

In 2001, the government of Cambodia embarked on a wide range of sub-national governance reforms, recognizing the need to introduce new systems of governance at commune/sangkat level, and provincial, municipal, and district levels in order to strengthen local democracy, promote local development, and reduce poverty. As a second phase of decentralization & deconcentration (D&D) reform, in 2008, the Organic Law was passed which lays out the administrative and management structure of Cambodia's sub-national administration. The law is expected to involve a significant devolution of power from the central to the provincial and district levels in order to improve service deliveries and strengthen the state's regulatory functions. Furthermore, the law stipulates that the majority of ministries will have to undertake a functional review process to identify functions for potential devolution to sub-national administrations in accordance with sector priorities and the provisions set out in the Organic Law. In 2010, the Council of Ministers signed the 10-year National Program for Sub-National Democratic Development. This was operationalized through the adoption of a three-year (2011-2013) Implementation Plan by the National Committee for Democratic Development (NCDD), and has since been extended till 2014. The implementation plan provides a framework for further strengthening of communes,[31] as well as for developing the roles of district, municipal, and provincial administrations. The recent endorsement of the policy framework for social accountability in July 2013[32] and its consequent implementation plan[33] is expected to enhance citizen empowerment, accountability and local service delivery with increased focus on the poor, women, children and youth.

Commune councils, which are directly elected, have a general mandate for reducing poverty through the use of the commune/sangkat fund. This could in theory be used to fund water supply and sanitation improvements, though in practice over 90% is used for rural road construction. At village level, Village Development Committees (VDCs) were established in 2010 as part of the decentralization process. Although Village Development Committees are governed through a joint prakas (regulation) by the Ministry of Rural Development and Ministry of Interior, they are not formed everywhere, and if existing, often do not have the capacities or interest to actively engage on water supply and sanitation.

Despite the intent of the Organic Law to provide real administrative autonomy to sub-national administrations, no broad agreement has been reached as to which functions will be transferred from central to local government after three years of implementation, although in 2014 certain

[30] Royal Government of Cambodia (2014) National Strategic Development Plan 2014-2018.
[31] The lowest tier of government is the commune (also called sangkat for urban areas), with the next administrative level being the district (not elected).
[32] World Bank (2014) Demand For Good Governance Policy Note, January 2014 - The Strategic Plan for Social Accountability in Sub-National Democratic Development; and
[33] World bank (2014) Demand For Good Governance Policy Note, August 2014 - An Implementation Plan for Subnational Social Accountability in Cambodia

sub-functions in health and education sector have been put forward for assignment. The Ministry of Rural Development, which is responsible for rural water supply and sanitation, was one of the first ministries selected for decentralization and has completed its functional mapping process in 2013. A functional review process followed and was formally issued in 2014, identifying rural sanitation and the maintenance of rural water supply schemes as functions that could be transferred to district level.[34] This has led to the establishment of joint teams between the Ministry of Interior,[35] MRD and the Ministry of Economy and Finance to design a pilot for this functional assignment with support of ADB and WSP. So, far the D&D reforms have not yet taken off for the line ministries responsible for the urban subsec-

Table 3.1: Key milestones for the reform of the water supply and sanitation sector in Cambodia

Year	Event
1999	Sub decree on water pollution control providing mandate to MoE to monitor and regulate effluent discharge into water bodies
2003	National Policy on Water Supply and Sanitation (2025 vision) ratified by Council of Ministers
2004	National Water Resource Policy approved by Council of Ministers
2004	National Drinking Water Quality Standard issued MIME
2005	Sector Investment Plan for Rural Water Supply and Sanitation 2005-15 (for ADB project)
2005	Memorandum of Understanding between MIME and MRD (outlines powers and responsibilities to avoid overlap in piped water supply)
2007	Technical Working Group for Rural Water Supply, Sanitation, and Hygiene established, that is coordinating government and development partner sector contributions
2007	Law on Water Resources Management passed
2007	Law on Concessions (implemented by the Council for Development of Cambodia to approve concession contracts for privately financed infrastructure, including water supply)
2008	Rectangular Strategy Phase II followed by NSDP 2009-2013
2008	Law on Administrative Management of Capital, Provinces, Municipalities, Districts, and Khan (the Organic Law)
2010	Joint ministerial regulation on Village Development Committees by Ministry of Rural Development (MRD) and Ministry of Interior (MoI), followed by a circular issued in 2011
2010	Action Plan for Urban Water Supply Sector 2009-13 prepared by MIME (not formally endorsed)
2010	Sub-Technical Working Group (TWG) on Urban Water Supply established, chaired by MIME, operating under Infrastructure and Regional Integration TWG chaired by MPWT
2011	MOWRAM sub-decree on water abstraction licensing drafted
2011-2013	Rural Water Supply, Sanitation, and Hygiene Strategy approved by Ministry of Rural Development and subsequently by the Council of Ministers in early 2014
2013	Rectangular strategy–phase III
2014	National Strategic Development Plan 2014-2018
2014	Ministerial Decree from MIH issued regarding the licensing process

[34] MRD 2013, Functional mapping of the MRD, report, D&D working group, MRD, Cambodia
MRD 2014, Functional review of the MRD, report, D&D working group, MRD, Cambodia
[35] The Secretariat of the National Committee for Democratic Development (NCDD) is the agency responsible under Ministry of Interior.
[36] Previously urban water supply resorted with the Ministry of Industry, Mines and Energy, and in late 2013 this Ministry was split in Ministry of Mines and Energy, and Ministry of Industry and Handicraft

tors, namely the Ministry of Industry and Handicraft (MIH)[36] for urban water supply and the Ministry of Public Works and Transport (MPWT) for urban sanitation.

Sector Policy

Table 3.1 lists a number of milestones that have impact on the reform of the water and sanitation sector in recent years. The National Policy for Water Supply and Sanitation, passed in 2003, was important as it provided direction for improved service delivery in both the urban and rural subsectors. Important policy provisions relate to the introduction and demand-driven approaches for service delivery, introducing a regulatory body and autonomy of service providers, an enhanced role for the private sector, financial sustainability of services and ensuring poor-inclusiveness. However, the 2012 World Bank sector review, which discussed the accomplishment of the policy in detail, states that many provisions have not yet been fully or effectively implemented.[37] Although a law governing the provision of water and sanitation services was drafted in 2004, it has not been adopted and the sector remains without a comprehensive legal basis.

Urban Water Supply and Sanitation

In 1996, a law was passed granting legal autonomy to the Phnom Penh Water Supply Agency (PPWSA). In the succeeding years, the utility became a profitable and efficient company and today is often cited as a prime example of utility transformation. Siem Reap followed suit with the establishment of an autonomous utility, and as of 2014 there are ten other public water works that function under MIH, while other towns and urban centers are served by licensed private water operators. In 2014, MIH issued a ministerial decree that provides more clarity about the licensing process and grants a 20-year license term for operators in a defined service area. At present, there is no independent regulator for urban water supply, though initial efforts to establish one were made in 2003. Although not seen as international best practice, the department of Potable Water Supply is assumed to fulfil this role in the medium term. Currently, MIH is drafting technical standards for urban water supply and revising the existing water quality standards, previously issued in 2004. It is expected that later in 2014, MIH will issue water quality standard for urban water supply systems, while MRD will issue a guideline for rural water supply quality.[38] The water quality standards as well as the necessary enforcement mechanisms are especially critical for Cambodia, which has a large population exposed to arsenic in groundwater, as well as high risk of non-chemical contamination due to poor sanitation and shallow groundwater levels.

The urban sanitation subsector remains in the initial stages of development and there have been no significant policy initiatives in recent years. In most urban areas, privately installed on-site facilities with limited treatment are most common, in some cases connected to combined sewer and drainage systems. With drainage and flood protection understandably receiving priority, so far only in Sihanoukville, Siem Reap and Battambang significant public investments have been made in sanitation infrastructure. These cities have the beginnings of a sewerage network including wastewater treatment plants, although it is estimated that less than 5% of the total urban area is connected.[39] In Phnom Penh wastewater is drained in lagoons with reportedly overloaded treatment capacity before being discharged in rivers. In 2006, Ministry of Economy and Finance (MEF) and MPWT issued a decision on user and connection fees for sewer collection and treatment.

Rural Water Supply and Sanitation

Activity and investment in the rural subsector is guided by the National Strategic Plan for Rural Water Supply, Sanitation and Hygiene 2014-2025, which was approved by the Council of Ministers in 2014.

[37] World Bank (2012) Cambodia Water Supply and Sanitation Sector Review
[38] The MIH drinking water quality and MRD drinking water guideline that are currently being drafted, are based on a combined draft proposal that was developed in 2011 with the help of WHO. However, the 2011 draft has was not cosigned by MIH and MRD, and instead two separate ministerial decrees are expected to be issued later in 2014.
[39] Ibid

The Strategic Plan envisages 2014-2018 as a transition period to be used for institutional strengthening and capacity building, with 2018-2025 dedicated to accelerated service expansion. Development of the strategy was a collaborative effort by government and development partners. MRD is currently preparing for a National Action Plan 2014-2018 to operationalize the strategy through rolling 3-year operational plan and budget.

The 2003 policy established that Water and Sanitation User Groups (WSUG) were to be responsible for the management of rural water supply schemes, and in 2004 guidelines were issued accordingly. However, these groups generally tend to exist only in areas with externally supported projects, as no systematic mechanisms are in place to provide continuous technical and financial support. In 2005, a Memorandum of Understanding between MRD and MIME (currently transitioned to MIH) allocated responsibility for piped water supply schemes above 500 connections to MIH. In the rural sector, the policy has been supported by the issuance of a number of guidelines by the Department of Rural Health Care, such as the 2014 guideline on Community-Led Total Sanitation which outlines the process for assessing the status of open Defecation Free villages. More comprehensive guidelines, including one on pro-poor support through smart subsidies, are planned to be issued as part of the National Action Plan.

This recent history puts the service delivery pathway in context, which has been further explored in detail using the SDA scorecard, an assessment tool providing a snapshot of reform progress along the service delivery pathway. The scorecard assesses the building blocks of service delivery in turn: three building blocks which relate to enabling services, three which relate to developing new services, and three which relate to sustaining services. Each building block is assessed against specific indicators and scored from 1 to 3 accordingly.

Sections 4 to 6 highlight progress and challenges within the subsectors sector across three thematic areas: the institutional framework, finance, and monitoring and evaluation. The scorecards for each subsector are discussed in Sections 7 to 10.

4. Institutional Framework

Priority actions for institutional framework

	short term	medium term	long term
Strengthen decentralization in the rural water and sanitation sector by clarifying institutional roles at sub-national level, developing legal framework, and providing operational guidance to sub-national administrations	√	√	
Develop professional post-construction technical and managerial support systems to ensure sustainability of community-managed water supply schemes (possibly through involvement of the private sector)		√	
Develop comprehensive legal framework for the urban sector aligned with D&D reform, separating responsibilities for service delivery and retaining economic and service regulation for water supply and wastewater management at central level	√	√	√
Following the model of Phnom Penh Water Supply Authority, transform public water works into autonomous utilities and transition all investment and service provision responsibilities		√	
Adopt and implement a capacity building strategy hosted with local institutions and design a pooled financing mechanism for development partner support		√	√
Carry out options study and high-level dialogue between MIH and MPWT to build consensus on urban sanitation institutional framework, considering combined solutions for service provision (utility for urban water and wastewater)	√		
Improve sector coordination and programmatic support using a combined urban water supply and sanitation sub-Technical Working Group as platform	√		
Institutionalize coordination mechanisms between Ministries of Health, Education, Rural Development to improve WASH facilities in institutions, such as health centers and schools	√	√	

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Sector Leadership Roles

Responsibility for water supply and sanitation lies primarily with three ministries: the Ministry of Industry and Handicrafts (MIH) for urban water supply; the Ministry of Public Works and Transport (MPWT) for urban drainage, sewerage and operation of treatment plants; and the Ministry of Rural Development (MRD) for rural water supply and sanitation. Provincial departments of these ministries undertake related functions at sub-national level, while in the urban water supply sector two state-owned enterprises are functioning as autonomous utilities (PPWSA, SRWSA). MRD extends its presence to provincial level and to a much lesser extent to district offices, as the latter are not well resourced and have

limited or no staff responsible for water supply and sanitation. Other central agencies with lesser roles in the sector include the following:

The Ministry of Water Resources and Meteorology issues permits which are required for water abstraction of water over a defined level.

The Ministry of the Environment is responsible for setting standards, monitoring and regulation for effluents discharging into water bodies as defined by the sub-decree on water pollution control issued in 1999. However, in practice, it only monitors industrial on-site wastewater treatment facilities and does not monitor domestic or public wastewater.

The Ministry of Education, Youth and Sports has responsibility – in coordination with MRD - for school sanitation via the School Health Department, though activity in this area has generally been limited to donor-funded construction of facilities with little attention to hygiene promotion. A positive step is the issuance of a joint decree (prakas) by Ministry of Education, Youth and Sports, Ministry of Rural Development on School to Community WASH in 2010 which is operationalized with support of UNICEF, GiZ, and NGOs active in this space. However, access to clean water in schools remained low at 58% and to sanitation at 88% (with many reportedly locked and inoperable facilities) in 2013 as per the government Education Management Information System (while access to WASH facilities in health centers is not routinely captured). It is expected that sector-wide education and health programs will pay increasing attention to improve these low access rates.

The Ministry of Health is responsible for adequate water, sanitation and hand washing facilities in health centers, in coordination with MRD. The Department of Preventive Health also has a role in hygiene promotion and has issued an Environmental Health Action Plan, although its implementation on the ground is limited and coordination with MRD has room for improvement.

The Ministry of Land Management, Urban Planning and Construction is responsible for checking the adequacy of water supply provision in new development areas.

The Ministry of Interior, notably the Secretariat of the National Committee for Sub-National Democratic Development play a role in supporting the implementation of the D&D reform in close coordination with line ministries, such as MRD. While the Organic Law of 2008 formalized the start of decentralization and deconcentration, at present, control of financing[40] as well as most technical capacity, remains at central government level. Local authorities, as part of their general mandate for poverty reduction, could play (and to some extent are already playing) a much more pronounced role in rural water supply and sanitation with support from provincial departments. However, capacity for planning and implementation is weak at sub-national level.[41]

Sector Coordination

Two working groups have been set up to help coordinate the activities of government and external agencies operating in the sector. The Technical Working Group for Rural Water Supply, Sanitation and Hygiene has been established formally in 2007 - including a supporting secretariat. Meetings are expected to take place quarterly and are chaired by the Minister of MRD with a development partner acting as co-chair on a rotating basis (since 2011 UNICEF). The rural subsector also has a monthly coordination meeting for knowledge sharing, which has been in place for over 20 years and is chaired by the Director of the Department of Rural Water Supply. Subgroups are formed under this umbrella to focus on particular areas of interest. Currently, the rural subsector is considering ways to improve the monthly coordination meeting so as to play a more strategic role for sector development.

The Infrastructure and Regional Integration Technical Working Group is chaired by the Minister of MPWT, and in 2010

[40] Other than the Commune Sangkat Fund and the District/Municipal Fund that has recently been established and are at the discretion of Communes, respectively Districts. Most of line ministries capital and program budgets are executed at central level.
[41] RGC 2012 Functional Mapping Report of Ministry of Rural Development; World Bank (2012).
[42] See also ADB (2012) Cambodia Water Supply and Sanitation Sector Assessment, Roadmap and Strategy.

a formal sub-group for urban water supply was established chaired by MIH, with JICA as its current co-chair. The frequency of meetings and the fact that the sub-TWG has not yet officially augmented its official mandate to cover urban sanitation remains a constraint for more programmatic support to the urban sector.[42]

Urban Water Supply

In the absence of an independent regulator, and as outlined in the NSDP 2014-2018, the Ministry of Industry and Handicraft through its Department of Potable Water Supply has responsibility for urban water supply policy, strategic planning, regulation and sector oversight, including the licensing of private water operators. While tariffs of public utilities require approval form the Prime Minister, in the recent past tariffs of private operators have mostly been determined through local negotiation with hands-off involvement of MIH. As per the 2014 licensing decree, tariffs will be stipulated in the license issued by MIH, requiring consultation at local level. At present, no official guidelines, procedures and method is yet available for tariff setting and review for public and private water operators. The Department of Potable Water Supply, which has around 20 staff, is faced by high demands, leaving some departmental functions only implemented in full when there is technical and financial support from development partners. MIH responsibilities in provincial and small towns include monitoring drinking water quality standards in piped systems and supporting the licensing of private operators.

Following extensive reforms and investment and capacity building support from multiple development partners, the Phnom Penh Water Supply Authority (PPWSA) has become hugely successful over the last decades. It has a listing on the Cambodia Stock Exchange and a high level of operational autonomy, with its Board of Directors headed by the Governor of Phnom Penh Municipality. As a state-owned enterprise, the water supply infrastructure remains in government ownership. Similarly, Siem Reap has moved to such autonomous utility model. Following the recent privatization of a number of provincial public water works, ten other provincial water works remain under the Department of Potable Water Supply. Institutional arrangements for the non-autonomous utilities are in stark contrast to the PPWSA; they are bound by government rules and compensation systems, have difficulty attracting skilled staff, have little incentives to improve performance and operational efficiency, and suffer from limited public investment allocation for the expansion of services.

Small-scale private operators also play a significant role in water supply provision, particularly in rural growth centers and emerging towns. There are an estimated 300 operators at present, though only 147 (approximately) are licensed, while MIH is currently trying to bring all non-licensed operators into its sphere of monitoring with as a first step a survey to identify all unlicensed ones. In 2013 it was estimated that over 1 million people are currently being served by the domestic private sector.[43] However, small private operators are not yet properly regulated, have limited capabilities and struggle to access capital for service improvements and expansion. Several development partners have been supporting private operators, through experimenting with various PPP-arrangements in the past. Understanding the potential of the private water market, development partners like AFD and WSP have focused on creating a more favorable environment to access financing through local banks, and the provision of business development services to improve performance and develop bankable investment proposals. In 2012, the Cambodia Water Association of private water operators has been established, now serving over 50 members covering more than 70 licenses.[44]

Urban Sanitation

The Ministry of Public Works and Transport is responsible for policy, planning, coordination and the implementation of investment projects. In 2011 a mandated department under MPWT was established to set technical standards and tariffs for urban sanitation. However, this department is in the early

[43] World Bank/IFC (2013) Tapping the Market: Opportunities for Domestic Investments in Water for the Poor. World Bank Water & Sanitation Program (WSP) and International Finance Corporation (IFC).
[44] Notably GRET (MIREP program) and World Bank experimented with Design-Build Lease arrangements, and Build-Operate-Transfer schemes, including output-based subsidies (also by USAID). AFD and WSP have focused more on operator access-to-finance and business development.
[45] PPWSA collects a 10% top-up on the water tariffs and passes this on the provincial department of MPWT to support O&M of the system.

stages of development and is not yet fully staffed and resourced. Provincial departments of MPWT are responsible for planning, project implementation and O&M of drainage, sewer and treatment facilities (treatment facilities are only present in Siem Reap, Sihanoukville and Battambang). Fee collection arrangements differ from city to city, with PPWSA providing this service through their water bill.[45] Improving on-site sanitation and the safe collection, management, treatment and disposal of fecal sludge does not rank high on the priority list of MPWT and/or cities themselves. Private sector involvement in fecal sludge management is so far limited and largely unregulated.

