National Cost Sharing Strategy for Water Supply and Sanitation in Bangladesh

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Local Government Division
Ministry of Local Government, Rural Development & Cooperatives
Government of the People's Republic of Bangladesh

National Cost Sharing Strategy for Water Supply and Sanitation in Bangladesh

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LIST OF ACRONYMS

ADB	:	Asian Development Bank
ADP	:	Annual Development Programme
ART	:	Arsenic Removal Technologies
BMDA	:	Barind Multipurpose Development Authority
BMSL	:	Basic Minimum Service Level
CBO	:	Community Based Organization
CC	:	City Corporation
CHT	:	Chittagong Hill Tracts
CHTDB	:	Chittagong Hill Tract Development Board
DALY	:	Disability-Adjusted Life Year
DBT	:	Decreasing Block Tariff
DPHE	:	Department of Public Health Engineering
ERC	:	Energy Regulatory Commission
GDP	:	Gross Domestic Product
GFS	:	Gravity Fed System
GOB	:	Government of Bangladesh
HDC	:	Hill District Council
IBT	:	Increasing Block Tariff
IEC	:	Information Education and Communication
LGD	:	Local Government Division
LGED	:	Local Government Engineering Department
LGIs	:	Local Government Institutions
LPCD	:	Liter Per Capita per Day
MDG	:	Millennium Development Goal
MIS	:	Management Information System
MLD	:	Million Liter per Day
MoLGRD&C	:	Ministry of Local Government, Rural Development and Cooperatives
NGO	:	Non Government Organization
NRW	:	Non Revenue Water
O&M	:	Operation and Maintenance
PDB	:	Power Development Board
PSF	:	Pond Sand Filter
PSU	:	Policy Support Unit
PWSS	:	Piped Water Supply System
RC	:	Regional Council
REB	:	Rural Electrification Board
RWHS	:	Rain Water Harvesting System
SDF	:	Sector Development Framework
SDP	:	Sector Development Plan/Programme
SST	:	Shallow Shrouded Tubewell
TLCC	:	Town Level Coordination Committee
TW	:	Tube Well
UfW	:	Unaccounted for Water
UNICEF	:	United National Children's Fund
UP	:	Union Parishad
UPI	:	Unit for Policy Implementation
VSST	:	Very Shallow Shrouded Tubewell
WASA	:	Water Supply and Sewerage Authority
WHO	:	World Health Organization
WQ	:	Water Quality
WSRC	:	Water and Sanitation Regulatory Commission
WSP	:	Water and Sanitation Programme
WSS	:	Water Supply and Sanitation

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PREFACE

The issues related to expansion of WSS services, achieving financial viability and sustainable service delivery system have long been discussed in Bangladesh. Despite having constraints the government has prioritized water supply and sanitation in its development agenda and been continuing policy and institutional supports to the sector development. But we have not yet been able to achieve desired level of development in the sector. Considering the need of establishing people's right to access basic services, we have to improve service delivery system, demonstrate creativity and efficiency in technology development and management, and above all, make sure that every people of our country have access to improved WSS services. In order to achieve those, the sector has to reduce dependency on public resources and foreign aid and to be financially self-sufficient as soon as possible. Private sector participation has also to be encouraged besides the government to facilitate service level improvement.

Importance of WSS in basic public services is unbound. Although natural and environmental problems like global climate change are mostly responsible for scarcity of safe drinking water, we cannot deny our responsibility of lacking self-realization and willingness to establish improved and sustainable system, using water resources in unplanned manner, lacking adequate capability of system operation and maintenance, and maintaining transparency and accountability in institutional management. Improvement of sanitation services is constrained due to failure in demonstrating economic viability of the sanitation system, growing urbanization and inability to modernize the system. This is also due to lack of integrated approach in developing appropriate technology and weaknesses in political commitment and institutional capacities to achieve financial self-sufficiency through adopting a balanced cost recovery mechanism. We feel encouraged that these constraints are now acknowledged in the government's policies and legal frameworks and emphasized that WSS services have to be considered social as well as economic commodity. Creating commercial and competitive market of the WSS services are also emphasized to sustainably overcoming the prevailing problems.

The preparation of the cost sharing strategy for WSS sector is an important-most initiative. I think this has been developed addressing the need of sustainable improvement of the service delivery system and delineating the ways and means of balanced cost recovery of services. I sincerely thank Policy Support Unit (PSU) to undertake such tough but committed initiative for developing the strategy. Now indeed, we need to ensure effective implementation of the strategy without further delay.

Abu Alam Md. Shahid Khan
Secretary

ACKNOWLEDGEMENT

Commendable successes have been achieved meanwhile in the WSS sector in Bangladesh. Nevertheless, internally the capacity of the sector to become economically viable, reducing external aid dependency and responsiveness to the consumer demand for service level improvement remain questionable. These problems are critically analyzed in the national government policies related to water supply and sanitation. The cost recovery modalities, equity and social justice in service planning and cost sharing among the unreached and poverty-prone communities irrespective of rural, urban and hard-to-reach areas, affordability of consumers and financial sustainability of the service delivery systems are highlighted in the policies. The National Policy for Safe Water Supply and Sanitation 1998 has recommended for a uniform cost sharing strategy and it pointed out that "water supply and sanitation services have to be provided on the basis of users' demand and cost sharing". This was followed through the preparation of a draft cost sharing strategy in 2005 jointly by DPHE, Dhaka WASA and UPI under the leadership of the Local Government Division. The draft strategy has been used for development of the final strategy in 2010 and formally approved by the National Forum for Water Supply and Sanitation in its 13th meeting (dated 23 March 2011).

The initiative for the preparation and finalization of the cost sharing strategy was taken under the leadership and guidance of the Secretary, Local Government Division. We are obliged and grateful to him for his enormous support and contribution in it. We are also grateful to Begum Zuena Aziz, Joint Secretary (WS) of Local Government Division for her sincere cooperation and encouragement in the task process. A Working Group was established under the Sub-Committee 2 of the National Forum for Water Supply and Sanitation with an aim to oversee and provide guidance to the entire process of the Consultants' work for strategy development and stakeholder consultation. The Working Group was headed by Mr. Shams Uddin Ahmed, Deputy Secretary of the Local Government Division, and both the sub-committee and working group have contributed through membership representation from various government and non-government agencies, development partners and international organization. I am pleased to convey special thanks to all the departments, agencies and the participating officials in the groups.

Personally, Mr. Poul Erik Frederiksen, Senior Sector Adviser and Mr. Shajahan Ali, Governance Adviser of Policy Support Unit (PSU) has provided dedicated advisory and management supports to the Consultants all through the process of the strategy development. Other officials and staff of PSU who assisted consultants directly or indirectly for the work completion, I am very much thankful to all of them. The Consultants deserve thanks for their hard work and excellent piece of output delivered at the end.

