MALDIVES WATER AND SEWER TARIFFS: CURRENT FRAMEWORK AND POLICIES

Contract No. EPP-I-00-04-00020-00
Task Order No. AID-383-TO-11-00001

May 2012

CONTENTS

ACRONYMS

DANIDA	Danish International Development Agency
ECRWS	Enhance Climate Resiliency and Water Security
EPA	Environmental Protection Agency, regulatory agency within MHE
GCC	Global Climate Change
GOM	Government of the Maldives
MEA	Maldives Energy Authority
MRf	Rufiyaa, currency of the Republic of Maldives
MVR	The International Organization for Standardization code for Maldivian rufiyaa
MWSC	Malé Water and Sewerage Company
NUL	Northern Utilities Limited
STELCO	State Electric Company
UNUL	Upper North Utilities Limited
USAID	United States Agency for International Development

SECTION 1
Background

The Enhance Climate Resiliency and Water Security in the Maldives project, or Maldives Global Climate Change (GCC), is intended to demonstrate the process and outcomes needed to allow island communities to maximize their opportunity to overcome impacts from global climate change. The project is providing assistance to the Government of the Maldives (GOM); island councils; regional utilities; the private sector; and residents of two islands (Hinnavaru and Dhidhdhoo) in the northern part of the country designated to become "climate resilient islands" with USAID assistance. The project's focus is based on climate-related risk-reduction associated with the development, use, and conservation of water resources in ways that are responsive to the environmental, social, cultural, economic, and governance context of the atolls. Maldives GCC is providing assistance for provision of water supply, sewerage, and solid waste services, and associated infrastructure. The overall objective and intended outcome of the project is to develop the knowledge, skills, and attitudes that island residents need to become stewards of their island environment and to make rational and informed decisions related to climate change adaptation.

A climate vulnerability assessment was conducted and documented in a separate report entitled *Climate Vulnerability Assessment – Islands of Dhidhdhoo And Hinnavaru, The Maldives* (CH2M HILL, 2012) using available climate data to assess the vulnerability of key services (e.g., water, sanitation, solid waste management) to the impacts of climate change. A second report entitled *Utility Service Delivery and Institutional Capacity Assessment – Islands of Dhidhdhoo and Hinnavaru, The Maldives* (CH2M HILL, 2012) documented the Utility Service Delivery Assessments and the associated institutional assessments for the islands of Dhidhdhoo and Hinnavaru. The Utility Service Delivery Assessment offered recommendations and action plans for the islands of Dhidhdhoo and Hinnavaru, with some qualitative assessment of the long-term affordability and financial sustainability of the proposed infrastructure alternatives.

SECTION 2
Objectives

The objectives of this assignment were as follows:

- Determine the current status of water and sewer tariff setting in the Republic of Maldives, and in the Northern Utilities Limited (NUL) and Upper North Utilities Limited (UNUL), as well as other mechanisms (e.g., subsidization) whereby current water delivery systems are funded (provided in this report).

- Analyze tariff options and other mechanisms to finance the operation and maintenance of each of the alternative water supply and sewerage infrastructure activities proposed in the prior assessment (provided under separate cover).

References throughout this report made to a year or fiscal year mean the calendar year beginning January 1 and ending December 31. Financial amounts that are reported in United States Dollars (USD or $) or Maldivian Rufiyaa (MVR or MRf) assume a currency exchange rate of 1.00USD to 15.35MVR.[1] Future amounts do not consider fluctuations in foreign exchange rates over time. Unless stated otherwise, capital and O&M expenses are reported in 2011 dollars. Findings are based on the best input information and assumptions available at the time of this report.

[1] http://www.google.com/finance?q=USDMVR#, accessed on May 7, 2012.

SECTION 3
Scope of Work

The following tasks were completed to determine the current tariff framework and policies:

1. Review the Utility Service Delivery Assessment prepared by the Maldives GCC project.

2. Review current legal requirements for water sector tariff setting in the Maldives and determination of the process for water sector tariff setting by utilities.