Rural Water Supply and Sanitation

The Ministry of Rural Development (MRD) is the lead agency for rural sanitation and water supply, via the Departments of Rural Health Care (DRHC) and Rural Water Supply (DRWS) respectively. MRD has offices at provincial and district level. In line with the Strategic Plan for RWSSH, the intention is to strengthen their District offices, however, to date few district offices are functional in the water and sanitation domain. Both domestic and externally funded projects are channeled through the ministry, leading to rather top-down implementation in limited geographic areas. While there are numerous local and international and NGOs facilitating service delivery and demand creation in rural water supply and sanitation, these efforts are, however, fragmented and not always mutually supportive due to a lack of consistency in operational approaches. PDRD offices often do not yet effectively coordinate NGO inputs at national or sub-national level and no programmatic guidelines have been issued for implementation of the RWSSH Strategy. The NSDP 2014-2018 provides the directions to move to a programmatic national approach. The vision is for MRD and PDRD to be facilitating and technical supporting the district offices and sub-national administrations. Districts and communes, including the Commune Council for Women and Children,[46] are expected to then play a larger role in the delivery of services, in close coordination with local private sector businesses. This will also require that sufficient human and financial resources are made available at local level. As laid out in Section 3, the clarifications of institutional roles and responsibilities and the legal basis for such functional assignment will be an important part of operationalizing the Strategy. Moreover, enforcement of water quality guidelines for rural water supply is under resourced, nor is much attention given to regulating multiple bottled water plants. Regulations on drilling, that could help to prevent contamination of shallow aquifers, have not yet been developed.

Since 2006, the Department of Rural Health Care has worked closely with development partners to introduce and scale up demand-driven approaches to sanitation and hygiene promotion including Community-Led Total Sanitation and behavior change communications. A lot of experience has been gained in sanitation marketing, leading to over 150,000 latrines being sold through the private sector over recent years.[47] However, there is not yet a roadmap for how the engagement of the private sector can effectively be institutionalized and facilitated by government at different levels.

For rural water supply, current policy envisages community management of rural water supplies via Water and Sanitation User Groups (WSUG). Progress here is hampered partly by the fact that institutional arrangements under deconcentration and decentralization are not clear, accountability mechanisms and clear procedures are missing, and citizen engagement and voice is not yet mainstreamed in social accountability initiatives (such as trough community scorecards under the social accountability framework). This leaves a dangerous vacuum in the rural water supply sector, where sustainable post-construction support, both technical and managerial, is missing.[48]

The role of private operators managing small piped schemes in rural growth centers was discussed under urban water supply.

[46] Commune Council for Women and Children (CCWC) are already mandated with a role to promote sanitation and hygiene, however, lack the resources and capabilities to prioritize such activities, especially in commune council does not champion sanitation as an important area for improving basic social services.
[47] See monitoring data provided by two large scale sanitation marketing programs facilitated by WaterSHED and IDE. http://www.ideorg.org/OurStory/Publications/iDE_PR_CBD100k.pdf and http://www.watershedasia.org/watershed-supported-suppliers-sell-50000-toilets-to-rural-consumers/
[48] World Bank (2013) Voice Choice and Decision 2: Local Basic Service Delivery. The Asia Foundation and World Bank

5. Financing and its Implementation

Priority actions for financing and its implementation

	short term	medium term	long term
Develop long term strategic investment plan and city master plans for urban water and sanitation coordinated by both MIH and MPWT	√	√	
Increase capital investments in urban sector, including leveraging debt financing from local banks, and allocate more programmatic resources for regulation and capacity building	√	√	
Implement existing policy on full cost recovery for public water works through efficiency improvements and regular tariff reviews	√		
Increase advocacy efforts to increase funding allocations for the rural sector, especially for programmatic software and operational costs	√	√	
Under the rural water supply and sanitation national action plan, develop a three-year budget for hardware, software and recurrent expenditures, responding to future devolved mandate	√		
Improve the tracking of budget allocations and expenditure on water supply and sanitation for rural and urban sub-sectors through program-based budgeting and the government's Financial Management Information System, including better tracking at sub-national level over time		√	√

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

Investment Planning

Through its multi-year planning framework and the introduction of program-based budgeting, the government of Cambodia is taking steps towards linking investment and operational planning with result areas. It is expected that program based budgeting will be introduced from 2015 onwards in a number of 'pilot' ministries among which MRD, with the department of rural health care slated for 2015, and the department of rural water supply to follow in 2016. This will allow each department to function as a separate budgeting unit, allowing more detailed and separate tracking of budgets and expenditure for rural water supply and rural sanitation against results. Currently, MRD, has a strategic budget plan for 2013-2015[49], which ties programs to overall priorities and sets specific annual targets (e.g access to clean water to increase from 44.9% to 49.5% between 2013 and 2015, and access to sanitation

[49] At the time of investigation for this report the 2013-2015 time horizon was used to review anticipated investments. This rolling plan has now been updated to 2014-2016.

from 27% to 33%). Similarly to MRD, MIH and MPWT prepare multi-year rolling investment plans, however, these ministries are not yet part of the program-based budgeting pilot.

Currently, none of the line ministries involved in the sector has yet developed a long-term investment plan and comprehensively covers each subsector with clear priorities and identification of sources. The absence of such planning is reflected in the 'planning building' block of the scorecard. It should be noted that as part of previous development partner support, MIH prepared such sector investment plan for 2009-2013 and MRD for 2005-2015 (although these plans were not formally endorsed at ministerial level).
All ministries do have project lists and anticipated expenditures as per their Project Investment Plans. However, not all ministries were able to clearly identify the breakdown of domestic and external funding and PIPs did not specify which sources of funding were already secured.

Budget Transparency

A key recommendation of a 2011 integrated fiduciary assessment and public expenditure review[50] was to improve the quality, coverage and classification of items in the government budget, which is crucial for designing, executing and monitoring government policy and strengthening accountability. The report recommended that authorities should strive to bring all government spending on budget, including disbursements on donor-financed projects, donor-financed technical cooperation and donor top-ups of civil service wages. Agreement is needed on the expenditure reports on donor-supported projects prepared using the government's chart of accounts – which will enable their better integration into the budget. Amongst others, the introduction of a revised financial management information system (FMIS), the introduction of program-based budgeting and the recent and ongoing revisions to the chart of accounts are expected to support the implementation of these recommendations. With the expectation that financial management and other public sector reforms will deepen over the coming years, Cambodia remains a moderate performer as per the Country Policy and Institutional Assessment 2013.[51]

During the review of the Medium Term Expenditure Frameworks, as well as the Project Investment Plans,[52] as prepared by MIH, MPWT and three-year rolling strategic Budget Plans of MRD, it indeed proved difficult to comprehensive identify sources of funds for budgets and expenditures. Although the rolling three-year budget plan for MRD did provide some information on the joint allocation for rural water supply and sanitation, further decomposition for rural water supply and rural sanitation needs to be strengthened. The planned introduction of program-based budgeting is expected to improve the transparency of the budgeting and expenditure monitoring process, and better link such expenditure to outcomes. As indicated in the functional mapping report of MRD, rural water and rural sanitation development expenditures remain a fraction of the overall capital and program budget of MRD.[53]

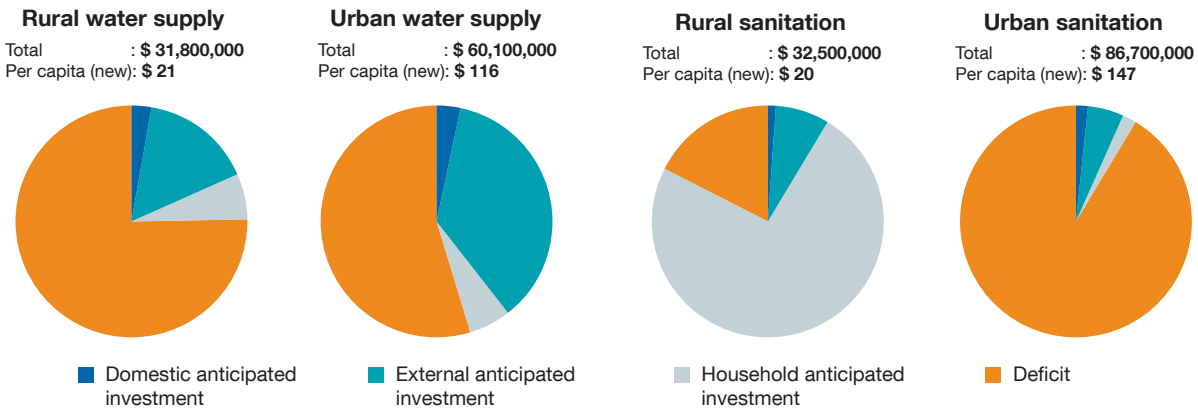
The online official development assistance (ODA) database maintained by the Cambodia Development Council is a fairly transparent resource for estimating development partner projects and annual expenditures subject to confirmation with the partners.

Utilization of Budgets

Because development expenditures for water supply and sanitation do not appear in detail, it is difficult to know exactly whether a budget allocation for water supply and sanitation was in fact spent. Overall, Cambodia has received a satisfactory mark in an assessment of aggregate expenditure compared to original approved budget.[54] At the level of the three main ministries, domestic budgets utilization has also been high, and as per the domestic expenditure reports of 2009-2011, has been reported to be at least 90%. This

[50] World Bank. 2011. Cambodia - More Efficient Government Spending for Strong and Inclusive Growth : Integrated Fiduciary Assessment and Public Expenditure Review. World Bank
[51] http://data.worldbank.org/indicator/IQ.CPA.PUBS.XQ/countries Viewed Aug 2014.
[52] MPWT PIP did break out domestic capital budget and donor sources, while MIH PIP did not break out government contributions or expenditures.
[53] Ministry of Rural Development 2013, Functional mapping of the MRD, report, D&D working group, MRD, Cambodia. Around USD 0.9 million for rural water supply annual identified in the MTEF and around USD 0.3 million annually for sanitation.
[54] World Bank. 2011 p. 91. Cambodia - More Efficient Government Spending for Strong and Inclusive Growth : Integrated Fiduciary Assessment and Public Expenditure Review.

Figure 5.1 Overall annual and per capita investment requirements and contribution to anticipated financing by source



Source: SDA costing. Note: the anticipated household investment in rural services are assumed

confirms the views of participants in the SDA that tended to give a high rating for utilization of domestic funds. However, it should be noted that domestic funding allocation for water and sanitation are limited (especially in rural subsector) and that a large part of domestic funds are for recurrent costs, such as salaries, which are easy to spend. The high domestic budget utilization rate is reflected in the fairly positive rating of the expenditure building block. At the same time, bottlenecks were identified in the frequent delays in fund transfer, which – combined with the rainy season – narrow the actual implementation period in the field. Development partners with substantial funding in the sector confirmed that – although project design and start-up is lengthy – annual disbursement rates of 75% were normally achieved.

Budget Adequacy

Figure 5.1 shows the illustrates that in all subsectors the anticipated budget, even when considering expected household contribution, is inadequate to reach the targets as set for 2025.

Deficits are especially pronounced for urban sanitation, due to high expectation of service levels as set in the assumed targets by 2025. However, also for water supply, urban and rural, anticipated public investments are much less than 50% of the required investments. Anticipated domestic funding sources comprise just a small share of overall spending requirements (< 5% in all subsectors) and the sector mostly relies on externally funded hardware support.

For rural sanitation, the deficit seems less pronounced, mainly as households are expected to be the major source of capital expenditure. However, the actual size of the deficits might be larger than the values presented here, as the assumed household contributions (shown in light blue) are a leveraged amount based on anticipated hardware spending. The chances of these investments materializing depend highly on the effectiveness of government social mobilization and promotion programs to elicit self-investment by rural households. Given the meagre operational budget and staffing levels within MRD, PDRD and the district offices, the actual deficit is likely to be higher.[55] Confirming this costing assessment, SDA participants, all scored the adequacy of the budget as problematic, as is reflected in the scorecard.

[55]Allocation (2011) to wages for MRD, PDRD and District offices as "mapped" to rural water supply, and rural healthcare was estimated to be around US$360,000, and US$240,000 respectively. MRD 2013 Functional Mapping Report.
[56] World Bank (2012) Voice, Choice and Decision: A Study of Local Governance Processes in Cambodia

Financial Reforms in Support of Decentralization and Deconcentration

Around 2.8% of national budget is allocated to the commune/sangkat fund and although some funds might be used for rural water supply and sanitation, over 90% of the expenditures are estimated to be allocated to rural road construction.[56] At national level it is not possible to clearly track if funds have been spend on water supply and sanitation, as broad categories are defined as infrastructure and social services. Hence, water and sanitation spending under this fund has not yet been included. Water and sanitation expenditure under the recently established district and municipal fund (0.8% of national budget) is unknown and could not be included. In line with the ongoing decentralization reform, it is expected that more funding will become available at the discretion of sub-national authorities, including a sub-national investment fund from 2014 onwards, some of these funds might flow into the urban and rural water and sanitation sector. It will be important in the future to track and understand how such expenditure will (or will not) be contributing to the sector. Hence, it will be critical to better monitor spending at sub-national level through the national Financial Management Information System on water and sanitation in the long-term. A first start is to implement national level programme-based budgeting for water and sanitation and to routinely monitor resource flows to the sector that are not going through the government budgets.

6. Sector Monitoring and Evaluation

Priority actions for sector monitoring and evaluation

	short term	medium term	long term
Establish better sectoral monitoring systems, reporting access and usage of services, service quality, sustainability and equity, and integrate indicators for WASH services in institutions (schools and health centers)	√	√	
Publish key sector performance indicators through ministerial websites to improve transparency and usage by different levels of government and external support agencies	√	√	
For urban water supply carry out industry benchmarking for both public and private operators		√	√
Allocate domestic resources, to operate and roll-out of monitoring systems by national and sub-national departments/actors	√	√	
Introduce annual joint government-development partner sector review process, under leadership of the Technical Working Groups (for rural and for urban)	√		

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

There is currently no national monitoring framework in place for either the rural or urban subsectors, though the need for improved sector monitoring - and the intention to establish a sector monitoring system - has been recognized in various policy and strategy documents and sector reviews. The 2003 Water Policy, for example, included a set of monitoring and evaluation principles. At present, much of the monitoring in the sector is dependent on census and other survey data rather than robust real-time subsectoral monitoring system. Although with the support of WHO/UNICEF much of the surveys that are implemented have increasingly streamlined definitions with JMP, limitations remain as sample sizes are small, limited information concerning sub-national progress can be distilled, the focus is on only monitoring access, and data is not real time to inform the annual review, planning and programming at sub-national level. Another source of information is the commune database hosted by the Ministry of Planning, and in absence of more precise data, this is the only available data at commune level. However, the reliability of this data is not assured, as is based on unverified reports made by village chiefs and collected by Commune Council chiefs.

[57] Unicef 2009. 'Arsenic in Cambodia'

Rural Water Supply and Sanitation

Monitoring in the rural subsector has not been well coordinated up to now, there being various disconnected project databases plus a national arsenic monitoring database[57]. Moreover, ADB is providing support to MRD in developing a M&E system, linked to programme-based budgeting, to which a future sub-sectoral M&E system needs to be well linked. The RWSSH Strategy acknowledges the need for a unified management information system to which all participating organizations contribute, making it possible to track progress towards national targets. In 2013, MRD with support of WSP, UNICEF and Global Sanitation Fund, has embarked on the development of such system, through carrying out a situation analysis, followed by the development of the M&E framework, and currently the system design is being implemented. The roll-out will initially take place in a limited number of provinces; however, as part of the development of a future national program, it is planned that other sector stakeholders will support country-wide roll-out. Stakeholders also recommended that a joint annual review mechanism need to be established, using management information from the future sector monitoring, systems, as well as inputs from a wide variety of sector stakeholders, including the NGOs active in the subsectors.

Urban Water Supply and Sanitation

Phnom Penh Water Supply Authority monitors and evaluates some 200 water supply parameters, publishes the data on its website, and is an example of best practice. However, for the urban water supply subsector as a whole, utility performance data is not comprehensively and systematically gathered by the Department of Potable Water Supply of MIH. The focus of the monitoring effort is mostly on the public utilities. Limited data are being collected from the almost 150 licensed private operators (without verification) and are stored in a rudimentary excel spreadsheet. Accessibility of basic sector data is also an issue, as data-sharing platforms (e.g. through websites) are not yet operational to publish information to the wider public. Development partners carry out regular assessments such as the JICA supported Urban Water Supply overview[58], and the Cambodia Water and Sanitation Sector review, supported by the World Bank.

Realizing the importance of better monitoring, some improvements in the urban subsector are now being made. With JICA support, public utilities are starting to improve their internal management information systems (billing, accounting, etc.), for both better utility performance as well as improved reporting to MIH against a range of performance indicators covering not only technical parameters but also financial performance. With support of WSP and CWA, private water operators are encouraged to use computerized management systems that support improved recording practices. The Department of Potable Water Supply has recently, with support of WSP, embarked upon the establishment of an M&E system for both public and private operators. However, continued human and financial resources will be required to support its roll-out, sustain its application, and especially ensure a minimum level of data verification, as well as water quality monitoring by Department of Industry and Handicraft at provincial level. As part of the new licensing regime, it is expected that a monitoring guideline will be issued, stipulating reporting requirements. The establishment of the system is expected to facilitate the future review process of private operator water tariffs.

The urban sanitation sector mostly carries out monitoring tied in with project implementation of drainage and sewer systems. Consolidated reporting on the effectiveness of fecal waste treatment is limited, however some utility level monitoring takes place.

In terms of a joint annual sector review process by government and key development partners, SDA participants agreed that this process has not yet been put in place for both urban water supply and sanitation.

[58] RGC 2012. Royal Government of Cambodia, Infrastructure and Regional Integration Technical Working Group. (IRITWG) Sub-Technical Working Group for Water Supply. Overview on Urban Water Supply Sector in the Kingdom of Cambodia. Phnom Penh.

7. Subsector: Rural Water Supply

Priority actions for rural water supply

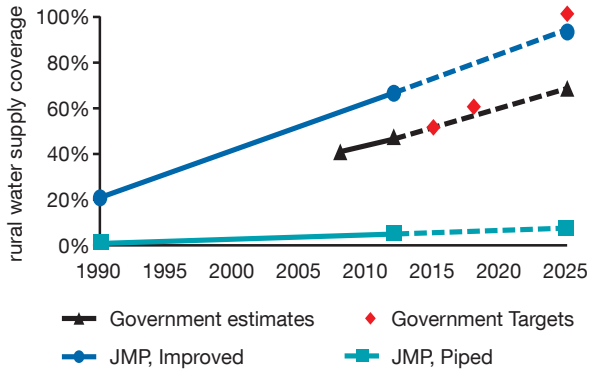
	short term	medium term	long term
Clarify the roles of government agencies and sub-national administrations at provincial, district and commune level under the decentralization reform and test this through a pilot	√	√	
Develop a National Action Plan for rural water supply with focus on sustainability and cost-effectiveness of different technology options (based on a review of technologies)	√		
Establish district rural water supply functionality plans linked to local and national investment planning process		√	
Develop professional post-construction technical and managerial support systems to ensure sustainability of community-managed schemes, possibly involving the private sector		√	√
Promote expanded role of private sector in piped water service delivery in rural growth centers, through facilitating access to finance and leveraging private sector investment grants	√	√	
Safeguard water quality through treatment, water quality management and risk assessment at source, as well as household water treatment and storage programs	√	√	√
Increase enforcement for water quality regulations and carry out point-of-consumption water quality surveys		√	√
Develop national management information system for rural water supply and sanitation	√	√	

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

JMP data indicate that in 2012, 66% of the rural population had access to an improved water supply (year round), of which 5% was estimated to have a piped water connection at the premises. Government estimates show a lower level of access, as they do not consider the use of rainwater as an improved source (unless stored in a tank of over 3000 m^3).[59] The classification of improved versus unimproved source needs to be seen in the light of the proposed future post 2015 Sustainable Development Goals for rural water supply, which will include actual water quality, and levels of service (reliability, quantity).