PSU expects views and suggestions of the users and readers of the strategy, and I personally hope that those will be very much useful for the revision and necessary update of the strategy in future.

Thanking

Md. Shariful Alam
Deputy Secretary, Local Government Division
Project Director, Policy Support Unit

Section 1

BACKGROUND AND PURPOSES

1.1 Background

In Bangladesh, water is generally perceived as perpetual free gift of nature. The fact remains that it is becoming scarce, and which have certain economic value. Sanitation services such as sewerage[1], drainage and waste management, especially in the urban areas, are highly expensive and service coverage and levels are constrained due to its questioned financial viability. Given the context, many people still lack access to safe drinking water and sanitation in the country. The cost of under-provision is revealed in poor public health and financial costs of people making their own alternative arrangement.

The National Policy for Safe Water Supply and Sanitation 1998 of Bangladesh recognizes water as a social as well as economic commodity. Thus, an appreciation of the economic value of water is essential to reduce waste and loss, encourage conservation, and move consumption towards higher value uses. Urban expansion is far more complex and taking accelerated paces, while the cost of operation and maintenance as well as of extension is high but revenue regeneration remains very low. Shortage of funds because of low cost recovery is widespread in all kinds of water supply and sanitation systems, at every scale. This is due to lack of political wills and a combination of reluctance to charge fully for water supply, inefficiency in collecting revenues due, and failure to control water losses and wasteful use, and a continuous growth in the demand for services.

Sustainability is the other but single-most important issue in the water supply and sanitation sector. This has technical, institutional, environmental, financial, social, and economic dimensions. Economic sustainability requires that users pay the full cost of operation and maintenance, including environmental costs and the cost of replacing supplies in future. Financial sustainability requires that the system is able to meet its capital, depreciation, and operating and maintenance costs.

This strategy document is developed with a view to provide functional ways and to facilitate a uniform practice with reasonable flexibility regarding cost sharing for water supply and sanitation services in Bangladesh. Keeping targets of achieving financial viability of the sector services as well as sustainability of the delivery system, it contains relevant policy interpretation, economic pricing, tariff design approaches, and promotion of demand-responsiveness and strategies of gradual phasing out of subsidies, among others. This has also aimed to achieve standardized and sustainable service delivery system through enhancing a balanced cost sharing between users and service providers.

1.2 Cost-Benefit of Water Supply and Sanitation Services

According to WHO (2006), the benefit-cost ratios of Bangladesh in terms of achieving water supply and sanitation MDGs, the return on US$ 1 invested is estimated to be US$ 5.4. This return could be US$ 5.6

[1] Sewage is the effluent in a piped network. Sewer is the conduit – usually a pipe – used to carry off water and waste matter. Sewerage is the complete system of sewers.

for achieving universal coverage, meaning - the benefit from investments in water supply and sanitation in Bangladesh would be over five-fold. When comparing returns on only water supply and only sanitation, the return on sanitation is higher than water supply (i.e. US$ 3.7 for water supply and US$ 6.3 for sanitation).

According to the World Bank Environmental Country Assistance Strategy (2006), the cost of not having clean water and sanitation in Bangladesh, based on DALY (Disability-Adjusted Life-Years), which corresponds to only health benefits (direct and indirect), is estimated to be US$ 800 million per year. The WHO (2006) says that the direct, indirect and non-health benefits are equivalent to US$ 3,689 million for universal coverage against a cost of US$ 662 million. According to the WSP-World Bank study[2] (2010) on the economic impacts (considering all aspects of direct, indirect and non-health benefits) of inadequate sanitation, including water supply, an annual economic impact of inadequate sanitation of Bangladesh is estimated to be Taka 295,500 million, which is equivalent to US$ 4,230 million or 6.3% of the GDP.

1.3 Goal of the Strategy

The strategy involves an analysis of WSS sector context, institutional development and policy reform requirements as well as economic pricing of water supply and sanitation services beforehand recommending cost sharing modalities with an aim to reach enhanced and well-balanced cost sharing.

The overall goal of the strategy is to provide a functional ways and means for water supply and sanitation in Bangladesh to facilitate standardization of and increased access to water supply and sanitation services to all by 2025, and to make services affordable, equitable and sustainable, at cost.

1.4 Strategy Purposes

The purpose of cost sharing strategy is to recover gradually the increased share of costs from the service users (i.e. consumers), while at the same time, decrease the share of providers i.e. subsidies. This encompasses the following purposes:

- ***Recovering costs of services:*** aims to reduce cost burden from the service providers through increased recovery of costs (*of capital, operation and maintenance, and depreciation*) of physical infrastructures and delivering WSS services.
- ***Gaining financial self-sufficiency***: to directly support public utilities/service providers in gaining economic self-sufficiency and thus enabling them to provide services satisfactory to the users demand and choices.
- ***Standardization of WSS services***: increased cost sharing by the users supports systems to be economically viable, and thus, service systems to be standardized.
- ***Ensuring sustainability***: has direct linkage with development of belongingness and appropriate arrangement for O&M involving economic capacities of service providers. Cost recovery of services can only enable providers to undertake O&M and make system rehabilitation eventually sustainable.

Apart from the purposes to achieve as stated above, the cost sharing strategy specifically focuses on ***developing a sense of belongingness*** among the users/consumers to the physical facilities obtained, and which ultimately ensures proper care to the facilities or systems to be long lasting. It also intends to ***add value to social dignity of the service recipients*** in all contexts through developing sense of ownerships and citizen responsibility. As the strategy plead with a significant portion of service costs to be borne by

[2] Economic Impacts of Inadequate Sanitation in Bangladesh (Draft), Dr. Abul Barakat, July 2010

the users that motivate them to be more responsible for system operation and maintenance, as well as for accessing improved service levels. This facilitates ***promotion of demand responsiveness***.

1.5 Development Process of the Strategy

A draft Cost Sharing[3] Strategy for Water Supply and Sanitation was prepared jointly by the Unit for Policy Implementation (UPI) of Local Government Division, Department of Public Health Engineering (DPHE) and Dhaka WASA in April 2005. The strategy was formulated in order to facilitate recommendations of the National Policy for Safe Water Supply and Sanitation 1998 and the Pro-poor Strategy for Water and Sanitation Sector 2005. The draft strategy was taken as the basis for final development and preparation of a functional document for the water supply and sanitation sector to provide guidance towards a financially viable and sustainable WSS service delivery.