3. Review additional mechanisms whereby the capitalization and operations and maintenance costs of water production and delivery systems are financed, or other relevant cost-recovery mechanisms, e.g., subsidies, taxation, etc.

4. Determine the current status of water sector tariff setting for the NUL and UNUL, and other mechanisms, if any, for offsetting or recovering costs.

5. Based on information in the Utility Service Delivery Assessment, determine tariff rates sufficient to operate and maintain each (or each combination) of the alternative water supply and sewerage infrastructure activities proposed, including (a) 100 percent cost recovery, (b) 75 percent cost recovery, and (c) 50 percent cost recovery.

6. Make recommendations about the implementation and financial viability of different water infrastructure "packages" on each island, at 100 percent, 75 percent, and 50 percent cost recovery. These packages may be a blend of options suggested in the utility assessment.

Two related reports were prepared to summarize CH2M HILL's findings:

- This report on *Maldives Water and Sewer Tariffs: Current Framework and Policies* (Tasks 1 through 4).

- *Financial Analysis of Water and Sewer Sector Infrastructure Alternatives – Islands of Dhidhdhoo and Hinnavaru, The Maldives* (Tasks 1, 5, and 6).

This assignment was conducted with approximately 20 days level of effort, including travel time, field days in the Maldives, and preparation and writing of both reports.

SECTION 4
Current Situation

Dhidhdhoo (Dhivehi: ދިދުވ) is the capital of Haa Alif Atoll administrative division in the Maldives. The island lies on the northwestern tip of Tiladummati Atoll. Originally the island was 52 hectares, but after land reclamation in 2010 the island is approximately 85 hectares. The estimated population of Dhidhdhoo is 3,740, the largest population in the Atoll[2]. Population on Dhidhdhoo has increased in recent years at a steady rate of approximately 2.0 percent per year.

Hinnavaru (Dhivehi: ހިންނަ) is one of the inhabited islands of the Lhaviyani Atoll. Originally the island was 22 hectares, but after land reclamation in 2010 the island is 55 hectares. It has a population of approximately 4,500 with 715 registered households. Population data and growth rates available for the past decade through 2010 show a slow rate of increase with an annual average growth rate of about 0.6 percent.

The conventional water resources available on the islands are shallow groundwater aquifers and rainwater. Non-conventional water resources include desalinated water, bulk water imported by barge, and imported bottled water. The main source of drinking water across the Maldives is still rainwater; desalinated water is the main source in Malé (capital of Maldives) and several of the larger more developed islands.

In Dhidhdhoo, the existing desalination plant and distribution system through public taps is in disrepair and inoperable. In Hinnavaru, piped desalinated water is supplied to 4 non-domestic accounts and approximately 42 domestic accounts on a 24-hour basis, which equlas approximately 6 percent coverage for safe secure water provision. The main potable source of water on both islands remains rainwater harvested on roof tops.

The vast majority of homes on both islands utilize and/or have access to central utility services for electricity, cable TV, internet and telephone, but have essentially no central water supply services.

[2] Registered Statistical Yearbook 2010.

SECTION 5
Tariff Framework and Policies

Provision of access to safe water and an adequate sewerage system to people in the Maldives became a constitutional right for the first time under Article 23 of the 2008 constitution. Yet while proper policies are in place, compliance and enforcement are weak across the country, mainly due to a lack of technical and financial capacity for decentralized compliance with environmental and water management guidelines.[3]

5.1 LOCAL GOVERNMENT ADMINISTRATIVE DIVISIONS

Geographically, the Maldives are formed by 189 islands and 19 natural atolls plus a few islands and isolated reefs, which form a pattern from North to South. The local government administrative divisions refer to the various units of government that provide local government services in the Maldives, divided into seven provinces and one municipality as follows:[4]

- Upper North Province
- North Province
- North Central Province
- Central Province
- South Central Province
- Upper South Province
- South Province
- Capital City - Malé

The provinces act as an extension of the central government based in Malé for the convenience of dealing with regional affairs. Further, there are administrative subdivisions consisting of atolls, islands, and cities; each administered by their own local council, under the basic terms of home rule. This has led to some confusion about the purpose and authority of the various governance structures. Regardless, local governments depend heavily on central government transfers, which act as disincentives to local governments to respond to growing fiscal gaps.