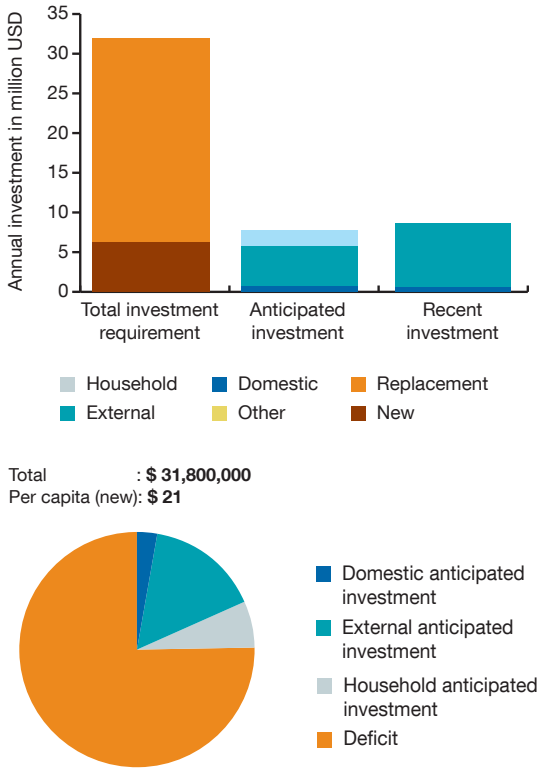
[59]According to CSES (2010) data, in the dry season, in terms of "improved water source", it is estimated that 4% of rural households had access to piped water supply connection, 32% used a tube well or borehole, 9% used a protected dug well, and 2% used pumped water from pond or streams; unimproved sources included unprotected wells (21%), fetching water directly from pond or streams (18%), and unimproved rainwater (2%) and water vendors (13%).

Figure 7.1 Rural water supply coverage and targets 1990-2025



Sources: JMP 2014-update; NSDP-2014-2018

Figure 7.2 Rural water financing: required, anticipated (2012 - 2014) and recent (2009 - 2011) annual investments



Source: SDA costing

In this context the recent findings of a national assessment of point of consumption water quality are very relevant. The study shows in rural areas only 23% of households drink water that meets drinking water quality standards, 21% can be considered low risk, while 56% are of medium to high risk. The study also suggests that household storage, handling, and treatment factors play a larger role in point of consumption quality than whether a household access an improved or unimproved source.[60] While over half of the population assessed used some sort of household water treatment, even among water samples that were treated, only 35% met said standards. These findings clearly illustrate the need for investing in improving access and service levels, better treatment and water quality management at source (such as through automatic chlorine dispensers) at the same time. Behavior change programs and campaigns that focus on household water treatment and storage practices are required.

The NSDP 2018 has set a fairly modest interim target of 60% improved access by 2018, only slightly higher than the CMDG target of 50% improved access by 2015. As per the SDA model (see Annex 2), in order to meet the target of 100% coverage by 2025 adopted by the National Strategic Plan for Rural Water Supply, Sanitation, and Hygiene, some 302,000 people per year will need to gain access to an improved water source. This implies an annual average capital investment of US$32 million per year, comprising US$6.4 million in new investments to expand access and US$25.4 million for the replacement costs of existing facilities, pointing to the short-life span of the predominant technologies (dug wells and tube well/boreholes), rendering these investments less productive in the long run. An additional US$3.4 million per year is needed for operations and maintenance, normally to be recovered by user fees levied through the WSUG and/or other providers. Avail-

[60] Shantz (forthcoming in 2014). National Microbial Assessment of Rural Household Point-of-Consumption Drinking Waters – Technical Report Draft. WHO. Phnom Penh.

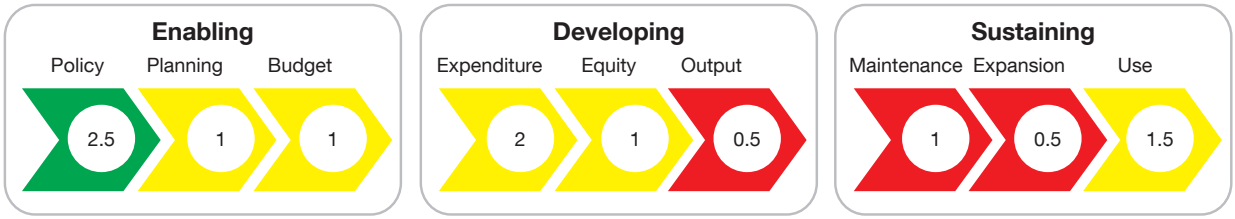
able data on anticipated rural water supply investments, including recent trends in spending, indicate that only a fifth of this annual total is likely to be available from 'public' sources (domestic and external), leaving the sector severely underfunded. The above estimates only refer to capital expenditure and exclude 'software' costs such as project management, community engagement, and other program management costs. As explained in Section 5, operational and other software costs are not well funded through domestic sources for rural water supply and rely heavily on development partners and NGOs.

Turning to the scorecard for rural water supply, a number of bottlenecks as well as drivers for service delivery are standing out (see Figure 7.3). In the enabling pillar, the presence of a policy, long-term Strategic Plan for Rural Water Supply, Sanitation and Hygiene, as well as the recent sub sector targets in the NSDP 2014-2018 are important building blocks. However, institutional roles not fully defined and operationalized, for example no arrangements are in place at district level for maintenance of rural water supply schemes in line with the D&D reforms. The moderate score for planning reflect weaknesses in sector coordination, including fund coordination and a joint annual sector review process. A future national program and action plan is expected to address this bottleneck. The subsector budget allocations remain inadequate and heavily dependent on support from external agencies, which also provide substantial technical assistance. The structure and comprehensiveness of the budget could be improved by separation of budget lines for water and sanitation, and ensuring that off-budget flows are reported on in a consolidated sector wide manner.

In the developing pillar, the yellow and red scores reflect a low level of output of new rural water supply schemes, as compared to what is needed in order to reach the ambitious target of universal access. When examining recent survey data closer, it seems that the access trend is stalling and urgently need to be reversed.[61] Moreover, the number and location of new schemes installed each year are not reported in a consolidated format, and no water supply mapping has been done at scale yet. Most government investment in new rural water supply is used to develop point sources, typically well drilling and well repair. With support a several development partners (UNICEF, ADB, GRET/EMWF), rural piped schemes are also being developed in partnership with the private sector. SDA participants also mentioned that service expansion in recent years has been funded not only by development partners and local governments, but though self-supply by better off households. In terms of equity considerations, there are no consistently applied criteria used for resource allocation, and neither do guidelines exist on how to best used subsidies in targeting poor households.[62]

Water quality is an additional concern in Cambodia, where at least 2.25 million live in areas where the level of naturally-occurring arsenic in the groundwater is high. MRD has mapped at-risk areas and in 2010 established an online database of rural waters point including their location, technology type and water quality status. An arsenic mitigation

Figure 7.3 Rural water supply scorecard results



[61] CIPS 2013 data report 8% access to piped water, 33% to tube wells/boreholes, and 7% protected dug wells, with remaining sources pond/stream /river (22%), unprotected dug wells and other sources (vendor, rainwater, etc.)
[62] In the past output based subsidies to the private sector were not explicitly targeted, however, recent initiatives are aiming to target connection subsidies to ID-poor I and ID-poor II categories (under GRET, EMWF, and future EU grants to private sector)

strategy has been developed with UNICEF/WHO support, including (amongst other things) revising the national drinking water standards (rural guideline now in draft), expanding water quality testing and promoting alternative sources where appropriate. Despite these efforts, these platforms are not yet fully institutionalized. MRD is currently working with development partners to integrate water quality aspects as part of the overall rural water supply monitoring system. In respect of water quality monitoring, it will be critical to step up efforts on enforcement of water quality standards of piped water services, as well as regular spot checks on point-source scheme by the mandated agencies (MIH, respectively MRD). In line with the emphasis on the future post 2015 Sustainable Development Goals, inclusion of water quality testing at point-of-use in national surveys is also recommended.

Another bottleneck in the sustaining pillar reflects the lack of post-construction support services for rural communities to manage their supplies sustainable. Poor maintenance of existing schemes is a serious threat to sustainability and backup support to communities is inadequately defined and underfunded, with typical annual budget allocations of just U$500,000 per year to support maintenance of all rural water supply schemes in the country.[63] A reconsideration of the role of WSUG is needed, as these groups tend to be active only when empowered through ongoing external support via INGOs or other development agencies. Different management models for community-based schemes need to be tested, and legal and institutional framework and accountabilities to be redefined, including global lessons. In this context recent experiences in for example Benin are promising where public-private partnership arrangements are used to expand services of clustered community-level schemes.[64] Moreover, a broader concept than access needs to be integrated as part of the future monitoring system of MRD. As pioneered with SNV support in Kampot province, functionality needs to be looked at from a gradual scale of level of service, and include water quality, accessibility, and quantity and reliability aspects.[65] Strengthening accountability for water supply services can further be enhanced through the community-scorecards assessing functionality of water supply, in line with the social accountability framework. Access to clean water supply in schools has been on the decline from 66% in 2009 to 58% in 2013, indicating that schools settings need to be addressed as part of functionality plans.

Private sector investments in rural growth centers have increased over recent years and this trend is expected to continue. Over 90% of private water operators are estimated to be covering their operating costs and around 80% their full costs including depreciation and debt service.[66] However expansion or investments in new sites remains difficult to fund through revenues only and will requires access to commercial finance and/or investment grants to close the viability gap. The red score in the expansion block illustrates these difficulties, although several initiatives are ongoing and pipelined to enable such expansion through better access to credit, business planning support and investment grants.

Equity aspects of outcomes could also be improved, although access to an improved water source between the lowest and highest quintile in rural areas is more or less similar, access to higher levels of services such as piped water supply, was four times higher for the richest income quintile, as compared to the poorest.[67]

[63] SNV, 2014a. Learning Brief: Functionality of Rural Water Supply Services Programme. This brief states that district-wide water supply mapping in one of Kampot's district revealed that out of 1,055 water supplies only 80% are fully functional.
[64] For more information please refer to https://beninwaterdpsp.wordpress.com
[65] SNV, 2014b Progress Brief: Progress Brief: Functionality of Rural Water Supply Services Programme: Assessing Rural Water Supply Levels of Service in Cambodia: Findings and Lessons Learned From a Baseline Assessment. The baseline conducted in 2013 in one district in Kampot showed that water quality and reliability were key factors contributing to only 24% of households achieving basic service levels.
[66] Sy, Jemima; Warner, Robert; Jamieson, Jane. 2014. Tapping the Markets: Opportunities for Domestic Investments in Water and Sanitation for the Poor. Washington, DC: World Bank.
[67] CSES (2011) Cambodia Socio Economic Survey

8. Subsector: Urban Water Supply

Priority actions for urban water supply

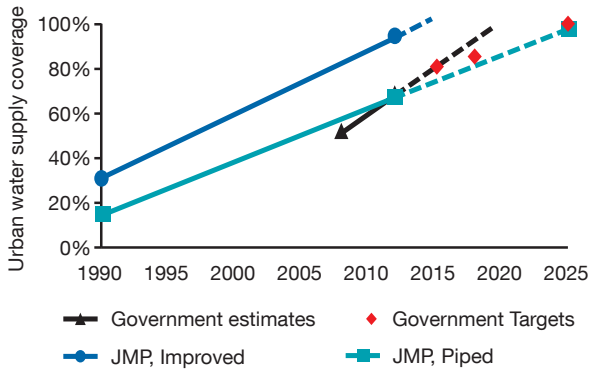
	short term	medium term	long term
Develop full legal framework (water law) that clarifies and redefines institutional roles, including that of regulator	√	√	√
Develop policy, guidelines and instruments for economic regulation, including pro-poor tariff setting and connection policies (beyond those existing at project level)	√		
Following the model of Phnom Penh Water Supply Authority, transform public water works into autonomous utilities and transition all investment and service provision responsibilities		√	
Develop a long-term sector development and investment plan, with emphasis on equity considerations (e.g. social connection fund)		√	
Improve service performance and efficiencies of public and private operators through at-scale training programs by - to-be-established - utility training center and Cambodia Water Association's training services	√	√	
Introduce competitive granting of licenses for private operators to increase transparency, leverage commercial finance, and ensure value for money	√		
Develop capacities of Department of Potable Water Supply for expediting licensing and economic regulation regime, bringing all unlicensed operators under its supervision	√	√	
Develop an umbrella association for all public and private operators to promote best practices and continued support to professionalizing of the sector		√	√

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

According to the JMP update 2014, 94% of the urban population has access to an improved water supply in 2012, of which 67% have a piped house connection. Other households with access to an improved source mainly use tube well or protected dug wells, and only a fraction relies on improved rainwater as their main water source.[68] However, there is a large disparity between Phnom Penh and other cities, especially in terms of service levels. For example, the CSES 2011, which disaggregates Phnom Penh and other urban areas, reports that 90% of all residents of the capital

[68]As per the government definition rainwater is only considered improved if stored in a tank of more than 3000 liters. Due to the preference of rainwater taste, most urban and rural households store and use rainwater at least as a complementary source for consumption, while relying on other sources for hygienic uses.
[69]The difference between CSES 2011, and NSDP 2012 estimates piped access outside of Phnom Penh is most likely due to other definitions of urban areas. The most recent CIPS (2013) estimates piped water supply access in urban areas slightly lower at 64%.
[70]The NSDP 2018 target does not clearly specify whether this target refers to piped household connections only.

Figure 8.1 Urban water supply coverage and targets 1990-2025



Sources: JMP 2014-update; NSDP-2014-2018

having water piped to their dwellings, while in other urban areas a third of the population accesses piped water supply services in the dry season. Government estimates as per the NSDP 2014-2018 are expressed in piped water supply access only and are fairly consistent with JMP estimates of 2012: urban piped water supply access is estimated at 68.5% in 2012, of which access in Phnom Penh is estimated to be 85% and other urban areas having around half of the population connected.[69] Although not formalized in an official document, the target for urban water supply by SDA participants has been set at 100% improved access by 2025, of which it is expected that 90% will be supplied through piped household connections. The NSDP 2018 target is set at 85% access to improved water supply,[70] as compared to the 2015 CMDG target of 80% improved access.

In order to meet the 2025 target of 100% access to improved water supply in urban areas - of which 90% through piped services - around 260,000 people per year will need to gain access. This implies an annual average capital investment of US$60 million per year, comprising US$30 million in new investments to expand access and US$30 million for the replacement costs of existing facilities, reflecting the already high levels of services in urban areas that need to be maintained through replacing assets. In an ideal situation, replacement costs are fully accounted for through full cost recovery tariffs and would not rely as much on national transfers and investment budgets. However, except for PPWSA, most public utilities do not yet charge full cost recovery tariffs. The level of full cost recovery by private water operators is assessed to be adequate, with an around 90% of private operators recovering operational costs and 80% full cost recovery including depreciation and debt service.[71]

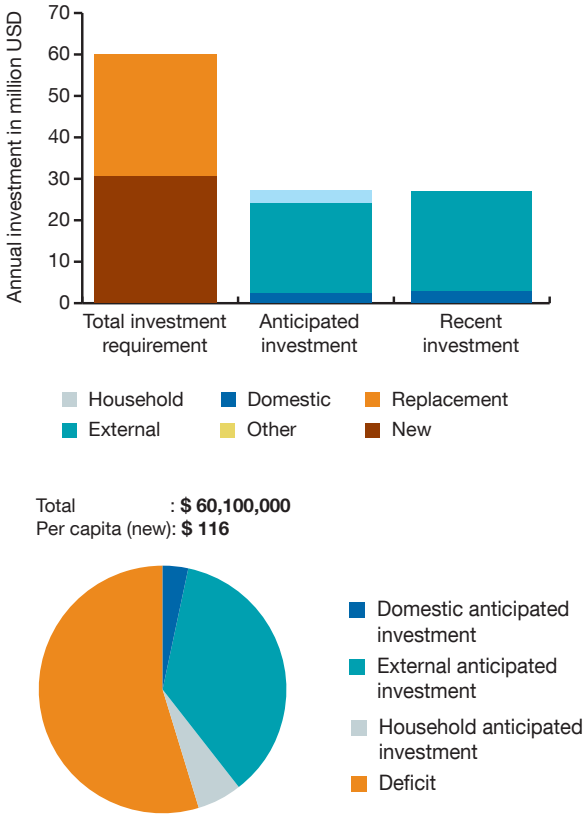
Tariff levels in the public sector (from around US$ 0.25-0.40/m^3) are considerably lower as compared to private operators, who do not benefit from public investment transfers (average US$0.53-0.60/$m^3$,[72] with some operators charging as much as US$0.80). Increasing tariff levels in the public sector to full cost recovery would help to close the existing financing gap in urban water supply, as illustrated in Figure 8.2. However, of equal importance to close the investment financing gap will be to improve operational efficiencies of water utilities, such as through non-revenue water programs, so that pressure on transfers for rehabilitation and replacement are diminished. An additional US$7 million per year is needed for operations and maintenance, to be recovered through tariffs (or other user fees). In addition to capital and O&M expenditure, financing needs include substantial funding for 'software' and programmatic costs such as project management, licensing and awareness campaigns, capacity building programs, and critically adequate recurrent funds to execute policy, monitoring and regulatory functions at central and provincial level.

Figure 8.2 illustrates that recent (US$26 million) and anticipated annual public spending (US$24 million) covers around 40% of the total annual investment requirements, and after including the relatively low expected household contribution, this leaves the sector with a substantial financing gap of around US$33 million annually.[73] However, it should also

[71] World Bank (2013) Cambodia Water and Sanitation Sector Review, and Sy. et al (2013).
[72] WSP (forthcoming in 2014). National representative survey to determine the poor inclusiveness of licensed private water operators. Available upon request at World Bank Phnom Penh.
[73] Non-confirmed pipelined projects for 2015 have not yet been included in this estimate, so the actual average annual deficit could be slightly lower (e.g. ADB urban water supply loan which is under preparation, AFD credit line of US$5 million for private water operators over 2015-17, channeled through a local bank to private operators).

be noted that new investments in piped schemes by the private sector, which could be in the order of several US$ millions annually, have not been included in the estimate, since no reliable data is yet available at the industry level. In addition to the financing gap for the sector, the reliance on development partner investments illustrates that domestic budget allocation remains inadequate.