Participatory approach and methodologies were adopted for the revision of the draft cost sharing strategy. This includes review of the national policy documents and legal instruments (i.e. laws, policies and strategies), Sector Development Plan (SDP) for Water Supply and Sanitation Sector of Bangladesh, and an assessment of conjunctive applicability with the Pro-poor Strategy for Water and Sanitation Sector 2005 in order to ensure compliance with relevant policies and principles. A multi-stage consultation of the revised strategy document was done with major stakeholders of WSS sector, experts, sector professionals and government functionaries to obtain their views and opinions.

A Working Group[4] was formed to guide and oversee the entire process of strategy revision and development. A series of consultation meeting was done with the Working Group to confirm the development of the strategy. After consultation with the field level sector stakeholders, the draft revised strategy was developed and further discussed with national level stakeholders for finalization (*please see detailed methodologies in the Volume II: Background Document*). The finalized strategy gets approved by the National Forum for Water Supply and Sanitation in its meeting dated 23 March 2011 following a presentation and discussion.

[3] Cost sharing means that portion of physical water supply or sanitation facility or project/program costs not borne by the Government. Cost sharing is used to describe a non-government commitment of any size. Even very small commitments (down to 1 percent of project or physical facility costs) from the users are described as cost sharing.
Cost sharing is a process wherein two or more entities work together to secure savings that one alone would be unable to obtain. Such partnerships may be pursued in order to realize any number of project/programme objectives—increased access to WSS technology and services, reduce expenses through economies of size in purchasing or reducing costs, etc. (ref: water supply services white paper, South Africa 2004).

[4] The Working Group was formed within the framework of National Forum for Water Supply and Sanitation, and headed by a Deputy Secretary, LGD (comprising the representatives from LGD, DPHE, LGED, WASAs, CCs, Pourashavas, Union Parishads, NGOs, development partners i.e. ADB, Unicef and private sector operators under the leadership of PSU)

Section 2

POLICY GUIDELINES

2.1 National Policy for Safe Water Supply and Sanitation 1998

The policy calls for a transition from traditional service delivery arrangement. *The value of water* is taken as one of the core principles of the policy. It recognizes that water has an organic, social and concurrently an economic value. The policy states "as water is increasingly considered to be an economic good as well as a social good, water supply services shall be provided based on user demand and cost sharing". It emphasizes on a viable service provision where price of services is reflected its economic value, with the eventual objective of covering the cost of production and supply. It also suggests that the transition from the current level of subscription to new rate of payment should be gradual and there should be a safety net for hardcore poor communities. Besides, the policy endorses that physical provision of WSS services alone is not a sufficient pre-condition for sustainable health and wellbeing of the people, there is a need to focus on elements of behavioral changes of users and sustainability through user participation in planning, implementation management and cost sharing.

2.2 Pro-Poor Strategy for Water Supply and Sanitation in Bangladesh 2005

The strategy was developed in recognition of two major needs. The first need is for 'direct attack on poverty' as the benefits of growth are not distributed equitably, and the second need is for providing a 'safety-net' for hardcore poor in conjunction with reducing subsidies over time, which is recommended by the National Policy for Safe Water Supply and Sanitation 1998. In order to facilitate the policy functions the Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh (2005) provides an operational definition of hardcore poor. The strategy emphasizes on the existing policy of the government that the community, irrespective of whether the beneficiary household is poor, hardcore poor or non-poor, is required to contribute 10% of the capital cost of water supply projects as the 'beneficiary's share'. It also provides guidance that the capital cost contribution of the 'Target Group' (of hardcore poor households, residing in clusters below the BMSL[5]) would be 50% of that earmarked for the non-hardcore poor as their beneficiary's share.

2.3 National Water Policy 1999

The policy recognizes that water is not infinite and cannot be treated as a perpetual gift of nature to be used in any manner chosen. Its availability for sustenance of life, in both quantitative and qualitative

[5] As per the Pro-poor strategy Basic Minimum Service Levels (**BMSL**) are defined as follows:

(A) ***Drinking water*** – for the purpose of drinking, cooking and personal hygiene, the basic minimum service level is defined as 20 liters per capita per day, the safe drinking water source should be within 50 meters of household premise, and the drinking water must meet the national water quality standards.

(B) ***Sanitation*** – one hygienic latrine for each household, and if it is not possible to have one hygienic latrine for each household due to lack of space or other reasons, then such households can either use "others' latrines", subject to a maximum of two households (or 10 persons) for one latrine or "community latrines", subject to a maximum of 10 persons per latrine.

terms, is a basic human right and that mandates appropriate use of water without jeopardizing the interest of any member of the society. The policy recommends accelerating the development of sustainable water service delivery with appropriate legal and financial measures and incentives, including delineation of water rights and water pricing. The policy, from the economic and financial management points of views, acknowledges that changes are required in the pricing system and other economic incentives affecting water demand and supply. In or to convey scarcity value of water, the policy recommends for a system of cost recovery, pricing, and economic incentives/disincentives which is necessary to balance the supply and demand of water. It highlights an importance of public service agencies to be converted into financially autonomous entities, with effective authority to charge and collect fees against services provided.

2.4 National Sanitation Strategy 2005

The strategy recognizes the absence of mechanism for ensuring effective utilization of government subsidies at all levels. The sanitation strategy, in its recommended actions, has emphasized on sustainability of the service delivery. It directs that the ownership of the facilities and the responsibility for operation and maintenance shall be that of the households and the communities. The strategy focuses on awareness promotion for increased mobilization of community resources (i.e. increased cost recovery) which is essential for 100% sanitation coverage.

2.5 National Policy for Arsenic Mitigation 2004

The policy recommends for using appropriate alternative and affordable technologies, as shallow tubewells can no longer provide safe water for drinking and cooking in arsenic affected areas. This gives explicit cost implication for all affected communities to access safe drinking water, particularly for the poor as they need comparatively costly options (i.e. deep TW instead of shallow TW) than that they currently use. The situation demands not for cost sharing by the communities but also for well-managed subsidies for the hardcore poor, in particular.

2.6 Local Government Acts 2009

The ***Local Government (City Corporation) Act 2009*** empowers City Corporations to set tariffs, tolls, taxes, and fees applicable for basic urban services including water supply, drainage and solid waste management. In case of tariff increase and, or formulation of new tariffs, the City Corporations have to obtain prior approval from the Government before execution.

The ***Local Government (Pourashava) Act 2009*** clarifies the roles and responsibilities of Pourashava which include water supply, sanitation and waste management services. It enables Pourashavas to form town level committees to share views and opinions with the local people regarding municipal services and the matters relating to development activities including setting and collection of tariffs. It gives mandates to the Pourashavas to set tariffs and taxes which shall subject to prior approval of the Government.

The ***Local Government (Union Parishad) Act 2009*** enables Union Parishads to undertake public health awareness, coordination and development activities within respective territories. It does not include UPs' role in tariff fixation and administration for water supply and sanitation services.