The provinces and their related administrative divisions are reflected in the structure of the Maldivian Energy Authority (MEA) described below. However following the change in government in February 2012, it is unknown whether the current governance structure will be maintained.

5.2 MALDIVIAN ENERGY AUTHORITY

The MEA was established in 2006 to regulate energy and electricity tariffs, issue licenses for power generation, and set performance standards. The MEA is responsible for regulation of electricity, diesel power, renewable energy, gas, and oil.

Electricity is a public service: according to the constitution, the government has an obligation to provide this service. Any provider must be registered and have its tariff approved by the MEA. In order to be registered, the company's rules and regulations must be approved. Operating licenses are

[3] Adaption Fund, Increasing climate resilience through an Integrated Water Resource Management Programme in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Island, July 7, 2011.
[4] https://www.cia.gov/library/publications/the-world-factbook/geos/mv.html

granted as long as a provider meets technical requirements, has its system design approved, meets environmental requirements (regarding noise, vibration, and waste), and has its tariff approved.

Electricity is a well established utility sector with an effective culture. Many of the electric utility operations on the islands were established and operated by the State Electric Company Limited (STELCO) until the government reforms of 2009 transferred many island electricity assets and operations to the newly formed utility companies, including UNUL and NUL. The electric utility staff has portable management skills that are applicable to operations of desalination plants and sewer systems, particularly when power is required for the running of desalination plants.

5.3 UPPER NORTH UTILITIES WATER SERVICES

UNUL is a service provider established as a limited liability company serving the inhabited islands in the Ha, Hdh and Shaviyani atolls and serves a provincial population of around 59,000, including the population of Dhidhdhoo. It works closely with the island councils and the atoll council. It is responsible for electricity, water, sewerage, and solid waste. STELCO transferred assets to UNUL for electricity. UNUL is taking on projects to build water, sewer, and renewable energy capabilities.

The UNUL operations on Dhidhdhoo Island do not have a tariff for water or sewerage connections and are operated at a significant loss. There is some discussion about adding a sewerage charge in the future, but there seems to be significant resistance to this from the island residents. Without a dedicated source of funding to support the sewer operations, it is likely that this system will also fall into disrepair in the future.

5.4 NORTHERN UTILITIES WATER SERVICES

Like UNUL (and all of the other regional utilities), NUL is a service provider established as a limited liability company. NUL has a memorandum of association (MoA) that sets ofobjectives that are standard for all of the regional utilities. The MoA[5] appears to give NUL the power to accomplish these objectives although that power is not specifically stated in the document. Objective 3.1.1 is: Provision of electricity, water, sanitation and gas in a sustainable manner to the people of North Province. This objective does not include solid waste.

NUL does not have an approved tariff from the government, perhaps because the Environmental Protection Agency (EPA) is currently formulating tariff guidelines. The NUL has established the following water service charges.

Table 5-1: NUL Water Service Charges

No.	Description	Hinnavaru Tariff (MVR per m^3)	Hinnavaru Tariff (USD per m^3)
Water for Domestic Consumption			
	All consumption	150.00	$9.77
	Fixed monthly charge	30.00	$1.95
Water for Institutional Consumption			
	All consumption	180.00	$11.73

[5] It is unclear whether UNUL also has a MoA. Regardless, the legal and institrutional framework for both utilities (amd the other regional utilities) is the same.