Figure 8.2 Urban water supply financing: required, anticipated (2012 - 2014) and recent annual invesments (2009 - 2011)



Source: SDA Costing Model

JICA has for some years been a key donor in the subsector, its major lending projects being the Niroth Water Treatment Facility near Phnom Penh, and the expansion of the Siem Riep water supply system. A third grant project involves the rehabilitation and expansion of water distribution systems in the provincial capitals of Pursat, Battambang, and Sihanoukville. JICA is also providing capacity building support to a number of urban utilities. AFD has also supported the Niroth water treatment facility and provided a loan of just under Euro 30 million to PPWSA, in part to extend the distribution network to low-income communities. UN-Habitat has also provided financial and technical assistance to the sector. ADB is currently preparing a new loan to support urban utilities with service expansion outside of Phnom Penh. When turning to the scorecard, it should be noted that participants intended to emphasize the situation outside of Phnom Penh, so as to clearly identify priorities for addressing bottlenecks. The NSDP 2014-2018 to a large extent reflects the identified bottlenecks and lays out a clear reform agenda for the urban water supply sector over the next planning period. Key elements of this reform agenda are reflected in the agreed priority actions listed at the beginning of the chapter.

Within the enabling pillar, the low score for planning reflects the fact that there is currently not yet a long term strategic sector investment plan, covering all urban areas beyond Phnom Penh, with prioritization and costing and a mapping of potential investment sites for the private sector. The three-year rolling Project Investment Plan format of MIH is now used to identify projects and source funds. The coordination of fund flow (domestic and external) as well as a joint annual review mechanism of government and key development partners has not yet been fully institutionalized translating in a sector wide approach of government and development partners to improve urban service delivery. PPWSA has taken on an important role in utility-to-utility peer learning. Human resource capacity assessment and HR development programs have taken place for a number of utili-

ties, but not yet at a sector wide level. Capacity building of sector professionals is proposed to be delivered through a national utility training center, however to date this has not yet been established. Positive developments are the delivery of training and coaching services through the Cambodia Water Association of private operators (CWA), but more is needed to expand and intensify these efforts.

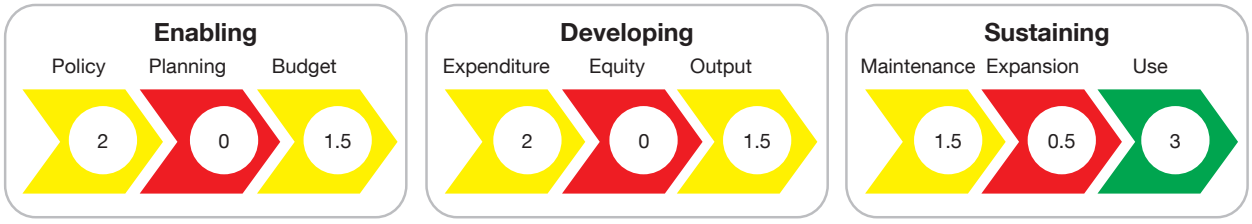
In the policy realm, the sector has an incomplete legal framework for the sector and operationalization of institutional roles. The role of sub-national authorities in line with the D&D reform is not yet clearly laid out. While the de facto role of the Department of Potable Water Supply (DPWS) has been defined through a ministerial decree of 2010, its functions have not yet been fully operationalized, given the current funding and staffing levels, and limited formal instruments and guidelines for economic regulation.[74] Recent issuance of ministerial decree that outlines the licensing process is a positive development towards the operationalization of the 2003 national supply water and sanitation policy.

Under the developing pillar, bottlenecks relate to the monitoring of new services developed and the quality of these services. Some level of monitoring for public water works takes place and PPWSA has an extensive monitoring system and shares data with the wider public. However, a sector-wide monitoring system of key-performance indicators across public and private operators is not yet operational (under development now). Around 150 licensed operators are not yet monitored comprehensively for key-information on service coverage, performance, and water quality, neither is this data shared with the wider public.[75] Moreover, an estimated 150 unlicensed operators remain out of sight of and need to be brought under the licensing regime as a first step. Basic monitoring of private operators, would be a first step towards more closely and regularly (every five years) reviewing their tariffs, as is indicated in the licensing decree.

In terms of equity, PPWSA's "Water for All" program and other project-specific pro-poor measures are examples that deserve scaling-up. A more systematic approach and clear policy for pro-poor tariffs and connection fees would be needed, including its application to the private sector. As a result, participants scored the subsector low on procedures and systems for stakeholder participation, project selection and policies for targeted subsidies to support the poor. Outcomes are not very equitable, as illustrated by CSES (2011) data, with 88% of the richest urban dwellers accessing piped water connections, while only 34% of the poorest urban household did so. A representative survey among private providers showed that on average 20% of ID-poor households living in network area were connected to piped water, while non-ID-poor[76] households showed a connection rate on average of 50%.[77] Connection rates among the poor were associated with tariff levels, connection fees and whether or not the private operator applied pro-poor connection policies (such as discounts, subsidies, installment rates).

Within the sustaining pillar, scores in the maintenance block point to the lack of full cost recovery by public utilities (with

Figure 8.3 Urban water supply scorecard results



Source: SDA scorecard (annex 1).

[74] JICA has committed to support the development of an overall legal framework for the sector, while WSP has worked closely with MIH on the licensing regulation, and will continue to do so with respect to economic regulation.
[75] DPWS is now closely working with WHO in revising the urban water quality standard, as well as technical service specifications, while WSP is supporting the development of a sector-wide monitoring system for private and public operators
[76] These are households in the category ID-poor I and ID-poor II, as per the Government of Cambodia poor household identification system.
[77] WSP (forthcoming in 2014). National representative survey to determine the poor inclusiveness of licensed private water operators. World Bank Phnom Penh.
[78] World bank (2013) Water and Sanitation Sector Review

the exception of PPWSA, SRWSA and Sihanoukville which has a large industrial customer base[78]). Especially among the non-autonomous public water utilities, results of financial performance are mixed. Performance of the larger utilities of Siem Reap, Sihanoukville, and Kampong Thom, shows that non-revenue water is estimated at an average of 16% and the operating ratio (revenues over expenses) on average to be 1.3. Especially for the less well performing utilities, operational efficiencies, such as non-revenue water, optimizing pumping regimes (reducing electricity costs which is a key cost driver), and streamlining other business processes will be critical to achieve better financial performance.

Private operators are doing better in terms of financial performance with 80% covering full cost. CWA is currently developing benchmarking other Key Performance Indicators (KPIs), however, this information is not yet available.

A major weakness for sustaining water supply services is that tariff reviews are not regularly conducted and an economic regulation framework and tariff methodology has not been formally adopted. Other than PPWSA who has been able to attract concessional loans from AFD, the red score under expansion points at difficulties for public and private utilities to finance expansion schemes. Public and private utilities that have access to external support services are already developing business and investment plans, however for many utilities the preparation of such plans and feasibility study is a bottleneck, compounded by their overall weak financial position and technical performance. JICA (and ADB in the future) are providing assistance to strengthen the capacity of public utilities along their pathway to becoming autonomous entities.

Once utilities are autonomous and in a better financial position, they would be able to access both sub-sovereign concessional as well as commercial finance, with the approval of the Board of Directors. For private operators, the recent change of license duration to 20 years is facilitating access to finance, especially now that the Cambodia Water Association, with the help of development partners, is able to offer business development services and feasibility studies to their members, as well as concessional finance through one of the local banks, lowering the collateral requirements.

The establishment of an umbrella association, where both public and private operators could become members, is expected to support the professionalization and capacity development of the sector.

Despite uncertainty in terms of sector financing, the subsector is on track to meet its 2025 target of universal access to an improved water source (see Figure 8.1). Overall levels of access to an improved source are already quite high, even among the poorest quintile (68%), although not for piped water services (34%), and public and private operators generally provide a high level of service hours per day with most public utilities providing 24 hours/day.[79]

[79] RGC 2012. Royal Government of Cambodia, Infrastructure and Regional Integration Technical Working Group. (IRITWG) Sub-Technical Working Group for Water Supply. Overview on Urban Water Supply Sector in the Kingdom of Cambodia. Phnom Penh.

9. Subsector: Rural Sanitation and Hygiene

Priority actions for rural sanitation and hygiene

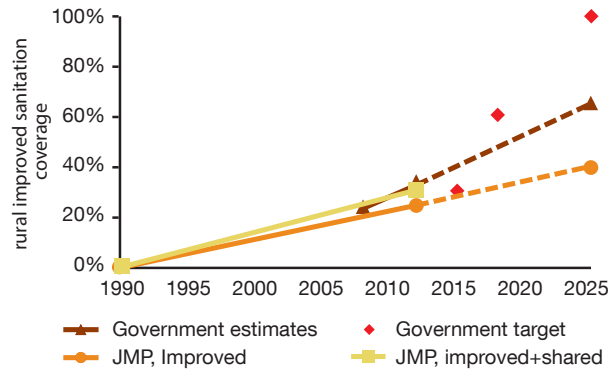
	short term	medium term	long term
Establish National Action Plan for rural sanitation and hygiene, that includes community-wide targets, and pro-poor implementation guidelines (e.g. on use of smart subsidies/incentives)	√		
Based on pilot, develop necessary legal framework, implementation guidance, and financial management mechanisms and sources for functional assignment of sanitation to subnational level	√	√	
Carry out high-level advocacy to increase funding allocations, especially for program and operational costs (software) such as for community-led total sanitation, behavior change, and monitoring	√	√	
Develop and implement a roadmap for government to facilitate and strengthen the private sector role in sanitation service delivery		√	
Test and scale-up approaches for integration of sanitation and hygiene in nutrition and social protection programs	√	√	
Carry out evaluations and facilitate sector learning on poor-inclusive sanitation service delivery and develop harmonized financing guideline	√		
Continue innovation and R&D for low-cost product and services especially for challenging environments, waste collection and emptying and other WASH products		√	√
Develop a national management information system for rural sanitation and water supply	√	√	

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

According to the JMP update 2014, 25% of the rural population has access to improved sanitation in 2012 and 6% has access to shared improved sanitation. Almost all rural households with improved access have a pour-flush toilet to either a soak-pit or a septic tank. However, there is a large disparity between income groups: among the poorest income quintile of the rural population only 12% has access to improved sanitation, while in the richest rural quintile this is five times as much at 59%. Government estimates as per the NSDP 2014-2018 are above JMP estimates of 2012, using figures with 33% having access to improved sanitation.[80] The Rural Water Supply, Sanitation and Hygiene Strategy 2011-2025

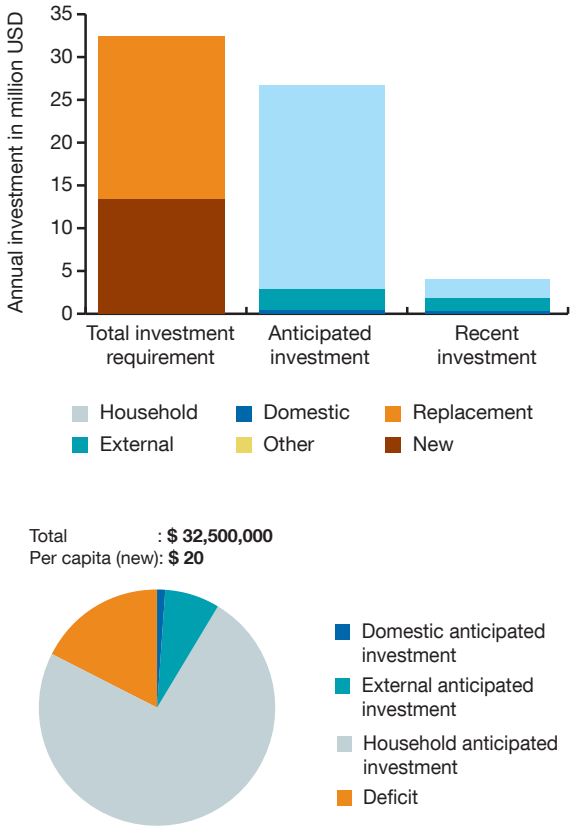
[80] CSES (2011) states 33% of households having a pour-flush to sewer (0.6%), pour-flush to tank/pit (30.6%) and improved pit with slab (1.3%), adding up to 33% improved access. The recent CIPS (2013) reports quite different figures for rural sanitation access with unclear category definition (38.5% having access to a toilet, of which 13% to a sewer, 22% to a septic tank and 3% to a pit latrine, and less than 1% to other facility).

Figure 9.1 Rural sanitation coverage



Source: JMP 2013; MARD (2012a); MARD (2012b); SDA costing

Figure 9.2 Rural sanitation financing: required, anticipated (2012 - 2014) and recent annual investment (2009 - 2011)



Source: SDA costing

sets an ambitious universal access target of 100% improved access, and interim NSDP 2018 target reflects the acceleration needed at 60%, as compared to the modest 2015 CMDG target of only 30% improved access. The access to sanitation facilities is reported to have increased from 79% in 2009 to 88% in 2013 as per the government's Education management Information System. However, observations reveals that many facilities are either locked, dirty and/or inoperable. Only 50% of schools is estimated to have hand washing facilities.

In order to meet the 2025 target, approximately 658,000 persons will need to gain access to improved sanitation each year (using JMP 2012 data). This will require US$32.5 million per year in capital expenditure, of which US$3.5 million is expected to come from public sources to support hardware subsidies/incentives for the poor, as most facilities are expected to be built with household own funds, as clearly stipulated in the strategy.

Recent and anticipated investments, although showing a positive trend, fall short of the amount needed. In line with the policy, the US$3.5 million annual anticipated hardware investments are expected to leverage eight times the amount of household investments, as subsidies should be directed to the poor and used with caution as per the guidance of the strategy. However, whether this leveraging will actually materialize will depend strongly on the ability of government, development partners and other institutions to elicit household investments in improved facilities, as well as on the mechanisms through which such subsidies are delivered.

[81] In 2011, the wages for MRD, PRDR and DoRD staff involved in rural health care and sanitation were estimated to be US$365,000 in 2011, as per MRD (2013). However, development partners and INGOs are delivering software support—estimated to be over US$8 million annually—although only some are directly supporting government-led implementation

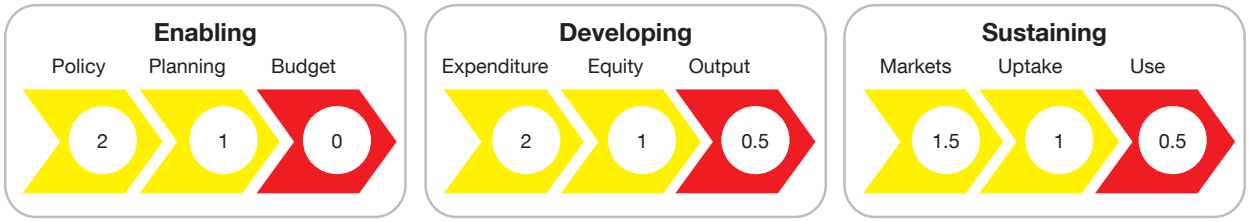
This will require intensive efforts on i) sanitation demand creation under leadership of communes, ii) ensuring that facilities are affordable to poor households, iii) putting other supporting financing mechanisms—like microcredit—in place, iv) deliver subsidies in a least market distorting way, and v) incentivize collective outcomes at village level. All of this will require operational funding for local implementers at commune and district level, which currently is practically non-funded. As discussed in Section 5, operational budget under MRD is mostly consumed through wages and does not adequately fund other software costs, such as training, capacity building, communications & advocacy as well as monitoring required to fulfill above tasks.[81]

As can be seen in Figure 9.2, the capital expenditure represents both new facilities as well as replacement of on-site sanitation facilities, which will need to be born by households mostly and represent more than half of all investment required due to the fairly short lifetime. In addition an annual average O&M expenditure—on household's accounts—is estimated at around US$4.3 million a year.

In the enabling pillar, the subsector achieves a reasonable score on sector policy, though important gaps include the absence of targets for community-wide sanitation status, such as Open Defecation Free (ODF) villages, ODF communes, and monitoring ODF district achievement. Moreover, the strategy has not yet been operationalized into a national action plan with program implementation guidelines, including those for use of targeted subsidies/incentives for the poor. Moreover, in terms of institutional roles and responsibilities, the functions of sub-national authorities need to be clarified and operationalized through the ongoing D&D reform. For budgeting, the low score reflects weaknesses in the existing MRD three-year rolling investment plans, which are not yet aligned with interim targets in the NSDP. As of yet no budgeting line has been directly linked to rural sanitation, which is expected to improve after the introduction of the program-based budgeting that would also link with the proposed national action plan. SDA participants judged that rural sanitation receives less than 50% of what is needed to meet the national targets, especially concerning the severely underfunded operational and software requirements. In addition, structure and comprehensiveness of budget are inadequate, as no routine mechanism is available to track off-budget contributions of NGOs and development partners in a consolidated manner, and hardware (capital) and software expenditures are not well articulated in the budget.

In the developing pillar, expenditure of budgets is generally not a constraint, with over 75% of limited domestic and externally raised budget estimated to be spent each year. However, the reporting on expenditure figures lacks comprehensiveness, especially due to the high amount of off-budget development partner funding and parallel contributions by NGOs, which are not systematically recorded. The equity score is low due the absence of consistent criteria and processes for geographic allocation of development partner and domestic resources, as well as the lack of operational guidance to implement the broadly defined principle for hardware subsidy in the national strategy. This often

Figure 9.3 Rural sanitation scorecard



Source: SDA scorecard.

leads to fragmentation and inconsistencies in implementation, undermining a coherent programmatic approach. Based on survey results since 2010, it seems that the rural sanitation access trend is accelerating. However, the number of new toilet installation each year remains insufficient to reach the target. Capacity of government to stimulate demand and the absence of a real-time monitoring system with verification process contributes to a low score under the output building block.

In the sustaining pillar, the market building block shows good progress made in reducing costs of pour-flush latrines, the rapid spread of sanitation marketing (in 150 out of 185 districts) through building private sector capacity, and the early engagement of microfinance institutions in the sector. However, a challenge is now to institutionalize and further scale private sector involvement through appropriate platforms and a facilitating role of the public sector to sustain these developments. Another bottleneck for uptake is the lack of a coordinated national behavior change campaign with associated tools and guidelines for effective and at-scale use by local government and NGO partners at different levels. Uptake of sanitation services is also limited in areas vulnerable to the impacts of climate change, especially areas with flooding or floating communities. Although some initiatives are underway to test innovative approaches, more is needed in terms of scaling these approaches and directing targeted subsidies to support the viability of market-based delivery. Other than ODF celebrations, and output-based aid approaches in specific projects, a harmonized incentive program that stimulate uptake for poor households, encourages ODF achievements for villages and communes, or benchmarks district performance is not yet developed. Finally, the red score on use clearly demonstrates the overall off-track status of the sector in terms of final outcomes, and in particular the extremely high inequalities.