2.7 The WASA Act 1996

The WASA Act 1996 exemplifies the nature of WASAs as public corporations with the sole responsibility to deliver water supply, sewerage, and storm-water drainage services. The Act provides for

WASAs to manage their facilities and operate with a high degree of autonomy. It provides for autonomous corporate management structures of WASAs which are answerable to their Board of Directors representing a range of stakeholders. The Act enables the government to delegate power to WASA Board of Directors to ensure that WASAs operate in a commercial manner. The law safeguards financial control over the authority by the Government of Bangladesh, and allows WASAs to increase tariffs to a maximum of five percent every year which is subject to the approval of the Government (i.e. the line ministry LGD).

2.8 Sector Development Plan (2011-25) for WSS Sector in Bangladesh

The Sector Development Plan (SDP) is considered as the strategic as well as the planning document for the sector to achieve its national goal and targets. In the revised SDP, the issue of 'cost recovery' has been considered central to the improvement of service coverage and standards. A broader consensus is built through a series of stakeholder consultation on a set of principles related to cost recovery, which include: a) operation and maintenance of the water supply and sanitation systems based on sound technical and financial management practices, b) adoption of cost recovery measures for WSS services in a manner that will ensure recovery of at least the operation and maintenance costs in the shortest possible time and then gradually recover capital costs and also generate funds for rehabilitation of degraded systems and expansion of facilities to meet future demands, c) ensuring fairness and social justice among the customers and service providers while establishing service standards and tariff, and d) providing safety net for the poor and address the needs of women, children and people with disability.

A need for sector reforms to meet the sector challenges is suggested in the SDP. According to this, reform will be taken place for institutional and organizational development of the service providing agencies (e.g. DPHE, WASAs, City Corporations, Pourashavas and Private Operators), and establishment of a regulatory framework. A Water and Sanitation Regulatory Commission (WSRC) is therefore recommended to regulate the overall provision of water supply and sanitation services. The SDP recommendation provides a basis for taking immediate actions for a uniform but reasonably flexible cost sharing strategy for Bangladesh's water supply and sanitation sector.

Section 3

KEY TERMS AND DEFINITIONS

3.1 Water Supply and Sanitation Services

Irrespective of sources, technology options, modalities and ways of delivering services, water supply and sanitation services used for domestic, institutional, community, commercial, industrial, as well as for other public (such as for floating people) or private purposes shall be treated as WSS services.

In specific, water supply services shall include:

a) Piped water supply with or without treatment
b) Point sources/non-piped water supply (i.e. tubewells, ring wells, dug wells, rain water harvesting, pond sand filer, arsenic removal units, etc.) with or without treatment; and
c) Vendors' water supply

The term 'sanitation' shall be used and treated in broader perspective of environment. This shall include physical infrastructures and outputs of the following:

a) All types of sanitary latrines
b) Pit/septic tank desludging
c) Drainage (for wastewater and storm water run-off)
d) Sewerage (including small-bore sewage with septic tank or desludging arrangement may be applicable in the peri-urban[6] and growth center contexts) with or without treatment
e) Solid waste management

Services rendered for further improvement of physical facilities and quality of water supply and sanitation provisions shall also be the integral part of WSS services.

3.2 WSS Service Providers and Users

WSS Service Providers

Service providers will be broadly divided into two categories: a) public service providers and b) private service providers.

Public Service Providers: shall include government agencies and utilities which are established and functioning under specific laws or ordinances, and are mandated to provide water supply and sanitation service, or any part thereof. In Bangladesh, these agencies/institutions are:

a) Department of Public Health Engineering (DPHE)

[6] Areas surrounding urban centers that are often densely populated, lacking improved infrastructure, and settled by households with formal and non-formal tenure rights

b) Water Supply and Sewerage Authorities (WASAs)
c) City Corporations
d) Pourashavas
e) CHT Regional and District Councils (CHT-RC and HDCs)
f) Upazila Parishads
g) Union Parishads
h) Multipurpose (public) Development Authorities (for example, BMDA, RDA, CHTDB)
i) GOB and Donor supported WSS projects and programmes implemented by different departments and agencies

Private Service Providers: shall include persons, organizations including NGOs, CBOs and, or privately owned agencies involved directly or indirectly in water supply and sanitation sector in Bangladesh.

WSS Service Users

'User' is a general term meaning any person, a group of persons, organization(s), social and commercial institutions, or any other agencies alike who use or consume water and sanitation services for any personal, collective and, or business purposes with or without sharing prices. The characteristics of users do not vary context-wise, rather in all cases they use water and sanitation service as commodity, and get benefited from it. In other terms, users are called 'consumer' or 'customer'.

3.3 Consumer Categories

Considering the present practices (with a positive mix of criteria) and needs for reflection of poverty issues WSS consumers shall be categorized based on poverty criteria (Box 1) and based on the purpose of usage (Box 2).

Box 1: Consumer categories by poverty levels and indicators

Hardcore Poor

- ***Rural***: Meeting any of the following criteria: (a) landless households, (b) homeless or residing in other's premise/land (of public or private), (c) main earning person or the head of family is day laborer, owning less than 100 decimal of land (cultivable and homestead), (d) having no fixed source of income, (e) households headed by disabled or females or old aged (65+years) persons, (f) monthly household income not exceeding Taka 2,499.

- ***Urban***: Meeting any of the following criteria: (a) landless households, (b) pavement/slum dwellers/homeless, (c) main earning person or the head of family is day laborer, owning less than 100 decimal of (cultivable and homestead) land or residing in a rented premise lesser than 200 square feet, and, having no fixed source of income, (d) households headed by disabled or females or old aged (65+years) persons, (e) monthly household income not exceeding Taka 3,999.

Poor

- ***Rural:*** Meeting any of the following criteria: (a) owning less than 200 decimal (2 acres) land (including cultivable and homestead) but *depending mainly on agriculture*, (b) live in poor quality (i.e. *kancha* or tin-roofed) house lesser than 500 square feet, (c) having single income source of the household, not exceeding monthly income of Taka 3,999, (d) having 3 (three) months' food deficit per

calendar year, both men and women sell labor occasionally, and some of them involved in sharecropping, (e) having limited access to educational facilities of their children.

- ***Urban:*** Meeting any of the following criteria: (a) landless, living in poor quality (i.e. *semi-pucca* or tin-roofed) house or in a rented premise lesser than 500 square feet, (b) having single income source of the household, not exceeding monthly income of Taka 4,999, (c) having 3 (three) months' food deficit per calendar year, both men and women sell labor occasionally, (d) having limited access to educational facilities of their children.