Fixed monthly charge	30.00	$1.95
Water for Commercial Consumption		
All consumption	190.00	$12.38
Fixed monthly charge	30.00	$1.95

Hinnavaru households that are connected to the distribution system are charged a tariff of 150 MRf per cubic meter of water—more than double the average 70 MRf per cubic meter of water charged by MWSC in Malé. Unlike the other islands such as Malé that have increasing block tariffs, Hinnavaru's tariff is a uniform rate (the same at all levels of consumption). According to NUL representatives, these tariffs generate sufficient revenue to cover the operations and maintenance expenses for the water system only.

The NUL does not currently have a separate tariff for sewerage connections. In 2011, power for the sewer treatment plant and pump stations cost the contractor Shin Nippon MVR200,000 (~USD $13,000) per month and there is concern that the NUL cannot afford this amount going forward. During discussions with CH2M HILL in 2012, NUL managers suggested that they have cut back the level of service by cycling-off the plant in order to continue operations at a lower cost.

5.5 ENVIRONMENTAL PROTECTION AGENCY

The EPA is an independent legal regulatory entity, working under the supervision of a governing body under the Ministry of Housing and Environment. EPA is the regulator of water and sanitation, solid waste, the environment, and coastal resources. Its regulatory mandate includes enforcing standards and approving tariffs. Tariffs are reviewed and approved on a case-by-case basis according to the license agreements issued to individual utilities. There is not an established methodology for conducting these reviews.

The EPA is currently considering a "unified tariff" that would apply across the country. Unlike decentralized periodic tariff reviews that enable service providers to petition for tariff adjustments according to their individual license agreements, a national tariff scheme would be established and controlled by the central government. Without regular tariff increases, the financial stability of local providers would be quickly compromised by inflation. As such, the Malé Water and Sewerage Company (MWSC) does not agree with the unified tariff approach. For this and other reasons, the EPA's tariff policy has stalled and there is no timeline for its release.

5.6 MALÉ WATER AND SEWERAGE COMPANY

The MWSC was established in 1995 in Malé, the capital of the Maldives. With a management team funded by the Danish International Development Agency (DANIDA), MWSC was originally organized as a joint venture between the Maldives Government and shared between two Danish parties (HOH, Denmark, and the Industrial Fund for Developing Countries – IFU, Denmark). In 1998 the government bought back 100 percent of the MWSC shares. In January 2010, Hitachi Plant Technologies, Ltd., reached an agreement with the Maldives Government to take a 20 percent stake in the MWSC. Based on this agreement, Hitachi Plant Technologies participates in the operation of MWSC.

MWSC currently operates water supply and sewage systems on seven islands (Malé, Villingili, Hulhumalé, Thilafushi, Maafushi, Kulhudhuffushi, Dhuvaafaru) and it serves approximately 150,000

people or 45 percent of the entire population of the Maldives. MWSC has also acquired licenses for similar operations on six more islands, and is expected to further expand its business going forward. Originally, the principal objective of MWSC was to design, develop, operate, manage, and maintain the public water and wastewater collection and disposal system in Malé, but it since has expanded into all areas of engineering, contracting, and operations on multiple islands. The current MWSC tariff structures are as follows:

Table 5-2: MWSC Water Service Charges

No.	Description	Malé Tariff (MRV per m^3)	Maafushi Tariff (MRV per m^3)	Malé / Maafushi (USD per m^3)
Water for Domestic Consumption				
	0 – 100 liters	22.00	65.00	$1.43 / $4.23
	101 – 500 liters	70.00	75.00	$4.56 / $4.89
	501 liters and above	95.00	95.00	$6.19 / $6.19
	Fixed monthly charge	30.00	30.00	$1.95 / $1.95
Water for Institutional Consumption				
	All consumption	75.95	75.00	$4.95 / $4.89
	Fixed monthly charge	30.00	30.00	$1.95 / $1.95
Water for Commercial Consumption				
	All consumption	101.26	100.00	$6.60 / $6.51
	Fixed monthly charge	30.00	30.00	$1.95 / $1.95
Water from Kiosk				
	All consumption	100.00	NA	$6.51 / NA

The MWSC tariff structure is an increasing-block tariff for the domestic class, including a subsidized lifeline block for customers that use less than 100 liters per month. Institutional and commercial customers pay a uniform tariff. The tariff structure does not include a wastewater component, but wastewater costs are recovered through the water tariff.