10. Subsector: Urban Sanitation and Hygiene

Priority actions for urban sanitation and hygiene

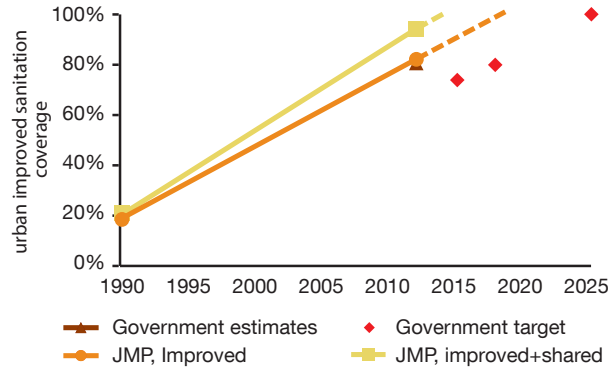
	short term	medium term	long term
Carry out options study and high-level dialogue to build consensus on urban sanitation institutional framework (e.g. look at combined utility for urban water and wastewater)	√		
Develop comprehensive urban sanitation strategy, focused on low-cost solutions for collection, management, treatment and disposal of fecal waste (wastewater treatment, as well as fecal sludge management)	√		
Develop a long-term urban sanitation investment plan, identify funding sources, and support city-wide sanitation master planning (including drainage and flood protection)	√		
Test and develop policy instruments for improved fecal sludge management, including promotion of private sector in septage collection, incentives and regulations for disposal		√	√
Build capacity of relevant actors in urban sanitation value chain, including for city-wide sanitation master planning, management of wastewater treatment plants and fecal sludge management		√	√
Tackle the elimination of open defecation among the poorest households in informal slum areas through targeted approaches		√	
Improve sector coordination and programmatic support using a combined urban water supply and sanitation/wastewater sub-Technical Working Group as platform	√		

Implementation horizon: short-term 2015-2016; medium-term 2016-2018; long-term 2018 and beyond.

According to the JMP update 2014, 82% of the urban population has access to improved sanitation in 2012, and another 12% has access to shared improved sanitation in an urban context. Around half of households with improved access have a pour-flush toilet to either a soak-pit or to a lesser extent a septic tank. The other half are said to access a pour-flush latrine connected to a sewer system, mostly representing a combined drainage system.[82] However, sector studies report much lower levels of septic tanks and direct disposal in waterways and open drains.[83] There is a large disparity between income groups: open defecation among the poorest income quintile of the urban population is 36%, while in the richest urban quintile

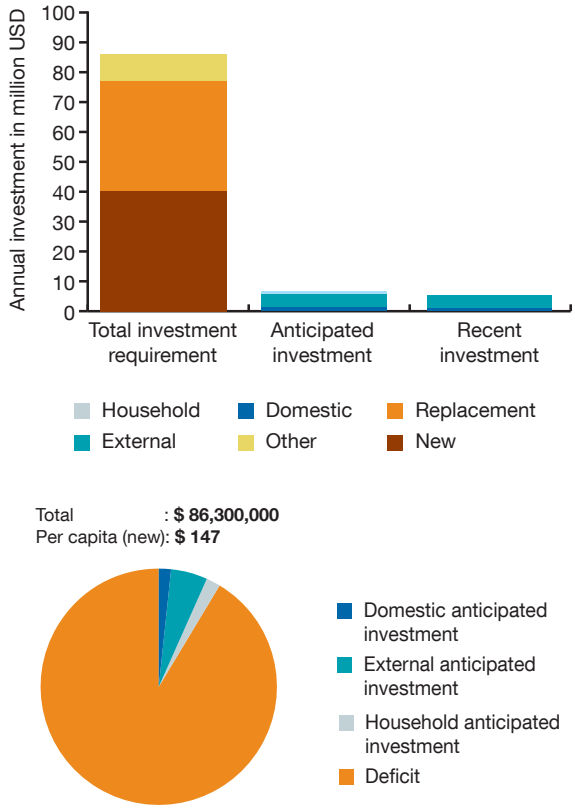
[82] In this context the master plan currently under development for Phnom Penh with support of JICA will investigate the option of having separate systems in four outer districts of Phnom Penh, while four inner districts have combined systems
[83] World Bank (2013); and ADB (2012) Asian Development Bank. Cambodia Water Supply and Sanitation Sector Assessment, Strategy, and Road Map. Manila.
[84] CSES (2011) states 43% of households having a pour-flush to sewer, 41% access pour-flush to tank/pit, and 1% uses an improved pit with slab, leaving 4% using a pour flush discharging elsewhere and 11% without sanitation. The recent CIPS (2013) reports somewhat different figures with 53% having access to a our flush connected to sewer, 32% pour flush to a septic tank, 1.2% to a pit latrine, and 12.5% without a toilet.

Figure 10.1 Urban sanitation coverage and targets 1990-2025



Source: JMP 2014, and NSDP2014-2018

Figure 10.2 Urban sanitation financing: required, anticipated (2012 - 2014) and recent annual investment (2009 - 2011)



Source: SDA Costing Model

nearly everyone has access to improved sanitation, of which almost three quarters connect to a drainage system through a pour-flush toilet. Similarly, bias to urban services is focused on the capital, with access to improved sanitation estimated to be near universal, but only three quarters in other urban centers[84]. Government estimates for urban sanitation for 2012 are reported in the NSDP 2014-2018 as more than 80% having access.

The SDA participants agreed to use 100% improved access as an on-site access target, while the NSDP 2014-2018 states that access should be at least 80% in 2018, which has already been achieved (likewise the CMDG target set at 74% improved access by 2015 has been achieved). In addition to adequately managing drainage and flood protection, the most pressing challenge, as in many East Asian cities, is to improve the level of sanitation services and ensure that fecal matter is safely collected, transported out of the residential environment, treated and safely disposed off. The proposed post-2015 Sustainable Development Goals are including the elimination of open defecation and universal basic access, as well as dimensions of safe collection, treatment and disposal.

It is estimated that less than 2% of the total urban population in Cambodia currently served by sewer systems that are connected to a functioning wastewater treatment plant. This means that those with reported "access" to a sewer system, essentially constitute a huge lagging treatment capacity that still has to be put in place, including likely improvements to the collection system as well.

Phnom Penh uses natural lagoons as treatment facility before discharging in the river (no separate wastewater treatment plant), however, these have silted up as sludge removal has

[85] World Bank (2013) reports that in the four major towns of Phnom Penh, Battambang, Siem Reap and Sihanoukville, less than 3% of the population living in these areas is served through a functioning wastewater treatment plan. Extrapolating these figures to the total urban population in Cambodia, less than 2% of all urban residents is connected to sewers with functioning treatment.
[86] ADB 2012 pp. 17-18.

been inadequate. Less than 5% of the population of Siem Reap and Sihanoukville is served by a wastewater treatment plant, and households were not willing to connect due to low willingness-to-pay. In Battambang, the treatment plant theoretically serves its entire catchment area but is not functioning due to a lack of operation and maintenance funds.[85]

For the large number of urban residents using on-site facilities (septic tanks, soakpits) some private contractors are available for the removal and disposal of septage; some municipalities also offer this service. In Phnom Penh there is a sanitary landfill managed by a private operator where tankers can safely dispose of septage (for a fee) but it is common for waste to be dumped indiscriminately.[86]

The arrangement for applying and collecting fees for wastewater management is not standardized across the country. In Phnom Penh, PPWSA collects sanitation fees through the water bill. Outside the capital, water supply and wastewater fees are generally collected separately on the basis that water supply coverage is still low and recovering wastewater charges only from network users would place a heavy burden on a small customer base.[87] Compounding problems with the low revenue base are that households and commercial establishments refuse to connect.

For the purpose of the costing model, SDA participants have suggested to use the very ambitious target of having 50% of the urban population to be connected and served by wastewater treatment facilities by 2025.

Given the fairly high existing access level and considering a rapid urbanization trend, in order to meet the 2025 target, approximately 275,000 persons will need to gain access to improved sanitation each year (using JMP 2012 data). This will require US$86.7 million per year in capital expenditure, of which US$71.4 million is expected to come from public sources to cover sewer connection and treatment capacity infrastructure. Recent and anticipated investments, although showing a slightly positive trend with around US$6 million annually, fall by far short of the amount needed. Since many households will continue to rely on on-site sanitation, US$15.3 is expected to come from household budgets no subsidies are available for on-site facilities for urban residents. Only a small portion of all required investments is expected to be leveraged through contributions of households through connecting their toilets and septic tanks to sewer systems. This leaves a funding deficit for capital expenditure of almost US$80 million annually, illustrating that more realistic targets are required. Moreover, as most urban residents are likely to rely on on-site solutions in the medium to long-term, other sanitation services than centralized sewers with wastewater treatment plants would need to be considered as interim solutions (such as fecal sludge management), while Cambodia is developing economically.

As can be seen in Figure 10.2, the capital expenditure represents new facilities, and an equal amount of replacement costs for worn out existing facilities, the latter which for on-site facilities will need to be borne by households. For centralized systems, these replacement costs would rely on government budget allocation, as currently sanitation tariffs only partially cover O&M, let alone will be able to recover full cost including depreciation of assets. In addition, between 2012 and 2025 a conservative US$9 million on average annually would need to be raised to put in place the lagging treatment capacity for those that already are connected to sewer/drainage systems. Finally, annual average O&M expenditures are estimated at around US$9.5 million a year. Without collection of tariffs that at least cover O&M, these expenses would also have to be provided through national and local government budgets. Failure to adequately fund O&M costs will lead to much lower lifespans of the investments and thus an even higher funding gap.

Currently, development partners in the sector are KOIKA, with a US$40 million loan for construction of sewerage system in Siem Reap, a major tourist center, AFD and JICA. JICA provided extensive support for drainage and flood protection infra-

[87] In Siem Reap and Sihanoukville a fee is charged by the Provincial Department of Public Works and Transport; and in Battambang this is done by the municipality.
[88] In this context the master plan currently under development for Phnom Penh will investigate the option of having separate sewer/drainage systems in four outer districts of Phnom Penh, while four inner districts have combined systems
[89] JICA expenditure on flood protection has not been included in under urban sanitation investments and ADB pipelined projects were not yet confirmed as anticipated spending at the time of data collection.

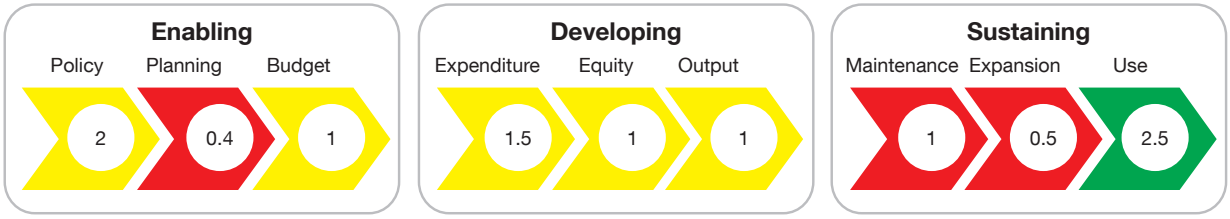
structure in Phnom Penh and is now developing a master plan[88] combining drainage, flood protection and sanitation. ADB is pipelining sanitation investments in other cities.[89]

Scorecard results under the enabling pillar reflect that despite the 2003 overall sector policy, urban sanitation is not very high on the priority list, there being no strategic sector investment plan or comprehensive urban sanitation strategy, although a master plan for Phnom Penh is now under preparation. Other cities have not yet developed city-wide sanitation plans and will require intensive external support to do so. There are no specific targets in the NSDP 2014-2018 for treatment and safe disposal of wastewater and/or septage. In terms of the institutional framework, at national ministerial level there is not yet a consensus how sanitation/waste water services are best managed, regulated and delivered by local service providers, such as through either municipal departments, provincial departments of MPWT or through a combined utility water and wastewater approach. The department under MWPT responsible for urban sanitation remains under resourced to fulfil its mandate as per the decree of establishment in 2010. In terms of planning and fund coordination, there is not yet a joint annual review mechanism of the subsector and the sub-TWG on urban water supply has not yet formally enlarged its mandate, although sanitation issues have been addressed in this forum in the past. In terms of budget, funds are inadequate and budgets do not precisely distinguish capital investment and subsidies for O&M support as gap-stoppers for inadequate revenue collection.

Further along the service delivery pathway, scores under developing pillar are again modest, illustrating the gradual progress in developing new services. Although domestic budget execution seems not a problem, the amounts are very low. Development partner budget expenditure is not integrated in the government reporting system, making it difficult to track progress. In terms of equity and participation, there is limited attention to involving communities in the planning of sanitation investments, resulting in many households refusing to connect. Other than specific project arrangements, provisions that target and monitor service delivery to poor households or communities within a town are not yet developed and routinely adopted. While some monitoring is happening at the level of the wastewater treatment plants, a systematic and consolidated monitoring system that reports connections and volumes of wastewater/fecal waste being collected and treated is not yet developed.

The sustaining pillar shows key bottlenecks for maintenance and expansion of urban sanitation services. While for the three plants under MPWT the operations and maintenance costs are known, fees are not covering full cost, and are reported to be on average 88%. From all wastewater collected it is estimated that around 40% is treated. While discharge standards exist, compliance is not subject to ongoing third party monitoring, though the Ministry of Environment is said to conduct annual checks. Fecal sludge management solutions are not reflected in the NSDP 2014-2018 or in priority agenda of MPWT. Communications programs that aim to incentivize households to regularly empty their septic tanks/pits are not yet executed neither are there incentives for the private sector to expand such services and comply with safe disposal rules. Due to the early stages of development of the urban sanitation sector, opportunities for private sector participation in the operation and maintenance of wastewater treatment plants are premature. Despite the various constraints, the subsector scores well for user outcomes, including equity, given that urban access to improved sanitation has reached 82%, albeit mostly though private investments in on-site facilities. While overall on-site access is high, no strategies are developed to eliminate open defecation (as part of city wide sanitation planning), prevalent among poor households, which are concentrated in informal settlement areas of Phnom Penh and other bigger towns.

Figure 10.3 Urban sanitation and hygiene scorecard



Source: SDA scorecard.

11. Conclusion

Reaching universal access targets set for 2025 will involve an estimated 562,000 persons per year gaining access to improved water supply services and 933,000 gaining access to improved sanitation, of which 62% live in rural areas. Almost 660,000 people living in rural areas will need to gain access annually to improved sanitation, making this the most pressing development issue in terms of closing the urban-rural gap, and especially in light in the high and persistent levels of stunting (40%) of children, translating in low cognitive development and less productive future lives.[90] These basic service delivery gaps in water and sanitation translate to capital expenditure requirements of US$92 million per year for water supply and US$119 million for sanitation. The estimated capital requirements are biased towards urban areas, requiring 70% of the total, on account on higher unit cost and ambitious targets for high levels of services, especially for urban wastewater. Anticipated financing falls far short of this requirement with projected deficits of US$57 million per year for water supply and US$85 million for sanitation; these include replacement costs as well. On top of this, approximately US$10 million per year is required for the operation and maintenance of water supply services and US$14 million for sanitation.

With the ambitious government targets in mind, it is clear that investments in the water supply and sanitation sector fall short of requirement, and - with an eye on delivering services to the poor, the rural sectors seems to be hardest hit. However, with rapid urbanization, urban water supply services especially outside of Phnom Penh need urgent attention, as well as sanitation solutions in the capital to improve hygienic living conditions and reduce environmental degradation. However, the scale of the investment gap could, however, be reduced by improving the efficiency, management and sustainability of existing infrastructure and services. Especially for water supply, ensuring higher cost recovery through user tariffs and fees will help to reduce the burden placed on government to fund replacement costs. Another critical challenge is the lack of a well-defined and operationalized institutional and regulatory framework to drive quality, equity and efficiency in service provision.

Especially relevant here is the importance to clarify functional assignment of rural sanitation and maintenance of rural water supplies to sub-national administrations. In line with the principles of the D&D reform, a decentralized service delivery model for rural services will need the adequate level of resourcing, strong district and commune council leadership, and oversight and guidance by technical line agencies. Similarly, the reform in the urban water supply sector would need to follow the example of Phnom Penh by creating autonomous utilities, as well as cities taking responsibilities for urban sanitation issues, possibly through combined water and sanitation service providers.

Other constraints for sound sector development – following the motto “what gets measured gets managed” - is the lack of effective monitoring systems to track progress against targets and improve programming for both the urban and rural subsectors, as well as the limitations of existing financial management to support budgeting and expenditure reporting, linking these to result areas.

[90] WSP (2014) Investing in the Next Generation: Growing Tall and Smart with a Toilet. World Bank Water and Sanitation Program. Phnom Penh

Figure 11.1 Subsector scorecards

SDA stakeholders identified a number of critical bottlenecks as reflected in the scorecards below, and formulated specific subsector priority areas that have been highlighted in the strategic overview and sub-sector chapters. Key sector-wide priority actions to address bottlenecks for service delivery are the following:

Sector-wide

	short term	medium term	long term
Strengthen decentralization in the water and sanitation sector by clarifying functions for sub-national administrations, providing operational guidance and developing the required legal framework	√	√	
Develop an overall legal and institutional framework (water law) for the water and sanitation sector which redefines the institutional mandate for urban sanitation and establishes an independent regulator	√	√	√
Adopt and implement a capacity building strategy hosted with local institutions and design a pooled financing mechanism for development partners support		√	√
Establish better monitoring systems, reporting access and usage of services, service quality, sustainability, institutional WASH, and equity, and publish information through ministerial websites	√	√	
Carry out high-level advocacy using platforms such as Technical Working Groups and Cambodia Development Council to increase funding allocations, especially for the rural sector	√		
Improve the tracking of budget allocations and expenditure on water supply and sanitation for rural and urban sub-sectors through program-based budgeting and the government's Financial Management Information System, including better tracking at sub-national level over time		√	√
Institutionalize coordination and planning between Ministries of Health, Education and Rural Development to improve WASH facilities in institutions, such as health centers and schools	√	√	

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/market, expansion, user outcome. The overall building block scores for each subsector are presented in the relevant subsector sections of the report.