Non-Poor/Better-off: Other than the poor and hardcore poor.

Adopted from: 1) The Pro-poor Strategy for Water Supply and Sanitation in Bangladesh 2005, 2) Household Income and Expenditure Survey (HIES) 2005, Bangladesh Bureau of Statistics (BBS), and 3) CARE Bangladesh

Box 2: Consumer categories by purpose of usage and indicators

Domestic (low consumption): Services used for domestic purpose in a single storey building, semi *pucca* or *kancha* house and used by a single family (consumption is less than 70 lpcd).

Domestic (high consumption): Services used for domestic purpose in an apartment, multi storied building, semi *pucca* or *kancha* houses and used by many families (consumption is more than 70 lpcd).

Institutional: Services used in educational institutions (Govt./ public School, college, universities, Madrasha), government offices, social and community clubs, charity organizations, hospitals, clinic, water service centers etc. and used in religious institutions such as Mosques, Temples, Churches or similar other religious institutions.

Slums (public and private): Services used for domestic purposes in slums through individual, group and community systems (i.e. street water hydrant/ group tap/yard tap at Basic Minimum Service Level - 20 lpcd; and community latrines).

Floating people in urban/peri-urban areas: Services used for multi purposes in public places (market place, bus stand, railway station, recreational park etc) at consumption of BMSL

The above mentioned consumer categories are commonly defined as 'domestic-institutional-community' consumers.

Commercial: Services used for commercial purposes in offices (private, public) commercial buildings/ semi *pucca* or *kancha* houses and used by hotels, restaurants, shops, hospital /clinic etc.

Industrial: Services used for industrial purposes in small or large factories, industries, textile mills, tanneries, bakery, foods and beverage production centers, and so on.

3.4 WSS Service Levels

WSS service levels will be different at different settings and contexts. The tables (3.1 to 3.4) below, depicting the service levels determined for different time horizons including measuring indicators, are adopted from the WSS Sector Development Plan 2011-25, as follows:

Table 3.1 Service Levels for Urban Water Supply

Scale of Development indicators	Development Indicators							
	Coverage	Service Levels				Operating Efficiency		
	% pop	*Supply hours/ day*	*Per capita consume litre/day*	*WQ As (mg/l)*	*WQ Bac (e-coli)/ 100ml*	*UfW %*	*Staff/1000 connection*	*Collection efficiency %*
Low (short-term)	<60	<6	<70	<0.05	0	35	>13	<75
Moderate (mid-term)	60-90	6-12	70-100	0.05-0.01	0	20-35	10-13	75-95
High (long term)	>90	>12	>100	<0.01	0	<20	<10	>95

The indicators related to service coverage, levels and operating efficiency determined and presented in the table above are mainly applicable for piped water supplies in urban settings. While the service parameters defined for water quality (both for arsenic and bacterial concentration) and per capita consumption can be used for rural piped water schemes as well. When rural piped water schemes are reached at scale, separate 'scale of development indicators' can be developed for that.

Table 3.2 Service Levels for Rural Water Supply

Scale of Development indicators	Development Indicators				
	Coverage	Service Levels			Operating Efficiency
	Pop point source within 50m	*WQ As (mg/l)*	*WQ Bac (e-coli) /100ml*	*Sanitary Score*	*Non-functional (%)*
Low (short-term)	50	>0.05	0	6-10	>20
Moderate (mid-term)	25-30	0.05-0.01	0	4-5	10-20
High (long-term)	<25	<0.01	0	0-3	<10

The indicators used in the table above, are only applicable for point source (non-piped) water supplies in rural settings. Similar set of indicators can be used for urban point source (non-piped) water supply systems.

Table 3.3 Service Levels for Urban Sanitation

Scale of Development indicators	Development Indicators				
	Coverage	Service Levels		Operating Efficiency	
	% of population	*Technological options used*	*O&M status*	*Sludge from on-site sanitation safely managed*	*O&M cost recovery*
Low (short-term)	<60	Single & double pit water seal latrines	Poor	Low	Low
Moderate (mid-term)	60-90	Limited sewer, septic tank and small bore sewer with safe desludging and disposal	Moderately maintained	Medium	Medium
High (long-term)	>90	Conventional and small bore sewer with sewage treatment	Well maintained	High	High

The 'scale of development indicators' presented in the table above, is for urban sanitation options including on-site and off-site technologies. After successful introduction and gradual achievement of the

standards of the aforesaid sanitation options, standard service levels for other urban service options (e.g. drainage, solid waste management, and wastewater treatment and reuse) should be considered.

Table 3.4 Service Levels for Rural Sanitation

Scale of Development Indicators	Development Indicators		
	Coverage	**Service Levels**	**Operating Efficiency**
	% of population	*Technology*	*O&M status*
Low (short-term)	<60	Single pit water sealed latrines	Poorly maintained
Moderate (mid-term)	60-90	Double pit water sealed latrines	Moderately maintained
High (long-term)	>90	Latrines with septic tank and safe desludging and disposal	Well maintained

In the chart of rural sanitation technology options, small bore sewer without or with septic tank and small drainage should be included in future. When any new technology is included, the service levels for the particular option shall be defined and incorporated.

3.5 WSS Technology Options

The strategy shall be applicable for all present and future potential alternative WSS technologies developed and used in Bangladesh. These include:

Water Supply Technologies:

- Shallow Tubewell
- Shallow Shrouded Tubewell (SST)
- Very Shallow Shrouded Tubewell (VSST)
- Tara Tube well
- Deep Tubewell
- Pond Sand Filter (PSF)
- Ring well
- Rain Water Harvesting System (Public)
- Pond (Re-excavation)
- Iron Removal and Treatment Plant
- Arsenic Removal and Treatment Technology
- Gravity-Fed System (GFS)
- Piped Water Supply System (PWSS) with house connections
- Piped Water Supply with house connections and public faucets, and
- Other proven and available technology options

Sanitation Technologies (covering environmental aspects):

- Water sealed, and other low cost/disable friendly/climate resilient latrines with or without septic tank (including community latrines and public toilets)
- Sewerage (including small-bore)
- Drainage (small and storm water) including or without sewage
- Solid waste management (separate detailed planning is being done by Ministry of Environment, GOB)

For schools, sanitation technologies of types would include water supply component, etc.