The MSWC tariff review process is specified in individual license agreements with EPA, and conducted on a case-by-case basis. MWSC has requested tariff increases, but they have not been approved. Tariffs have not been increased since 1995. Instead, tariffs were reduced on two occasions. MWSC claims such reductions were due to its efficient operations, energy savings measures, and increased bulk water production. However, the second tariff reduction was requested by the Government of the Maldives and required compensation to MWSC for the reduction in revenue. It is estimated that the government now subsidizes roughly 5 percent of MWSC's total revenues.

SECTION 6
Alternative Funding Mechanisms

As the capital region in Malé has made enormous advances in water supply and sanitation, the focus is now shifting to the provinces, where small-scale water provision could be commercially viable. Commercial opportunities await for utility companies with the imagination to tackle problems in innovative ways, and the stamina to navigate the bureaucracy of both central and local governments. However, until there is a clear tariff-subsidy review framework together with changes in consumer attitudes and abilities to give water its proper monetary value, infrastructure investments are likely to fail in the near future. It may be that a water tariff system required to achieve full cost recovery is simply not be viable or sustainable (this analysis is described in more detail in the companion report *Financial Analysis of Water and Sewer Sector Infrastructure Alternatives – Islands of Dhidhdhoo and Hinnavaru, The Maldives*) and therefore a central government tariff-subsidy mechanism is required.

The Maldives does not impose any kind of income tax on its citizens and there are no corporate taxes or property taxes. In addition, there are no value added taxes, sales taxes, or similar taxes for citizens of Maldives. The principal sources of revenue consist of import taxes and tourism revenues—more than 90 percent of the central government tax revenue comes from tourism related taxes and import duties. Although the strategy for the future lies in devising an unconventional system of taxation (fiscal decentralization), with a clear link between taxation, fees, local budgetary autonomy, and functional assignment of central and local governmental responsibility, this is currently not a viable model for the Maldives. Potential sources of alternative funding through the local councils under the basic terms of home rule would be unprecedented. Evidence does not indicate that local funding (through property, ad valorem, or other forms of taxation) could realistically be accomplished as a source of alternative funding for infrastructure services.

The Maldives is at a critical juncture in its utility governance because the water utility tariffs on the islands and even in Malé have largely avoided increases over the last 15-20 years as a result of government subsidies in both the water and energy sectors. This is likely to change as the global pressure on liquid hydrocarbon fuel costs increases, diesel fuel being the primary source of energy and electricity on the islands. A resilient and sustainable pathway must include shifting towards alternative and renewable sources of both energy and water for the islands. These may include wind, waves, solar, and other sources.

SECTION 7
Institutional Strengthening

The setting of tariffs is one of the most important functions of a water and wastewater regulator. The regulator's task is to ensure that the consumer gets a satisfactory level of service at the lowest possible price. The 'lowest possible price' is the price which ensures that the service provider is both efficient and financially viable, while also safeguarding future sustainability of the water services and the environment. In the Maldives, another challenge is managing the balance between central government subsidies and self-sustaining local utilities. In the immediate future, tariffs and subsidies are likely to be jointly determined with the local utilities on a case-by-case basis.

To be effective in carrying out its tariff and subsidy setting mandate, EPA needs to have a methodology and set of procedures in place for tariff reviews. Institutional strengthening is required to develop a tariff and subsidy review methodology that clearly and transparently defines the methodology and procedures which EPA will use, and to train EPA staff on its implementation. This will strengthen EPA's regulatory role and inform the MWSC and the local service providers of EPA's approach and procedures. Once EPA gains training and experience with a common tariff review framework, a more detailed procedures manual can be developed. Such a manual should provide the detailed step-by-step guidance needed by EPA staff to carry out reviews with consistency, fairness, and efficiency. There may be an opportunity to develop EPA's tariff-setting process to be consistent with MEA's tariff-setting process (to be investigated further and beyond the scope of this report).