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
RURAL WATER SUPPLY									
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	There is a target set in National Strategy Development Plan for the rural water supply access to improved water 50% (CMDG) by 2015 and NSDP2014-2018 at 60% and 100% by 2025. NSDP plan has no targets for higher level of services (as the traditional point source supplies through wells) such as piped supply. We should include these issues in the policy target.	1. NSDP 2009-2013 2. NSDP 2014-2018 2. National Strategy on Rural Water Supply and Sanitation 2011-2025
Policy	RWS 2	Sector policy	Is there a rural water policy that is agreed by stakeholders, approved by government, and is publically available?	Policy officially approved and publically available	Policy drafted and agreed but not officially approved	No policy	1	There is national policy on rural water supply and sanitation, the policy was established by the government and publically disseminated in 2003. The policy was engaged with all stakeholders in the sector including development partners, leading sector agencies, and line ministries. As an overall policy instruments the directions are still valid, however, the implementation is lagging.	National Policy on Water Supply and Sanitation 2003

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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 operationali-zed	Not defined	0.5	There is overall statement on the roles and responsibilities were defined from national to sub-national level. According to the D&D legal framework, local authority is the entity to take lead of local development and develop short term, medium and long term plan. SUG and VDC are expected to take up a role in water supply management, but often not operationalized in the field. The implementation of D&D reform is still limited, although rural water supply maintenance is now formally proposed to be assigned to sub-national authority. There are many actors in the rural water supply sector. MRD has no effective coordination strategy to work with relevant ministries, development partners, NGO yet. This is maybe due to limited support from political, lack of institutional capacity, insufficient budget allocations to specific sector institution. Although there is Prakas on the establishment of DRWS, PDRD and DORD but no detailed Term of Reference are developed. MoU with MIME/MIH has been arranged to clarify institutional role of MRD for small community-based water schemes (< 500 connections).	1. Guideline of CCWC July 2010 2. VDC established 2010 3. Prakas the establishment of DRWS 4. Prakas the establishment of PDRD and DORD 5. Roles and Responsibilities of DRWS 6. Guideline for WSUG 2004 7. MoU with MIH/ MIME on the responsibilities for piped water supply
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 operational-ized	Not defined/ no process	0,5	The ministry's process is based on the priority activity and at project level only. Ministry has teams coordinating multiple investment budget based on the priority needs/projects. But there is no sector-wide programmatic approach yet based on a national action plan. Normally the ministry creates project management unit (PMU) to coordinate any investment project. MRD also signs MOU with the NGO and DP to improve coordination, but no systematic system is in place that tracks and coordinates fund flow of domestic sources, development partners that are channelling through the budget, and NGOs that executed through parallel mechanisms. MRD has the TWG-RWSS which is the platform to coordinate development partners and government program and policies, but so far it does not support the coordination of funding to the sector. Fund flow is bilaterally coordinated between MEF, MRD and DPs. Coordination at Cambodia Development Council (CDC) level is happening to a limited extent. There is annual CDC Forum which is the highest level platform for gathering all DPs to look at priority development program proposed by the government, however has not taken place in recent years.	1. Experts opinion 2. Consultative Workshop on Rural Water Supply & Sanitation 3. Rural WASH retreat 2014

Building Block	No	Areas of evidence	Indicator 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	There is public investment plan (PIP) for 5 year – with a 3 year rolling plan, not linked to the sector target. It has been developed based on the annual budget allocated to the department. The PIP was done without need assessment and the quality is limited. MEF has encouraged to MRD should develop PIP even though MEF might not able to provide full funding but it is useful information for MEF knew what is the needs and help finding the development partners.	NTP3 document, annual MARD circulars requesting two year plans. / Rural Sanitation Component No.3 / MOH Sanitation Action Plan (2012-2015).
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	MRD has established TWG-RWSSH on rural water supply and sanitation. The main roles of TWG are to follow up the progress of the sector through quarterly meetings and coordinate strategic inputs from development partners. Secretariat is understaffed, and no annual sector review takes place. There is no assessment for corrective measure of the sector performance. Joint Monitoring Indicators of the TWG reflect some activities between government and DP, but sector monitoring system is absent. There is WASH coordination meeting, with sub-groups, that supports information sharing, but they have limited involvement in TWG. MOP leads a mid-term review of NSDP for all sectors.	1. ToR of TWG-RWSSH 2. ToR for WASH coordination group and ToRs of sub-groups
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	For the development of the national strategy for rural water supply and sanitation, HR needs were identified but not specific type of skill. Only the resource needs at local level were mentioned. Recruitment processes within MRD need MEF approval and do not necessarily reflect skill requirements. Functional mapping reports weaknesses in staffing, in quantity and quality.	1. National Strategy For Rural Water Supply and Sanitation 2011-2025 2. Functional Report of MRD 2010 (supported by UNICEF) 3. Functional Mapping report of MRD (2013)

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
Budget	RWS 8	Adequacy	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	0	The national strategy clearly defined the need of financing yet but addressed that lack of financing. SDA estimate clearly specify a gap of US$24 million annually, and could be higher if household contributions do not materialize (less than 50% of needs). Moreover, funding of software, O&M support and other operational cost are severely inadequate. Partner mapping report for the rural water supply and sanitation sector showed that development partner and NGO support allocated for period of 2009-2015 is around $15 million per year (includes software, hardware and program costs), with declining allocation to water supply	1. Costing analysis SDA model 2. Sector Investment Plan 2005-2015. Page8 3. The progress report of WSS sector mapping issued by MRD on January 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	As per the National Budget Law, multi-year budget should show the source of income from own source (state income) and income from external (including: investment subsidy, bilateral subsidy, and loans) and the expenditure for national level (ministries and provincial departments), and the expenditure for sub-national level (including: city, district, sangkat/commune). The law also specifies the capital expenditure from abroad and capital investment with the available and not available budget. Related to the records of all the major source of external income, the Council for the Development of Cambodia (CDC) established the ODA database for development partners to provide information about their investments. Present, MRD has allocated budget 90% to rural road and less than 10% for rural water supply and sanitation. In principal, MEF can only increase budget 5% annually to MRD based on the GDP growth. It depends on the MRD itself to decide on increasing the budget for RWSS within the budget allocated from MEF.	1. National Budget Law 2. Consultative Workshop on Rural Water Supply & Sanitation
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 subsector on budget	Between 50-75% of funds to subsector on budget	Less than 50% of funds to subsector on budget	0.5	Currently there is no separate budget-line/account for rural water supply sector. DRWS is responsible for capital investment only while the operational expenditure is in charge by department of admin and finance. With the introduction of the program-based budgeting this is expected to change. MRD has to put the budget plan propose on their PIP, although the government not able to provide the budget as proposed but will show it to other DPs to get their interest to support in some ways. The national budget allocated for rural water supply and sanitation sector is about $11.12million from 2008-2013, and it includes major development partner funds (like loans), but does not specify very well hardware versus software costs. However, due to lot of NGO involvement in the sector, a large fund allocation remains of budget (including technical assistance).	1. ODA http://cdc.khmer.biz 2. Investment budget 2009-2011 & 2013&2015 3. The progress report of WSS sector issued by MRD on January 2013.

Building Block	No	Areas of evidence	Indicator 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	Based on the national budget law provided to MRD from 2009-2011 showed that the expenditure of domestic funds work well, at national level 88% and provincial level 90% of total budget has expensed. This is because the budget allocated to MRD is normally late with one quarter and provides only recurrent budget and some small subsidy budget. Sometimes the budget approved has been use for other priority purposes out of the plan as well.	Budget law vs. actual expenditure from (2009-2011)
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	There is no reference document but from each department and some development partners like Unicef, ADB has mentioned that the external fund is generally spent on time and at least over 75%. However, normally, the project start up is slow disbursement and quick after the project started.	Meetings and Experts Opinion
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	There is no consolidated financial report for all resources. In practice each department has own finance officer and report to department of finance. Development partner expenditure is not included in national chart of accounts, and thus reporting is incomplete.	Consultative Workshop on Rural Water Supply & Sanitation
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	The procedures were clearly defined from national to local level. Presently the commune, district are developing investment plan sand receive an allocation of the annual national budget to implement the activity but still very small amount. Communes and districts receive funding (CSF is 2.8% of national revenue), and D/M fund is 0.8% of national revenue DM fund) based on allocation mechanism. So far, sending on rural water and sanitation is not a priority item. National funding through MRD is allocated to different PDRD, normally based on the bottom-up work plan preparation. However procedures are not standardized and systematically applied	1. Commune/ Sangkat Law 2. Investment plan of district level 3. Investment plan of commune level
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	The national budget law has the mechanism for allocation budget to all ministries based on the GDP growth and prioritized sectors. MRD is one of the priority ministries. However, the budget allocated from MRD to subsector has no criteria and is not systematically applied. WSS received less than 10% of total budget allocated to MRD. There is no documentation on the criteria (or formula) had been determine but in practice DRWS use budget to implement the activity by rotation method. The foundation criteria are population density, poverty rate, presence of NGO/DP, diarrhoea rate, remote area, and low WSS coverage. In strategy of rural water supply and sanitation indicates the need but need to develop into guideline.	Consultative Workshop on Rural Water Supply & Sanitation MRD functional mapping report

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	Normally DRWS and PDRD implement the program based on priority activity and on ad hoc manner because of limited national budget allocated compare to the huge needs. Presently, at provincial level does not have well developed plans aligned with sector target. There is not a lot of bottom up planning happening with districts and communes, and there are no systematic reviews whether plan and implementation are supporting the reduction of inequalities, also largely due to absent monitoring systems	Consultative Workshop on Rural Water Supply & Sanitation
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	0	DRWS has recorded the number of water supplies (wells, etc.) but not focus on functionality. It can be said that there is no M&E system to capture the annual increase of water supplies, or their service levels, especially with respect to aspects as water quality, reliability, and quantity. The target of 100% universal access would require an acceleration in the number of new facilities that are developed, as well as a review of the type of technologies that are most sustainable	Consultative Workshop on Rural Water Supply & Sanitation
Output	RWS 18	Quality of water	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	There is no drinking water quality standard for rural drinking water but only a draft guideline (from 2011, not yet endorsed). However, it is not implemented as DRWS's laboratory is not able to test all 13 parameters and focuses only on arsenic. Under supporting from WHO 2013-2016, the DRWS will develop the drinking safety plant and keep only 6 parameters. Although, there is guideline to test every newly installed well, this practice might not alwsysd be implemented, and in addition this is difficult to enforce for privately drilled wells.	1. National Standard for Rural Water Supply revised in 2004
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	There is no M&E system to report on water utility. The DRWS cannot capture the new program from NGO/DP as there is no coordination strategy in place yet. However, started from 2011 the DRWS has created one form to record the number of well and type of well from all province but the report have no information about the functionality and don't know who built it. The Commune Date Base also has some date on water resources, but data reliability is often questioned. Currently a monitoring framework for rural water supply is being developed, and will build on previous platforms that monitor arsenic with the aim of institutionalizing those.	1. Report number of well 2012 2. Annual report on the progress from each department 3. Situation Analysis on Rural Water and Sanitation Monitoring, 2013 MRD

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
SUSTAINING									
Maintenance	RWS 20	Function-ality	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	0.5	There is no regular asset register update of rural water infrastructure. MRD use well log sheet for recording functionality of new well installed which supported by project but not regular update. WSP collaboration with MRD has established the Cambodiawellmap in 2010 and this platform will be transformed for future water supply monitoring system.	1. Cambodia wellmap 2. National Wellog Sheet
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	There is no detailed policy on O&M cost. In national strategy for rural water supply and sanitation 2011-2025 indicated the need of establishment the guideline for O&M, and the need to cover at least O&M by user fees. MRD has established the WSUG in 2004, the purpose to give ownership to well user and responsible for O&M but there is no follow up on the implementation and strengthening the WSUG, especially when major repairs are needed. In practice, the budget proposal to install new well also includes a rehabilitation component, as well as some additional support to maintenance as O&M user fees are often not collected	1. Consultative Workshop on Rural Water Supply & Sanitation 2. Guideline on WSUG 2004
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	There is no comprehensive study on this issue yet. Currently, the supply chain is rapidly growing, MRD has established the evaluation platform to evaluate and recognize the private sector (well driller), so far, there is 52 well drillers has been recognized and certified which need reevaluation every 2 year. By estimation from the group discussion has informed that the spare pare supply chain is available almost in whole district of the province but mostly supply only small spare part (piped, rubber valve, leather valve) for pump generally need to order from Phnom Penh market through the well drillers. A small functionality study in Kampot district (by SNV) showed that 80% of the wells were functioning	Consultative Workshop on Rural Water Supply & Sanitation
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	Climate change is very new issue for Cambodia. National climate change adaptation plans have been developed, but no specific sector plan with respect to water supply and sanitation has been developed yet. However, recently the sector is working on a national rural water supply emergency response plans for floods, which will increase due to the impact of climate change. At the time of the workshop this was not yet issued	Consultative Workshop on Rural Water Supply & Sanitation

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	MRD recognizes the community piped water supply organizations and to operate their business only for social purposes and not for profit. They normally are ci=conceived as WSUG which might not give them sufficient legal basis. MRD has limited budget to support the community piped water supply for extensionand virtually no fund for technical support. Expansions are supported by project from development partners such as Unicef, Gret, and AFD…etc. Piped water system (<500HHs) is currently not priority technology intervention of MRD as it has high investment cost.	Consultative Workshop on Rural Water Supply & Sanitation
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	MRD has no plan to expansion of piped system in rural areas yet. Currently, MRD is implementing the water and sanitation program with ADB at provinces surrounding Tonle Sap. No study ahs been carried out to investigate longer term cost effectiveness and sustainability of different technologies	Consultative Workshop on Rural Water Supply & Sanitation
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	There is no comprehensive study on this issue yet. But it is one of big concern of MRD, it having seen the investment required a lot of budget and mostly the community relies on support from government or donors, unable to provide such expansions by themselves	Consultative Workshop on Rural Water Supply & Sanitation
User Outcomes	RWS 27	Subsector	Is the subsector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	0.5	Based on the JMP report, the rural water supply for CMDG is on track but the quality and sustainability is still a big concern. If focus on the sector target by 2025, rural water supply is off track, but increasing.	1. JMP report updated March 2012 2. Consultative Workshop on Rural Water Supply & Sanitation
User Outcomes	RWS 28	progress	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	More than 5 times	1	The ratio of improved access quintile is 43% versus 36% = 1.2. However quintile for piped water is much more unequal., 7% versus 1%.	CSES 2011
User Outcomes	RWS 29	Equity of use	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	Based on the JMP update 2014, the rural community access to piped water supply in 2010 is only 5%.	JMP 2014 update

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
ENABLING									
Policy	UWS1	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	Urban water supply sector has a target of 80% of urban will receive improved water service in 2015, and per NSDP 2014-2018 achieves 85% of piped water supply. For 2025, MIH informal targets are set at 90% piped access and 200% improved access.	1. NSDP 2014-2018 2. Consultative Workshop on Urban Water Supply
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	0.5	The government has a policy on water supply and urban sanitation with the participation of relevant ministries and development partners and publically disseminated in 2003. But the policy is not widely disseminated. The policy is over 10 years old and time for updating to meet the development trend of the sector. A Draft law for the water sector was prepared in 2005, to provide the overall legal basis for the sector, but did not get approved.	1. National Policy on Water and Sanitation published by government in 2003 2. Experts Opinion
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	0.5	No overall legal framework is available for the sector. Sub-decree No. 35 has set roles of the Ministry of Industry, Mines and Energy and the roles of each Department, the Potable Water Supply Department is responsible for urban water supply sector. Then, the Ministry's issued the Prakas No.1029 on the operation and functioning of Department of Water Supply on December 22, 2010. In 2013, MIME has been split up and Potable Water Supply has been allocated to Ministry of Industry and handicraft. The roles and responsibilities of MIH-DPWS are defined but due to lack of fund and staff not fully operationalized. As per the onging D&D process, the roles of sub-national authority in water supply provision is also not well defined	Sub-Degree No.35 published 26 April 1999
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	Ministry of Economy and Finance plays lead role in fund coordination for grants and loans from donors, as well as the CDC. MIH does not regularly hold sub-TWG meetings to support coordination of the sector; most is done on a bilateral or project-by-project basis. However NSDP 2014-2018 calls for wider strategic reform and coordination on funds under an umbrella investment plan.	1.TOR of CDC 2. TOR of sub-TWG on Urban Water Supply
Planning	UWS 5	Investment plan	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	No medium and long term investment for the sector is yet available, with clear prioritization and aligned with targets. MIH develops project investment plan (PIP), which is not a sector-wide approach, but a project approach, mostly funded through donors.	1. Budget Book 2011-2013 2. PIP 2012-2014

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	The Ministry has Sub-Technical Working Group, which can be a mechanism to monitor on the entire sector and reports to the TWG on Infrastructure and regional integration. However, there is not yet a joint annual review process for the urban water sector.	TOR of sub-working group on urban water supply
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	Review and evaluation of the human resources needed for working in the urban water sector is not available yet. DPWS has a personal office in charge to do this work but not enough capacity as of yet to do assessment for sector as a whole yet. 3 Water Supply Utilities (Kampong Thom, Siem Reap and Sihanoukville) have carried out studies on human resources development and need assessment with support of development partners. PPWSA has developed its own training center in support of other utility development, which is very positive step forward	1. Prakas 1029 on the establishment of DPWS 2. Consultative Workshop on Urban Water Supply
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	DPWS has not received national budget for direct capital investment in urban water supply sector, as this goes directly to the provincial department that are responsible for the water works. DPWS only receives recurrent budget for annual payment. Most sector investment depends on development partner lending and grants. SDA costing illustrates financing gap of US$33 million per year	1. Budget Book 2011-2013 2. PIP 2012-2014
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	0.5	As per the National Budget Law, multi-year budget should show the source of income from own source (state income) and income from external (including: investment subsidy, bilateral subsidy, and loans) and the expenditure for national level (ministries and provincial departments), and the expenditure for sub-national level (including: city, district, sangkat/commune). The law also specifies the capital expenditure from abroad and capital investment with the available and not available budget. Related to the records of all the major source of external income, the Council for the Development of Cambodia (CDC) established the ODA database for development partners to provide information about their investments. However, not all water works are able to fund their O&M costs fully, and the transfer of subsidies into operations are not easily identifiable	1. ODA database http://cdc.khmer.biz 2. National Budget Law 2009-2013
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 subsector on budget	Between 50-75% of funds to subsector on budget	Less than 50% of funds to subsector on budget	1	MEF and CDC had created ODA management information system for development partners report the amount of fund and their programs that are being implemented. Funding from major donors and majority clearly recorded but the budget for technical assistance not recorded comprehensively. The capital investment data from main development partners has been recorded is over 75% except the some investment budget for technical assistance was not reported.	National Budget: Investment Budget 2011-2013

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	The national budget allocated to MIH is only recurrent budget (including salary, subsidy & social fund), there is no investment budget and small amount allocated. Based on the expenditure report from 2009-2011, over 90% has been spent.	National Budget: Domestic Expenditure Report 2009-2011
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	Each project has plan and agreed between the project implementer and donor. Funding from development partners / loan is reported to have good disbursement rates, except for some delays in project start up.	Consultative Workshop on Urban Water Supply
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	Currently the process of reporting on expenditure does not include donor projects in the national chart of accounts.	Expert opinion
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	There is thus no consolidated audit report for development partner spending but each project follows the donor required. PPWSA has consolidated audit report since 10 years ago. With the autonomy of future public water works, all of them should be provided audited accounts as per the law on State Owned Enterprises.	Consultative Workshop on Urban Water Supply
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	In particular, the public water utilities do their own planning and responsible for operation and Ministry has role of oversight.	Experts opinion
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	For the sector as a whole there are no specific pro-poor policies or guidelines/regulations that public or private utilities should follow. PPWSA has set 5% of revenue aside for a social connection fund. Other donors have or will be providing targeted subsidies to poor households connecting (GRET, and AFD) or set-up revolving funds to help poor people affordable access to clean water (UN Habitat)	Consultative Workshop on Urban Water Supply

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	The Ministry has set targets to achieve urban water supply 100% in year 2025 which 90% is piped water supply and 10% other improved water sources. Based on the above targets over 50,000 new connections have to be put in place annually, while the current rate is estimated to be around 25,000 annually. MIH is not yet able to fully capture relevant output data from licensed water utilities due to the absence of a monitoring system. This is currently under development.	Consultative Workshop on Urban Water Supply
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	There is a drinking water quality standard (2004), and a draft from 2011 that has not yet been signed. Quarterly water quality control is supposed to be done by DIH, although results are not reported publicly. This will be included in the future monitoring system	Consultative Workshop on Urban Water Supply
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	0.5	All licensed (private and public) utilities need to report annually on the new connection but without a full listing. Not all licensed operators may submit data. Unlicensed providers are not being monitored neither on connection nor on quality standard.	MME's report on connection 2010-2012
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%	1	Based on the 3 year report from three main water utilities (except from Phnom Penh) (Kampong Thom, Siem Reap, Sihanoukville) show that the non-revenue water is 16%	Report on Non-Revenue water supply from 3 utilities 2010-2012
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	1	Based on the 3 year financial report from three main water utilities (Kampong Thom, Siem Reap, Sihanoukville) show that the operation ratio of O&M cost is 1.3	O&M cost from 3 utilities 2010-2012
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	There is not yet a formal regulation that defines the regulatory framework, neither tariff methodology for regular review of both private and public operators. Tariff of PPWSA has to be approved by the PM.	Consultative Workshop on Urban Water Supply