Section 4

IMPLEMENTATION STRATEGIES

4.1 Demand Creation for Improved Water Supply and Sanitation

The demand curve for water supply and sanitation is an aggregation of individual demand curves for different purposes. Therefore, the service planners and providers shall give due importance to create users' demand for improved water supply and sanitation services through hygiene promotion and other IEC activities. Households shall be offered a variety of water sources, each with different characteristics, to be chosen by users for different domestic uses (e.g. drinking, cooking, bathing, and washing), and they may vary seasonally. Water and sanitation systems must allow for a range of facilities to be made available, such as connections for basic household consumption, commercial and industrial use; different type of latrines for household, community, institution and public use; sewage disposal and treatment, and waste management. In order to ensure matching supply and demand people shall be given a choice over the type and standard of services offered, as well. Such an offer, in case of water supply, shall be targeted to increase the quantity, the reliability, the convenience of the service provided, and the quality of water available to a community. These changes in *quantity, reliability, convenience, and quality* may range from significant to modest. The economic value of a water supply depends largely on the magnitude of these changes.

4.2 Economic Pricing of WSS Services

Considering the issues relating to income distribution and poverty, pricing of water supply and sanitation (except sewerage) services shall primarily reflect its full financial cost[7] to give incentives to use water in the efficient way. In the subsequent stages, the pricing shall be estimated in full economic prices[8] (reflecting the impact on the economy as a whole) to cover the opportunity costs and the external costs. For sewerage services, creating users demand for improved services and service providers'

[7] Full financial cost includes costs of capital, O&M and depreciation of the system

[8] The full economic cost of water has three components:

(i) **Long-run marginal costs of supply:** includes capital as well as running costs. They are marginal because they are based on the cost of extension of the supply.

(ii) **External costs:** The main components are
Economic externalities: These are where water use has an impact on others 'upstream' or 'downstream'. Examples are the cost of disposing of wastewater where pollution of other water sources leads to higher costs for downstream producers or the cost of over-extraction from an aquifer or river. Externalities may be positive too, for example, where irrigation leads to the recharge of an aquifer and reduces salinity.
Public health externalities: These are health costs imposed on others because of polluted wastewater.
Environmental externalities: These are costs imposed on ecosystem health.

(iii) **Opportunity costs:** These are the costs to the economy when scare water use in one way pre-empts its use for a higher value purpose elsewhere. Typically domestic water has a high value relative to other uses, so the opportunity cost to be applied in calculating the cost of domestic water is zero. The opportunity cost of water used in agriculture can be high when this pre-empts domestic use (The opportunity cost concept can be very important, however, for policy discussions about intersectoral allocation of water, for example drinking water supply in the Barind Multipurpose Development Authority – BMDA projects).

responsiveness shall be emphasized in the short term, while at the same time tariff shall be kept low. From the start of the medium term, when service coverage and standards are improved, the tariff for sewerage service shall be gradually adjusted as it applies for water supply and for other component of sanitation services. In a broader term, initial pricing shall be targeted for demonstrating financial viability[9], while the long term pricing target shall be for achieving economic efficiency of the sector.

4.3 Considerations for Pricing and Cost Sharing of WSS Services

There is an extent of disparities prevailed regarding cost sharing for water supply and sanitation services between rural and urban people (i.e. users) in Bangladesh. Therefore, the strategy urges for an equitable cost sharing modalities to be developed for all; while in the urban areas most users are comparatively better-off than the rural people having advantages of getting improved WSS services but at higher subsidized rates.

The urban areas of Bangladesh are now densely populated, and this is mostly due to growing trends of migration among the poor and marginalized people from the rural areas. By now, the urban poor/low income population represents more than 30% of the total urban population of the country, and this has already created significant pressure over urban service delivery systems particularly on water supplies, while public service providers (i.e. WASAs, City Corporations and Pourashavs) are facing huge revenue losses (ranging from 30% to 60%) due to unaccounted for water. This is generally perceived to being happened due to management inefficiencies of the service providers, but costs of such unaccounted for water is reflected in the tariffs being charged to the consumers irrespective of their socio-economic backgrounds and contexts. This strategy therefore, emphasizes on taking serious measures so that the poor are no longer burdened as a result of management inefficiencies of the service providers.

Taking into account the above, pricing and cost sharing considerations for water supply and sanitation services shall be as follows:

- Current market prices of a wide variety of WSS technologies;
- Poverty categories of service users and their affordability levels;
- Equity and fairness among users in accessing basic services
- Geo-physical and hydro-geological disparities and contextual differences of the country which often lead the communities to hardships for accessing safe drinking water and sanitation services (for example, due to arsenic contamination in ground water, water scarcity because of lowering water table, flooding, saline intrusion, etc.);
- Promotion of sanitation and hygiene practices in schools (of various types) and others educational institutions
- Need for extension of service coverage in line with the national policies and targets

Whatever the case, service providers (i.e. government, NGOs and others applicable) shall discourage subsidizing individual water supply options. Individual options shall be provided on full cost-recovery principle. Only community based options, in special grounds as pointed above, may be subsidized.

4.4 Cost Recovery and Effective Use of Subsidy

Users shall be responsible for sharing of a reasonably acceptable part of capital cost, and full cost of operation and maintenance (O&M) and depreciation of piped water supplies, and full capital and O&M cost of point source (non-piped) water supply. Recovery of full costs from the existing users who are

[9] Full recovery of system operation, maintenance and depreciation costs

capable (and willing) to meet them, and the use of available public funds to subsidize capital costs for the remaining parts can foster greater coverage of safe water supply to many more poor people.

For small rural water supply schemes, simple cost recovery targets shall be taken, such as requiring communities to provide land, labor, materials, and a fixed cash sum as their contribution towards construction costs, and to meet O&M cost subsequently. In urban schemes, where poor people are unlikely to benefit from system expansion to cover more low-income areas, steps shall be taken to tackle the financial and operational weaknesses of the service providers. Investment to improve the sustainable access of the poor to safe water must therefore be complemented by necessary reform of the utilities to make them financially self-sustaining. The aim shall be to meet all capital and O&M costs, except those met by transparent public subsidy.

Service providers shall make suitable sanitation options available, and take measures for demonstrating convenience benefits (for example privacy) of improved sanitation which people are willing to pay for. Users shall be charged fully for rural sanitation excepting only a few options for community, institutional and public use. For individual household use, sanitary latrines can be provided using only government grants (i.e. 20% of block/ADP allocation through Upazila/UP budgets) at fully subsidized rates, for which only the hardcore poor are eligible as per government rules. When considering off-site sanitation (including sewerage) system, the cost of wastewater collection and treatment shall be included in the estimated production and delivery cost. In general, sanitation subsidy should not be encouraged unless likely benefits of sanitation program(s) are clearly assessed, and that are visibly contributory to public health. The subsidy for sanitation program(s) can be allowed for the promotional activity, rather than subsidizing the construction of facilities themselves. In that way the number of families who can benefit is not limited by the size of the subsidy budget.