In addition to simply establishing tariff levels, determinations need to be matched by a commitment by the service provider to attain certain performance targets which are of direct relevance to EPA and utility customers. The task of EPA staff working on tariff reviews is not just to come up with the tariff and subsidy options but to make a specific recommendation about which option should be selected. The recommended option must balance the inherent tradeoff between tariff levels and service levels. Illustrative outcomes of this process include:[6]

- Outputs (including levels of service, performance measures and activities) and efficiency improvements required of the service provider
- Maximum tariffs to be charged for water and wastewater services
- Structure of tariffs to meet equity and efficiency objectives for defined customer categories
- Maximum connection charges for each category of new consumer and maximum values of other charges and fees
- Automatic tariff adjustment formula to account for inflation
- Operating and capital cost subsidies to be provided by the Government
- Rules for initiating the next tariff review

A monitoring system should allow for EPA to compile and examine the implementation of the performance measures by the various service providers, thereby ensuring that the service providers consistently work towards achieving output and efficiency targets that the EPA has

[6] Institutional Capacity Building of the Egyptian Water and Wastewater Regulatory Agency – Phase 1, Tariff-Subsidy Review Framework and Approach. Mott MacDonald, October 2009.

set in their previous tariff review. Thus a continual improvement framework is established that can help utilities understand improvement opportunities and explicit service levels, guide investment and operational decisions, form the basis for ongoing measurement, and provide the ability to clearly communicate with customers and key stakeholders.

SECTION 8
Conclusions and Recommendations

The Maldives central government tariff policies and procedures are in flux as the latest initiatives have stalled due to the current political uncertainty and disputes over the tariff-subsidy review framework and methodology.

Although the UNUL and NUL have transferrable technical and managerial skills to operate the water and sewer systems, they have failed to do so on the Island of Dhidhdhoo and to a lesser extent on the Island of Hinnavaru. The local councils do not appear to have the resources to independently provide full-scale water and sewer infrastructure operation, maintenance, and management services.

Historically, private utility service models have worked—including cable, telecommunications, and internet services, and, to some extent, the heavily-subsidized government model for electricity service. Although the MWSC may have the ability to balance utility services and appropriate tariff levels, its willingness to do so depends strictly on the commercial viability of the local utility.

Water and power sustainability are inextricably linked worldwide, but especially in the Maldives, where the most viable alternative to natural sources of fresh water is desalination—perhaps the most energy intensive source of supply. Expanded desalination would further strain the financial and technological sustainability of life on the islands and their essential services. Ultimately, financial sustainability and the appropriate tariff/funding and governance model for water and sewer utilities on Dhidhdhoo and Hinnavaru will depend on the social nature and the financial viability of the selected alternative(s) (rainwater harvesting, groundwater-wastewater reuse, desalination, or other innovative technologies) to provide resilient, long-term water supply and wastewater treatment.

To be effective in carrying out its tariff and subsidy setting mandate, EPA needs to have a methodology and set of procedures in place for conducting tariff reviews and establishing performance targets. Institutional strengthening is required to develop a process that clearly and transparently defines the tariff-subsidy-performance review methodology, the procedures that EPA will use, and the appropriate training of EPA staff for its implementation.

Provision of sustainable increases in potable water produced by locally based entities, will likely require some blend of re-structured tariffs, subsidies, taxation, local funding and other creative financing mechanisms, most of which are either poorly developed or unprecedented in the Maldives, and have not been used in combination to finance local water production. This topic will be reviewed more fully in the second report related to Tasks 1, 5 and 6 of this assessment.