Building Block	No	Areas of evidence	Indicator 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	No Climate Change vulnerability plans have been prepared by public utilities or MIH.	Consultative Workshop on Urban Water Supply
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	Presently there are only two autonomous water supplies (Phnom Penh & Siem Reap). These autonomous have full right in operation and investment of the business. They are independently making plan, invest and access loan to expanse the business. Other public water works are not yet autonomous, and although with operational discretion, the investment budgets are delivered through MIH/DIH, and not under full autonomy of the utility	Sub-Degree on the establishment of autonomous public water utility Phnom Penh and Siem Reap
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	All public utilities have annual business plan (expansion plan) but there most of them have no long term business plan. Except PPWSA has long term business plan, being reviewed with support from ADB. JICA is also supporting longer term business planning of a few public works.	Consultative Workshop on Urban Water Supply
User Outcomes	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	Reference to sub-degree No.52 on the establishment of autonomous water supply in article 10 point 7 mentioned that the autonomous has right to sell, buy, trade all kinds of property or stock share and allowed to access loan for medium and long period to operate the business. The autonomous utility an access loan from the bank once there is approval from BOD, and the rest cannot. However, since many public utilities are not yet autonomous and has no right accessing commercial finance the score was decided to be 0.	1. Sub-Degree No.52 on the establishment of autonomous water supply. 2. Expert Opinion
User Outcomes	UWS 27	Subsector	Is the subsector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	1	MIH targets only piped water supply as the national target (85% by 2018) and seems on track with current rate of progress. The universal access target for improved supply is on-track looking at existing trend line of JMP data.	JMP Update

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
User Outcomes	UWS 28	progress	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	More than 5 times	1	The quintile in urban area is 96%/61%= 1.57 for improved water supply; however piped water supply is more unequal with 88% versus 34% (hence larger than 2)	CSES 2011
User Outcomes	UWS 29	Equity of use	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	1	All public water supply provides an over 17 house per day, most supply 25 hrs per day	Overview on Urban Water Supply Sector, January 2012. TWG - JICA
ENABLING									
Policy	RSH 1	Sector targets	Are there subsector targets in the national-level development plan? For households and communities? Are there ODF targets?	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	0.5	There is a target set in NSDP for the rural access to sanitation 30% in 2015, 60% in 2018 and 100% in 2025. But there are no ODF targets	1. NSDP 2014-2018 2. National Strategy on Rural Water Supply and Sanitation 2011-2025, MRD
Policy	RSH 2	Sector policy	Is there a rural sanitation policy, that is agreed by stakeholders, approved by government, and publically available?	Policy officially approved and publically available	Policy drafted and agreed but not officially approved	No policy	1	There is national policy on rural water supply and sanitation, the policy was established by the government and publically disseminated in 2003. The policy was engaged with all stakeholders in the sector including development partners, leading sector agencies, and line ministries. As an overall policy instruments the directions are still valid, however, the implementation is lagging.	National Policy on Water Supply and Sanitation 2003

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	There is overall statement on the roles and responsibilities were defined from national to sub-national level. According to the D&D legal framework, local authority is the entity to take lead of local development and develop short term, medium and long term plan.. The implementation of D&D reform is still limited, although rural sanitation is now formally proposed to be assigned to sub-national authority. There are many actors in the rural water supply sector. MRD has no effective coordination strategy to work with relevant ministries, development partners, NGO yet. This is maybe due to limited support from political, lack of institutional capacity, insufficient budget allocations to specific sector institution. Although there is Prakas on the establishment of DRHC, PDRD and DORD but no detailed Term of Reference are developed.	1. Guideline of CCWC July 2010 2. VDC established 2010 3. Prakas establishment of DRHC 4. Prakas establishment of PDRD and DORD 5. Roles and Responsibilites of DRHC 6. MRD Functional review Report 2014
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)? State budgets=local government budgets	Coordination process defined and operationalized	Coordination process defined but not operationalized	Not defined/ no process	0.5	The ministry's process is based on the priority activity and at project level only. Ministry has teams coordinating multiple investment budget based on the priority needs/projects. But there is no sector-wide programmatic approach yet based on a national action plan. Normally the ministry creates project management unit (PMU) to coordinate any investment project. MRD also signs MOU with the NGO and DP to improve coordination, but no systematic system is in place that tracks and coordinates fund flow of domestic sources, development partners that are channelling through the budget, and NGOs that executed through parallel mechanisms. MRD has the TWG-RWSS which is the platform to coordinate development partners and government program and policies, but so far it does not support the coordination of funding to the sector. Fund flow is bilaterally coordinated between MEF, MRD and DPs. Coordination at Cambodia Development Council (CDC) level is happening to a limited extent. There is annual CDC Forum which is the highest level platform for gathering all DPs to look at priority development program proposed by the government, however has not taken place in recent years.	Consultative Workshop on Rural Water Supply & Sanitation

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	There is public investment plan (PIP) for 5 year – with a 3 year rolling plan, not linked to the sector target. It has been developed based on the annual budget allocated to the department. The PIP was done without need assessment and the quality is limited. MEF has encouraged to MRD should develop PIP even though MEF might not able to provide full funding but it is useful information for MEF knew what is the needs and help finding the development partners. .	1. Sector Investment Plan 2005-2015. Page8 2. Budget Strategic Plan 2012-2014 3. DRHC's PIP 2009-2013
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	0.5	MRD has established TWG-RWSSH on rural water supply and sanitation. The main roles of TWG are to follow up the progress of the sector through quarterly meetings and coordinate strategic inputs from development partners. Secretariat is understaffed, and no annual sector review takes place. There is no assessment for corrective measure of the sector performance. Joint Monitoring Indicators of the TWG reflect some activities between government and DP, but sector monitoring system is absent. There is WASH coordination meeting, with sub-groups, that supports information sharing, but they have limited involvement in TWG. MOP leads a mid-term review of NSDP for all sectors.	Consultative Workshop on Rural Water Supply & Sanitation
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	For the development of the national strategy for rural water supply and sanitation, HR needs were identified but not specific type of skill. Only the resource needs at local level were mentioned. Recruitment processes within MRD need MEF approval and do not necessarily reflect skill requirements. Functional mapping reports weaknesses in staffing, in quantity and quality.	1. National Strategy For Rural Water Supply and Sanitation 2011-2025 2. Functional Report of the MRD 2010
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	The national strategy clearly defined the need of financing yet but addressed that lack of financing. SDA estimate clearly specify a gap of US$6 million annually, however with a very high reliance of US$24 million from households that will require much higher funds for software and operational costs to actually materialize. Funding of software, demand promotion and other operational cost are severely inadequate. Partner mapping report for the rural water supply and sanitation sector showed that development partner and NGO support allocated for period of 2009-2015 is around $15 million per year (includes software, hardware and program costs), although with an increasing allocation to sanitation, although often implemented not through government	1. SDA financial analysis: budget 2. Partner mapping report 2013

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	0	As per the National Budget Law, multi-year budget should show the source of income from own source (state income) and income from external (including: investment subsidy, bilateral subsidy, and loans) and the expenditure for national level (ministries and provincial departments), and the expenditure for sub-national level (including: city, district, sangkat/ commune). The law also specifies the capital expenditure from abroad and capital investment with the available and not available budget. Related to the records of all the major source of external income, the Council for the Development of Cambodia (CDC) established the ODA database for development partners to provide information about their investments. Present, MRD has allocated budget 90% to rural road and less than 10% for rural water supply and sanitation. In principal, MEF can only increase budget 5% annually to MRD based on the GDP growth. It depends on the MRD itself to decide on increasing the budget for RWSS within the budget allocated from MEF.	1. National Budget Law 2. Consultative Workshop on Rural Water Supply & Sanitation
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 subsector on budget	Between 50-75% of funds to subsector on budget	Less than 50% of funds to subsector on budget	0	Currently there is no separate budget-line/account for rural sanitation. DRHC is responsible for capital investment only while the operational expenditure is in charge by department of admin and finance. With the introduction of the program-based budgeting this is expected to change. MRD has to put the budget plan propose on their PIP, although the government not able to provide the budget as proposed but will show it to other DPs to get their interest to support in some ways. The national budget allocated for rural water supply and sanitation sector is about $11.12million from 2008-2013, and it includes major development partner funds (like loans), but does not specify very well hardware versus software costs. However, due to lot of NGO involvement in the sector, a large fund allocation remains of budget (including technical assistance).	1. ODA http://cdc.khmer.biz 2. Investment budget 2009-2011 & 2013&2015 3. The progress report of WSS sector issued by MRD on January 2013.
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	Based on the national budget law provided to MRD from 2009-2011 showed that the expenditure of domestic funds work well, at national level 88% and provincial level 90% of total budget has expensed. This is because the budget allocated to MRD normally late on quarter and provided only recurrent budget and some subsidy budget for social fund. Sometimes the budget approved has been use for other priority purposes out of the plan as well. Other bottlenecks reported with the use of domestic funds, especially at local level relate to the uncertainty if and how software costs can and should be budgeted and reported against. The familiarity with "capital investments" at local level, makes it difficult for communes to take on more social services that require development expenditure to be focussed on software	Budget law vs. actual expenditure from (2009-2011)

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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%	1	There is no reference document but from each department and some development partners like Unicef, ADB has mentioned that the external fund spent on time and at least 75%. However, normally, the project start up is slow disbursement and quick after the project started.	Meetings
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	There is no consolidated financial report for all resources. In practice each department has own finance officer and report to department of finance. Development partner expenditure is not included in national chart of accounts, and thus reporting is incomplete.	Consultative Workshop on Rural Water Supply & Sanitation
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	The procedures were clearly defined from national to local level. Presently the commune, district are developing investment plan sand receive an allocation of the annual national budget to implement the activity but still very small amount. Communes and districts receive funding (CSF is 2.8% of national revenue), and D/M fund is 0.8% of national revenue DM fund) based on allocation mechanism. So far, sending on rural water and sanitation is not a priority item. National funding through MRD is allocated to different PDRD, normally based on the bottom-up work plan preparation. However procedures are not standardized and systematically applied	1. Commune/ Sangkat Law 2. Investment Plan of District level 3. Investment Plan of Commune Level
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	The national budget law has the mechanism for allocation budget to all ministries based on the GDP growth and prioritized sectors. MRD is one of the priority ministries. However, the budget allocated from MRD to subsector has no criteria and is not systematically applied. WSS received less than 10% of total budget allocated to MRD. There is no documentation on the criteria (or formula) had been determine but in practice DRWS use budget to implement the activity by rotation method. The foundation criteria are population density, poverty rate, presence of NGO/DP, diarrhoea rate, remote area, and low WSS coverage. In strategy of rural water supply and sanitation indicates the need but need to develop into guideline.	Consultative Workshop on Rural Water Supply & Sanitation
Equity	RSH 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	Normally DRHC and PDRD implement the program based on priority activity and on ad hoc manner because of limited national budget allocated compare to the huge needs. Presently, at provincial level does not have well developed plans aligned with sector target. There is not a lot of bottom up planning happening with districts and communes, and there are no systematic reviews whether plan and implementation are supporting the reduction of inequalities, also largely due to absent monitoring systems	Consultative Workshop on Rural Water Supply & Sanitation

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	DRHC has no real-time reliable M&E system to capture the annual increase and usage of improved sanitation, as well as verified ODF villages. The target of 100% universal access would require an acceleration in the number of new facilities that are developed, as well as a verification and follow-up process to ensure ODF sustainability. Based on current trends, trend need to accelerate 4-5 fold.	Cambodia M&E Situation analysis for rural WASH; national survey data CSES, DHS
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	There is no comprehensive study the need of human resources, skills, and materials to implement the program at scale yet. Capacity building efforts are taken up by variety of different NGOs and development partners, sometimes using each other's materials. However there is no national capacity building framework or curriculum that is consistently used, neither is there an overarching Communications strategy and tools, that are widely adopted and endorsed by MRD. Such national BCC strategy is now in development, including the identification of gaps.	1. National Strategy for Rural Water Supply, Sanitation and Hygiene 2011-2025 2. Concept Note on BCC strategy development 3. Various tools and materials by different partners
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	0	The DRHC does not have M&E system in place to track access and ODF achievement, as well as other critical management information to improve program implementation. Data is mainly received from DPs & NGOs, KAP and Census/ Surveys, where definitions are not always well aligned or sample sizes are small and provide no geographical granularity. The CDB has sanitation access but is reportedly not a very accurate source and only updated annually. With help of UNICEF, GSF and WSP, and other partners rural sanitation monitoring system will be developed	1. Cambodia M&E Situation analysis for rural WASH;
SUSTAINING									
Market	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	0.5	The MRD does not have standard for latrine designs, quality level of service. Although important cost reductions have taken place due to innovation of several NGOs that are active in sanitation marketing, the price and unaffordability of a desirable shelter are still barriers. Experience with microfinance products for sanitation is emerging, as affordability is still a big challenge for the poor. As per the estimation from DRHC, sanitation marketing and supply chain support is now almost reaching to all district of150/185 total districts.	WSP (2014) Lessons from sanitation loans through Microfinance institutions GSF (2014) Evaluation of microfinance for sanitation in Cambodia .

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
Market	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	The sanitation product design was driven by NGO with collaboration with MRD. Scaling up of sanitation marketing initiatives have shown that business capacity to deliver can be patchy and sometimes insufficient to deliver on increased demand. Private sector remains reliant to some extent on external support to manage certain aspects of the supply chain (sales, coordination, etc.). Further cost reductions, especially for shelter or solutions, and private sector capacity (including mason) building is expected to be needed.	WSP Lessons from Sanitation Marketing in Cambodia (2013) WSP Sanitation Supply and Demand assessment (2010) Reports by iDE and WaterSHED as per their websites
Market	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	The national policy on rural water supply and sanitation 2003 addressed the important roles of private sector in development of the sector. To now, MRD has no specific mechanism to attract private sector invest in the sector yet. However, the government is working with NGO partners providing technical support and capacity building to local private sector, and currently a review is ongoing to look at the best options and platforms for government to proactively facilitate a larger role of private sector actors	National policy on rural water supply and sanitation 2003 Dalberg (2014) inception report of sanitation marketing review; interim report
Market	RSH 23	Management of Disaster Risk and Climate Change	Do rural service providers [local government] 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.	0.5	National committee for disaster management has not yet budget allocated at local level to prepare for disasters, but only carries out post disaster activities, including providing WASH services in emergency situations. Private sector providers are typically not very present in areas that are vulnerable to sever flooding as suitable solutions are costly, demand is low, and knowledge on what designs work well is not widespread. This will continue to be an area for future investigation, as floods are likely to increase due to the impact of climate change	Consultative Workshop on Rural Water Supply & Sanitation Presentations prepared on challenging Environments as part of the WATSAN coordination meeting (IDE, Engineers Without Borders, Live and Learn)

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	Commune and SangkatFund allocated to commune level is mainly spend on roads and public infrastructures; although this can be spend in support of sanitation, with support of CCWC, guidance is often missing on how communes can best plan and execute this fund; or in case communes wish to include sanitation as a priority, it anecdotic ally does not yet translated into the annual district plans. UNICEF has allocated earmarked funding for 60 communes, ($ 2000), to carry out local wash activities.	1. Guideline for commune to implement the WASH (UNICEF) 3. District and commune investment plan 4. Budget law 2013
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	0.5	Some guidelines and instruments have been developed to stimulate uptake of rural sanitation services and behaviours by households. MRD recently issued a CLTS and ODF verification guideline that stimulates villages and communes to reach ODF status. In terms of incentives, the Strategy discusses the cautious use of hardware subsidies; however in reality fragmented approaches are being implemented, with some innovations of output-based aid to targeted poor households (EMWF) as well as approaches where subsidies are broadly provided to either entire villages (WB Ketsana) or large parts of the Community (ADB RWSSP2). A more detailed guidance and consistent implementation would support coherence under a future national program	1. CLTS and ODF awarding guideline 2. Hygiene Promotion guideline 3. Concept paper on national BCC strategy 4. Discussion among sector experts
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	0.5	Already affair amount of formative research has been carried out to understand the drivers and barriers for sanitation behaviours), including a widespread KAP survey in 2011, as well as a rural sanitation consumer adoption study by WaterSHED in 2012. Currently MRD is reviewing all these evidence to bring this under a consolidated BCC strategy and identify gaps for future research and tool development. Other evaluations have provided valuable insights in what drives households to change behaviour and for communities to achieve and sustain ODF	1. KAP survey (2011) 2. Unicef CLTS evaluation report Multiple project reports and tools as available from individual organizations (on watsan google docs) 3. BCC strategy development for concept note 4. Rural Consumer Adoption Study, WaterSHED

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
User Outcomes	RSH 27	Subsector	Is the subsector on track to meet the stated target?	On-track	Off-track but keeping up with population growth	Off-track	0	Based on the progress achieved on rural sanitation sector JMP 2014 update states 25% access. Although the trend since 2010 seems to be increasing (and CIPS reports 37% access in rural areas), the existing trendline is off track to achieve the 100% access by 2025	1. CIPS 2. JMP report updated 2014
User Outcomes	RSH 28	progress	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	More than 5 times	0.5	Based on the social economic survey, the quintile ratio between poor and rich is 4.91, it showed still have big gap. Quintile ratio: 59% versus 12% = 4.91	CSES 2011
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	JMP 2014 update illustrates 25% of rural Cambodians have access.	1. JMP report 2014 update
ENABLING									
Policy	USH1	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	NSDP states a target of > 80% having impoved acces sin urban areas by 2018. As part of the SDA discussions, MPWT agreed to use 100% improved access as a 2025 target, while agreeing on an ambitious target where 50% of urban households would need to have access to sewer and treatment systems. No formal; targets are identified for level sewerage and septage management	1. NSDP2014-2018
Policy	USH 2	Sector policy	Is there an urban sanitation policy that is agreed by stakeholders, approved by government, and publically available?	Policy officially approved and publically available	Policy drafted and agreed but not officially approved	No policy	1	The National Policy on Water Supply and Sanitation was developed and publically disseminated by the government in 2003, there was participation from development partners but not widely published. It needs to be noted that a policy document is not law; hence the institutional linkages that have been listed here are not statutory	National Policy on Water Supply and Sanitation 2003
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	The 2003 policy defined the roles and responsibilities of the key levels of administration. However there is no comprehensive legal framework for the urban sanitation sector (no law). The Prakas on the establishment of sub-national public infrastructure and engineering department (SNPIED) was issued by the MPWT in July 2011. This department is not fully operationalized, as it remains under resourced and staffed. .	1. National Policy on Water Supply and Sanitation 2003 2. Prakas of establishment of SNPIED