4.5 Management and Use of Collected (Cost Sharing Money) Revenue

Every service provider (i.e. public or private) shall follow the guideline provided in the strategy document to design cost sharing modalities. As such, the recovered cost shall be used to improve standards, coverage and reliability of water supply. This can also be used as ‘matching fund/grant’ for extension of service quality and coverage.

4.6 Subsidy Management

4.6.1 Financing Mechanism

There are two principal ways in which subsidies can be financed. In the case of direct subsidies, the government, or some other external entity (i.e. NGOs, donors), shall make resources available to cover the deficit between the cost of service provision and the level of water bill, in case of piped water supply. These resources shall be transferred directly to the service provider and delivered to consumers through the tariff or capital cost structure (known as ‘supply-side subsidies’). Alternatively, subsidies shall be given directly to consumers who are deemed to be eligible for special financial support (known as ‘demand-side subsidies’), for example the hardcore poor.

If government finance is not an option, cross-subsidies shall be allowed whereby some groups of consumers are charged more than the actual cost of service provision, and this surplus shall be used to cover the deficit of another set of consumers, who pay less than the actual cost of service provision. This cross-subsidy can be alternatively arranged through project loans or credits, which shall be repayable within the project period. Effectively, the service provider is undertaking a redistribution of income between these two groups, through allowing cross-subsidies.

4.6.2 Targeting Approaches

The service providers shall identify target groups based on the characteristics of the household and income distribution (e.g. geographical location, type of dwelling, the income level, or household eligibility for other government assistance programs) for subsidy supports. For identifying the target groups, consumer categories defined on the basis of poverty criteria (Box 1) shall be used.

4.6.3 Effective Use of Public Subsidies

Public subsidies can only be used to meet the capital costs of water supply and sanitation facilities. These shall be used to provide water at a lower cost, either by charging a lower tariff or by providing a water source which is closer to home, or more reliable.

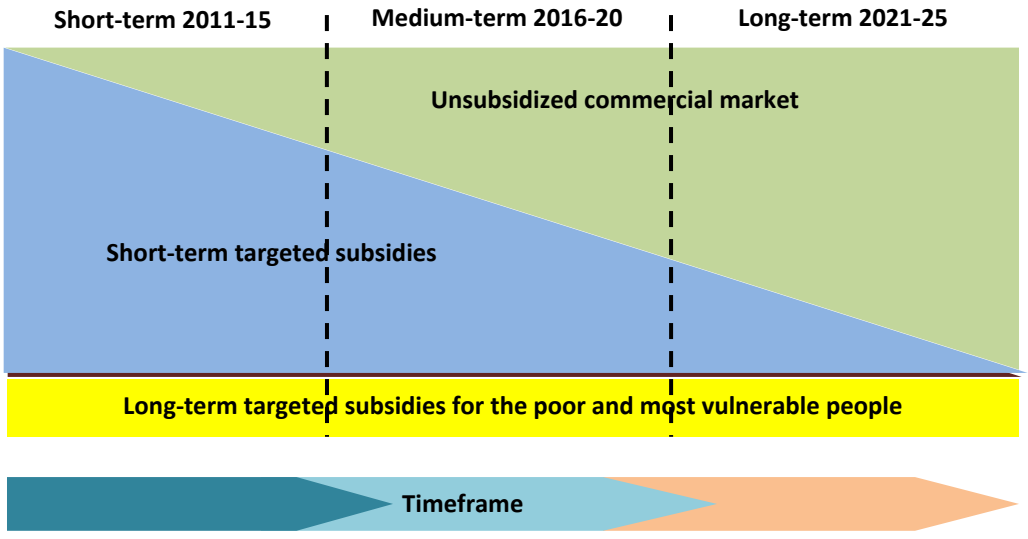
For sanitation services, subsidies shall be used to uphold people's motivation to use sanitation and thereafter for improved sanitation. Public resources shall not be used for subsidizing consumers who are capable of and willing to pay the full costs of the services, and where there is no compelling social reason for subsidy.

4.7 Gradual Phasing-Out of Subsidies

The WSS service providers, from all levels, shall take a full drive to recover costs of services as per strategy guidelines provided. This shall be done to gradually recover the capital cost of the existing WSS systems and at the same time to improve and standardize service levels. This drive will be for gradually phasing out of subsidies, but there will be a segment of users who continuingly deserving to be subsidized, such as the hardcore poor and most vulnerable people. Following this target, respective service providing agencies (private and public) shall take appropriate measures to prepare and implement their own plan of actions may be in phases.

The concept and basic approaches of gradual phasing out of subsidies shall be as shown in the figure 4.1 below.

Figure 4.1: Approaches for gradual phasing out subsidies for WSS services



Targeted Subsidies

The service providers shall undertake such actions so that the unsubsidized commercial market is expanded over time, and the short-term subsidies are targeted to come to minimum by the longest timeframe. There will be a segment of WSS service users who will never be able to afford a net at any price. Therefore, the action plans will rely on a mix of strategies to use fund efficiently and ensure all consumer segments are reached.

In order to ensure transition towards more efficient and mature market, service providers shall be responsible for:

- Preparing their own supportive (or enabling) policies (i.e. a tariff structure that does not encourage subsidized WSS services)
- Formulation of segmentation strategies (that do not offer subsidized services to those who can buy them – thus crowding out the commercial market)
- Developing organizational strategies that create demand for expanded and improved services, which in turn encourages competitiveness and expansion of distribution, and
- Monitoring of intervention effects (on both the subsidized and unsubsidized segments, to ensure that populations at risk are served and market strengthened).

The service providers shall take advantages of the WSS sector, since it has private sector dominance. During course of actions, service providers shall ensure full compliance with the intended service standardization set-forth in the revised SDP besides increased cost recovery (see figure 4.2).

Figure 4.2: Gradual standardization of service and increased cost sharing

Timeframe	Service Levels (WS for example)	Cost Recovery
2021-2025	Rural WS coverage: <25 pop/point source Urban WS coverage: >90% with>100 lpc/d WQ standard: As <0.01mg/l, Bac 0/100ml Operating efficiency: High	• Full financial costs for urban WSS (except sewerage) including partial (20%) capital cost • Full WSS cost (rural) with added taxation; • No subsidies, excepting most vulnerable; • Gradual introduction of capital cost recovery in urban WSS
2016-2020	Rural WS coverage: 25-30 pop/point source Urban WS coverage: 60-90% with100 lpc/d WQ standard: As 0.05-0.01mg/l, Bac 0/100ml Operating efficiency: Moderate	• Full recovery of O&M, depreciation and admin costs for urban WSS services (except sewerage); • Max capital cost recovery of rural WSS facilities (exception for poor and others in difficult areas); • Subsidies (decreased to half of short-term)
2011-2015	Rural WS coverage: 50 pop/point source Urban WS coverage: 60% with per capita 70 liter/d WQ standard: As <0.05mg/l, Bac (e-coli) 0/100ml Operating efficiency: Low (but acceptable)	• Full recovery of O&M costs including cost of depreciation for urban WSS services (except sewerage); • Partial recovery of rural WSS capital costs; • Targeted subsidies for the poor and hard-to reach population

During formulation of the phasing out strategy by each individual agency, they shall pay careful attention to certain increases in the service levels and reduction in the subsidies. The extent of increase and reduction of subsidies shall be shared and agreed between the service providers and users. The whole

exercise shall be done by the specific service providers, considering their context, may be being supported by external agencies.