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	Normally the ministry creates project management unit (PMU) to coordinate any investment project. MPWT's PIP should be a vehicle for better fund coordination, however there is no sector wide approach and coordination mostly takes place at the project level. The TWG on Infrastruture, chaired by MPWT does not extensively discuss urban sanitation; the sub-TWG chaired by MIH on urban water supply has not yet formally adopted urban sanitation	Roles and Functions of TWGs October 2010 PIP2012-2014
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	There is no strategic long term investment plan for urban sanitation yet. In practice, the existing Project implementation Plan,is project driven. A master plan for urban sanitation for Phnom Penh is under preparation, with JICA support	PIP2012-2014
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	There is no joint annual review process. Review of progress sis done on the project basis not at the sector level.	Expert Opinion
Planning	USH 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	There is no sector assessment on human resource needs for urban sanitation. The department in charge for urban sanitation has newly established and no resource and capacity to do it yet.	Expert Opinion
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	Urban sanitation is a responsibility of the Sub National Public Infrastructure and Engineering Department. Budgets for urban sanitation are difficult to identify and no subsector targets exist for treatment of fecal waste. Hence this is scored zero. In addition, the SDA costing model assumes a large gap of almost US$80 million, (due to ambitious targets)	1. SDA financial analysis: budget 2. Investment budget from National Budget

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	0	According to National Budget Law the source of income from own source (state income) and income from external (including: investment subsidy, bilateral subsidy, and loans) and the expenditure for national level (ministries and provincial departments), and the expenditure for sub-national level (including: city, district, sangkat/commune) needs to be clearly	National Budget
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 subsector on budget	Between 50-75% of funds to subsector on budget	Less than 50% of funds to subsector on budget	1	The records of all major sources of external income, the Council for the Development of Cambodia (CDC) established the ODA database for development partners to provide information about their investments. In national budget book, the data of capital investment from main development partners has been recorded over 75% except the some investment budget for technical assistance was not reported.	1. ODA database 2. National Budget
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	The domestic fund is recurrent budget that government allocated to ministry annually. Over 95% of the domestic fund has been spent and normally the budget allocated to ministry is late 1 quarter. On the other hand, the domestic fund is very little amount.	National Budget
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	No data available on external project utilization in last 3 years	No data
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	The report of budget expenditure was not consolidated in one report, and does not include development partner fund. PMU records budget by project only, but the SNPIED will be able to separate expenditure between road and sewage system in future budget breakdowns.	Consultative Workshop on Urban Sanitation
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	0.5	There is no procedure that clearly defines the procedure for allocating budget. The current waste water treatment units that are under the control of MPWT have to prepare and propose the annual budget plan to MPWT. For Phnom Penh, the waste water management unit is mainly supported and under the control of Phnom Penh municipality. Local communities are not well consulted and often refuse to connect to sewer systems	Consultative Workshop on Urban Sanitation

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
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	0	See above ; there is no consolidated national budget that records capital spending at the provincial and utility level	Expert Opinion
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	0.5	Up to now, there is no specific policy to subsidize the poor to get access to the sanitation service, only on a case by case basis according to the availability of the project. In practice, tariff for sewage connection and monthly service fee based on the household income and location. Two waste treatment units (Sihanoukville & Siem Reap) have plans to offer special low cost connections for the urban poor. Other than sewers and WTTP, MPWT is not concerned with managing on-site sanitation through fecal sludge management, or with eliminating open defecation	Consultative Workshop on Urban Sanitation
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	When looking at on-site improved sanitation access, the current trendline will achieve the 2025 target of achieving universal access. In terms of putting sufficient sewer and treatment capacity in place, the proposed target of 50% seems unrealistic given the existing low levels of treatment (estimated at 2%)	JMP Update 2014 Cambodia Water and Sanitation Sector review – World Bank 2013
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	There are only two functioning waste treatment systems in the country as per 2013. Few larger urban towns have collection system (combined drains mostly) but not treatment system and capacity is very limited. Based on the SDA study from 4 systems (Phnom Penh, Siem reap, Sihanoukville, Battambang) showed that maximum of 40% of effluent discharged is being collected, however the level of treatment is around 5-7% for these towns. At national level, including all the smaller urban district and provincial capitals, this means that treatment of fecal waste is around 2%.	SDA Calculations for Siem Reap, and Sihanoukville based on data provided by MPWT. Cambodia Water and Sanitation Sector review – World Bank 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	There are no well-defined sector targets and M&E system to evaluate the progress and achievement of the sector yet. It has been done at project level. In practice, the waste treatment system in Siem Reap and Sihanoukville have some M&E system but quality of data is low. However, lessons learnt from these two units can be applied in other provinces.	Expert Opinion

Building Block	No	Areas of evidence	Indicator 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 faecal 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	Based on the waste model calculation by SDA from 4 major towns provinces showed that the level of waste collected and treated is very low only 7%, while the rate of collection of waste is higher at 41%	SDA Calculations - Waste Model Calculation.WSP
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	1	The sewage treatment systems were built by donors and government funds. Currently the revenue of two public waste treatment units is not able to cover 100% of cost recovery yet as it has been newly established and operation is not full capacity yet. It was stated that income has covered 88% of cost and will be able to cover 100% in the near future.	Income and Expenditure from 3 waste units (Sihanoukville, Siem Reap, and Battambang) Consultant workshop
Maintenance	USH 22	Discharge	Are there norms and standards for wastewater discharge for septage 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	The MPWT has established one central lab (in Siem Reap) and will be used it as the national lab to control all service providers. At two waste treatment systems in Sihanoukville and Siem Reap has own lab but not regularly controlling. The Ministry of Environment also conduct annually monitoring but the level of actual monitoring and enforcement is weak	Expert Opinion
Maintenance	USH 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	Most of existing waste system are old networks. There is no risk assessment on climate change undertaken for the sector as a whole, and neither have wastewater units put in place preventive and emergency action plans. However, in the feasibility studies and master plan, the impact of flooding is included in the project design.	Consultative Workshop on Urban Sanitation

Building Block	No	Areas of evidence	Indicator question	High (1)	Medium (0.5)	Low (0)	Score	Explanation for score	Source of evidence
Expansion	USH 24	Uptake		Policies and procedures (instruments) developed and being implemented	Some policies and procedures (instruments) developed but not implemented	No policies or procedures (instruments) exist	0	Some project-based examples can be found, such as that MPWT issued the recommendation to Siem Reap waste treatment unit to enforce the household connection to sewage system. There is also such internal guidance at Ministry level. It was implemented case by case. However, there is no communications program or incentives to stimulate uptake of urban sanitation. This relates to connections to sewerage but also for households to empty their pits and septic tanks with regular intervals.	Expert Opinion
Expansion	USH 25	Plans	Has government (national or local) developed any policies, procedures or programs to stimulate uptake of urban sanitation services and behaviors by households?	Business plans for expansion of collection & treatment being implemented	Business plans for expansion of collection & treatment under preparation	No Business Plans	0.5	The waste treatment service providers are under the MPWT control. There is no private service provider investing on sewage treatment system yet. Before establishing the two waste sewage treatment systems, the donor has conducted the feasibility study which included the business plan. As per the national budget plan, expansion of sewer and treatment capacities are planned.	.1. Expert Opinion 2. National Budget: Investment budget 2013-2015
Expansion	USH 26	Private sector development	Do government/service providers have business plans for expanding the proportion of citywide fecal waste that is safely collected and treated?	Yes, various components	In development, few components	No	0	The MPWT has no any concrete strategy to engage the private sector to engage in urban sanitation service delivery (either in the Operation and management of WWTP, or as in supporting the collection and transport of septage) However, government is open to PSP, and some private sector study is underway for Sihanoukville.	Expert Opinion
User Outcomes	USH 27	Subsector progress	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?	On-track	Off-track but keeping up with population growth	Off-track	1	JMP 2014 states 83% improved access and thus on track to reach universal access by 2025.	JMP updated report 2014
User Costumer	USH 28	Equity of use	Is the subsector on track to meet the stated target?	Less than 2 times	Between 2 and 5	More than 5 times	1	Based on CSES report 2011 shows the ratio of improve urban sanitation access quintile is 97%/58%=1.67. However inequality persists with 36% of the poor practising open defecation, while all of the richest quintile have an improved toilet.	CSES 2011
User Costumer	USH 29	Use of facilities	What is the ratio of improved toilet access between the lowest and highest quintile in urban areas?	More than 90% of people	More than 75% of people	Less than 75% of people	0.5	JMP 2014 states 83%	JMP 2014

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 (CAPEX) from 2012 to 2025. It discusses the sources, adjustments and assumptions of the following information: Exchange rates, demographic variables, sector-specific technologies and spending plans.

Exchange Rates

Budgets and project costs in Cambodia are frequently presented in both riel and US dollars, and even historically (from 2009 on) use an exchange rate of 4,000 riel to 1 US dollar. This rate has been used to convert riel to US dollars. Other amounts (for example amounts expressed by development partners in their own currencies) were converted using a constant exchange rate at the time the information was obtained (Oct 2012—March 2013).

Demographic and Access Estimates

The main demographic variables in the SDA financial model are rural and urban population estimates or projections for 1990, 2012, and the target year (2025). 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 2013 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.
The average household size (4.8 persons) was drawn from official government figures.

Table A2.1. Population (millions) and access to improved water supply and sanitation 1990, 2010, and 2025 used for SDA Financial model

Region	1990 Estimated			2012 Estimated			2025 Target		
	Pop	Access		Pop.	Access		Pop.	Access	
		WS	SAN		WS	SAN		WS	SAN
Rural	8.3	20%	0%	11.3	66%	25%	11.4	100%	100%
Urban	1.2	32%	18%	3.1	94%	82%	6.1	100%	100%
National	**9.5**	**22%**	**3%**	**14.4**	**71%**	**37%**	**17.5**	**100%**	**100%**

Source: Access data from JMP (2014) –progress on Drinking Water Supply and Sanitation - Update 2014; Population date in 2012 and prediction for 2025 from National Institute of Statistics (2011); access targets for rural water supply and sanitation from the National Rural Water Supply Sanitation and Hygiene Strategy and for urban subsectors agreed with stakeholders during SDA process.

Table A2.2 Selected information on water supply.

Option	Distribution of facilities (2012, %)[a]		Projected distribution of facilities (2025, %)[a]		Unit capital cost ($/capita)		Lifespan (years)
	Rural	Urban	Rural	Urban	Rural	Urban	
Piped into dwelling/yard for rural schemes	8%	-	8%	-	35	-	15
Piped into dwelling/yard for urban schemes	-	74%	-	9%	-	117	25
Tube well or borehole	72%	18%	72%	6%	21	21	10
Protected dug well	20%	7%	20%	4%	16	16	10
Improved rainwater	0%	1%	0%	0%	16	16	5
Total	100%	100%	100%	100%	-	-	-

[a] *Expressed as a relative share of population that have access to improved source as per JMP; and in target year*

Sector-Specific Technologies: Water

Information on sector-specific technologies, unit costs, and expected life span are necessary for the calculation of investment requirements. Table A2.2 presents data on the variables mentioned above for water supply.

The options included and technology shares for 2012 were based on the technology shares reported in the Cambodia Socio Economic Survey (2011/2010), and were then applied to the JMP access rates for 2012[90]. Given the absence of documents, the distribution of water supply technologies for 2025 was based on SDA stakeholder guidance. For urban water supply, this meant that piped water supply services are expected to increase. For rural water supply it meant that the distribution of the technology mix was held constant.

Unit capital costs represent expenditures for materials and labour used in the construction of the different facilities while lifespan refers to the projected number of years before a facility needs to be fully replaced. For urban water supply, the information was based on estimations from the Norith treatment and expansion project[91]. On the other hand, unit costs for rural water supply were based on estimates from MRD for point source services, and for piped services, a weighted average was used of MRD estimates for small community based piped systems, and small-scale private sector based schemes (using data from the Cambodia country study on private sector investment in water supply, see Sy. J. et al, 2013). Lifespan were taken from estimates provided by government.

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.

[90]For rural water supply this might have led to underestimation of the investment costs, as for rainwater, only government definition of improved was included (> 3000 l tank available), while the overall improved access levels of JMP 2014 were used (that include all rainwater as improved). However, this underestimation is not likely to have a major impact on the overall findings and narrative with respect to sector financing.

[91]This estimate is based on the cost for the Niroth project, which was said to be around 200 USD/capita overall, covering 600,000 people costing US% 120 million. However to get a more realistic figure for expansion of urban services outside of Phnom Penh, expensive land costs (US$20 million), industrial treatment capacity (US$30 million), reduces the amount to around US$70 million for 600,000 people, which is USD 117.

Sector-Specific Technologies: Sanitation

Table A2.3 presents information on the expected household technology distribution, costs and lifespans of key sanitation technologies.

The options included and technology shares for 2012 were based on the technology shares reported in the Cambodia Socio Economic Survey (2011), and were then applied to the JMP improved access rates for 2012. Given the absence of documents, the distribution of sanitation technologies for 2025 was based on SDA stakeholder guidance. For urban sanitation, an explicit target of 50% of those with improved access requiring sewer and treatment systems was set. For rural sanitation it meant that the distribution of the technology mix was held constant, as most people anyway use a soak pit or basic septic tank.Unit capital costs represent expenditures for materials and labour used in the construction of the different facilities (excluding the superstructure/shelter) while lifespan refers to the projected number of years before a facility needs to be fully replaced. Costs of septic/pour flush latrine in rural areas was based on the expectation that one in ten rural households would have a more expensive septic tank, as compared to a cheaper lined wet pit[92]. Costs of pit latrines (mostly build with natural materials) were estimated to be low. Rural households that are somehow connected to simple sewer and/or decentralized treatment system in rural markets were estimated to have a higher per capita cost, as derived from data shared by BORDA[93]. For urban sanitation, a rough benchmark estimate as derived from the World Bank Cambodia Water and Sanitation Sector review of US$250 for low-cost treatment and sewer systems was used as an estimate. Lifespan figures were discussed with sector stakeholders.

Table A2.3 Selected information on sanitation technologies

Option	Distribution of facilities (2012, %)[a]		Projected distribution of facilities (2025, %)[a]		Unit capital cost ($/capita, 2012 prices)		Lifespan (years)
	Rural	Urban	Rural	Urban	Rural	Urban	
Pour flush connected to sewer / DEWAT rural	2%	-	2%	-	60		9
Pour flush connected sewer plus treatment urban	-	50%	-	50%	-	250	35
Pour flush connected to septic tank/soakpit rural	95%	-	95%	-	20		
Pour flush connected to septic tank/soakpit urban	-	49%	-	49%	-	45	15
Pit latrine with slab	3%	1%	3%	1%	5	5	3
Total	100%	100%	100%	100%	-	-	-

a Expressed as a relative share of population that have access to improved sanitation as per JMP; and in target year

[92]As per WSP Economics of Sanitation Study (2012), a septic tank costs US$215, and a wet lined soak pit around US$118. WB and ADB project cost for soak pit are estimated at US$80 million. Thus, and average of US$80 has been used for a wet-pit; and the lifespan is expected to reflect the average between septic tank (15 years) and wet lined pit (8 years) is weighted average is 9 years.
[93]BORDA brochure estimates US$50,000 for a facility of 250 households; which is around US$200 per household or US% 40 per capita (BORDA / GRET Tra Peangsap project brochure); in addition additional US$20 per capita is added to allow for pre-treatment/settling tank.

In addition to the capital expenditure for developing new urban sanitation services (that contribute to overall access), for urban sanitation additional average annual cost had to be calculated to cover for the lagging treatment capacity of those that are already having on-site access, with connections to sewer/combined drains. A ballpark figure was calculated as follows:. As per CSES data, half of those with access are connected to a sewer, while 83% is estimated to have improved access as per JMP. Based on the 2012 urban population, this means that 1.3 million people need to get access to treatment facilities. Assuming that treatment facilities alone will cost at least USD100/per capita, the total conservatively estimated additional investment required to address the lagging treatment capacity is US$129 million over the period to 2025, which would be on average around US$9.1 million per year. This amount is reflected under "other investment costs".

Table A2.4 Estimated operations and maintenance costs for water supply and sanitation

Subsector	2012 O&M	2025 O&M	Average O&M
	US$m/year	US$m/year	US$m/year
Rural WS	2.7	4.1	3.4
Urban WS	4.1	9.9	7.0
WS total	**6.8**	**14.0**	**10.4**
Rural S&H	1.7	6.9	4.3
Urban S&H	5.6	13.5	9.5
S&H total	**7.3**	**20.4**	**13.8**

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, 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. Table A.2.4 below presents annual estimates of these costs in 2012 and 2025, and the average.

Table A2.5 Public investments in capital expenditure (million US$, annual average).

Sector	Domestic government	Development partners	Total
Anticipated (2013-2015)			
Rural water supply	0.9	5.0	5.9
Urban water supply	2.2	21.5	23.7
Rural sanitation	0.4	2.5	2.9
Urban sanitation	1.6	4.3	5.9
Total	**19.5**	**32.8**	**52.3**
Recent (2010-2012)			
Rural water supply	0.8	7.9	8.7
Urban water supply	2.4	24.4	26.8
Rural sanitation	0.2	1.6	1.8
Urban sanitation	0.3	5.3	5.6
Total	**3.7**	**39.2**	**42.9**

Investments

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, estimated capital investments of the government, donor agencies, NGOs, and private institutions from 20010 to 2012 were obtained from documents available from the Cambodian Development Council, development partners, and other agencies and complimented by direct consultations with many of them. Given limitations on time and resources, the SDA in-

vestment estimates should not be regarded as in-depth or highly detailed, but helicopter 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. At the time of SDA data-gathering, figures for 2012 actual expenditures were not available (they were estimated).

The overall approach to calculating investment requirements was to look at average annual calculate annual average requirements, minus an 'expectation' of average annual investment based that on the next three year investment (2013-2015) (which is extrapolated to exist in future years). Similarly, recent expenditures were average over a three year period (2010-2012). This resulted in the following information

Future Estimates of Household Expenditures

The planned spending of users is computed by specifying the proportion of investments that the government is households are expected to contribute. In the absence of an expressed policy or solid reporting, all users shares were discussed with stakeholders and simply provide a direction of what the expected contributions to capital expenditure are. For rural sanitation, these are highest due to the "cautious hardware subsidy policy". The figure is derived from estimating the population which is poor/eligible for public incentive to be average of 15% over period 2012-2025. The assumed hardware subsidy would be 50% of average cost of a toilet, this then computes the user share to be around 93% (85% of people pay 100% while 15% of people pay 50% of cost). It can also be seen that rural contributions to piped water supply are considerably higher due to less subsidies available and more private sector involvement, similarly they are expected to contribute a higher percentage to simple DEWAT systems in denser rural areas. Values of 99% are suggestion pure self supply and no subsidy from government (there is no option to use 100% in the model).

Table A2.6 Share of users in capital/development costs, %

Technology	Rural	Urban
Water Supply		
Piped into dwelling	60%	10%
Tube well/Borehole	20%	80%
Protected dug well	20%	99%
Improved Rainwater	99%	99%
Sanitation		
Pour flush to sewer and treatment	33%	1%
Pour flush to septic tank/ soak pit	93%	99%
Pit latrine with slab	99%	99%

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