4.8 Addressing Poverty and Geo-physical Disparities

Bangladesh's faster gains in human development than in income growth result from public policies that have complemented the remarkable energy at the grassroots. The national head count index of poverty has declined from 56.6% to 40.0% in 2005[10]. In 2009, the poverty level is estimated to be in between 31.1% to 32.5%. Despite rises in household income, income distribution remains highly unequal. The bottom 40% which coincides with the proportion of the poor in total population received only 14.4% of the total income whereas the top 5% received nearly 27% of the total income in 2005. Various studies indicate that "hard core" poor are mostly women. There remains regional disparity in poverty. Poverty is higher in the western region of the country while lower in the eastern region. The poverty incidences in the three North and Western Divisions namely Khulna, Barisal and Rajshahi were 45.7%, 52.0% and 51.2% respectively in 2005 while in South and Eastern Divisions namely Dhaka, Chittagong and Sylhet the poverty incidences were 32.0%, 34.0% and 33.8% respectively[11].

In the poverty-prone areas of the country, people have less affordability, but are much prone to diseases due to lack of basic WSS services. Considering that, consumers shall be classified on the basis of poverty criteria. The geo-physical disparities and hydro-geological differences also exist in Bangladesh. Based on those characteristics, WSS consumers shall be categorized inclusive of the following:

a) Extreme poverty (i.e. char areas of north-west Bangladesh) zones
b) Hard to reach areas and populations[12] (i.e. char, haor-baor, distant island, red-light areas, etc.)
c) Chittagong Hill Tracts (also included in the Hard to Reach areas)
d) Arsenic contaminated areas
e) Water scarce (technically difficult) areas e.g. Bagerhat, Sathkhira costal zones, etc.
f) Low water table areas e.g. Greater Rajshahi, Bogra and Pabna
g) Urban slum communities and floating population

Considering the fact, the population live in the areas mentioned above shall be treated as poor in terms of accessing WSS services. Service providers shall ensure basic minimum service level (BMSL) of water and sanitation to the poor necessary to meet their basic needs at an affordable price. The pricing policy shall require decisions to be made about cost recovery process, cross subsidy[13] within the area of operation and future investment. This shall be done with full transparency to maximize community and political commitment to the cost sharing modalities applied as well as to poverty reduction.

4.9 Establishing a Safety-net for the Poor

The basic concept of introducing a safety net for the poor is to ensure that the provision of cost sharing for WSS services does not further compel them to be more vulnerable and marginalized. As such, this

[10] BBS: Household Income and Expenditure Survey (HIES) 2005. No national level HIES are carried out after 2005.
[11] A Strategy for Poverty Reduction in Lagging Regions of Bangladesh by GED-Planning Commission, March 2008
[12] Char lands, haor-beel areas, exposed coastal zones and islands, hill areas, barind areas, tea gardens, saline (including Sundarban) areas and isolated areas such as Chitmohol, mohazer, river gypsies, urban slums and floating population are identified as hard-to-reach areas and population (by SSTB, Dhaka Ahsania Mission with the support from WSP-World Bank through "Mapping of Hard to Reach Areas of Bangladesh on Water and Sanitation Services" 2009)
[13] A pricing strategy in which some users pay below average tariff (subsidized), while others pay above average tariff (subsidizers); cross subsidies are commonly used in the WSS sector in an attempt to provide basic services at low or no cost to the poor.

strategy shall apply the safety-net provision of the Pro-poor Strategy for Water Supply and Sanitation 2005, as follows:

- The capital cost sharing of the target group (i.e. hardcore poor) shall not be more than 50% of that earmarked for the non-hardcore poor as their beneficiary's share.

- There shall be a provision of collecting the capital cost sharing amount from hardcore poor in installments within the scheme cycle (exceptionally, if services are provided at the middle or end of the scheme period, users shall be allowed the full length of time to complete installments which is equivalent to the project period), for minimizing the stress on the target groups. In case of payments (share of costs) beyond the project cycle are to allow, service providers or project authorities shall set-up necessary institutional arrangement to take up the responsibility (for example, respective LGIs can be handed over responsibilities of collecting outstanding amounts).

- In a cluster, the 'User Group' shall pay 100% cost contribution for O&M, but the hardcore poor households shall be allowed to pay 50% of the O&M contribution earmarked for the non-poor households given that cross-subsidies are made available by other members of the user group. They shall also be allowed to pay their contribution in kind i.e. labor (based on current wage rates in relevant settings).

To be more urban specific, special service provision and arrangement for the urban poor communities should be in place, where NGOs or any other private operator can buy bulk water from the service providers and resell it to the poorest customers at subsidized rates.

People live in the technically difficult, arsenic contaminated and low water table including hard-to-reach areas shall be eligible, in general, for special rebate on the capital costs of technology options; while the hardcore poor and poor can be offered a range of 'cash transfers' from the service providers or, in special cases, can be waived from the charges. The users' cost contribution in these areas shall be determined based on types and costs of technology options suiting to the geo-physical areas and affordability of users; and percentage user contribution recommended in general for technology options shall be kept flexible (for example, 20% cost contribution of the poor users may be applicable for STW, but this can be reasonably reduced for DTW to the extent that is affordable for them, even may be down to 1%);

Cross-subsidies shall be allowed for all type of 'group users' if available from within the group or community even for costs of O&M of the technology options. Special service provision for the hardcore poor and poor users shall be ensured during emergencies and for the urban floating populations; the users in these cases shall be eligible to access basic WSS services free of costs.

The outmost importance of the safety-net shall be adhering to the principles of safeguarding the most vulnerable people in any situation. The principles of cost sharing, whatsoever determined, shall not be contradictory to the basic human rights of the people to access WSS services.

4.10 Institutional Capacity Strengthening

Gradual introduction of increased cost recovery for WSS services requires enhanced institutional capacity. Institutional capacities are coherent to the organizational development as well as development of human resources. An improved organization and skill mix are the pre-requisites for continuous restructuring of cost sharing modalities, service planning and standardization, revenue generation, and subsidy management. Therefore, the service providers, particularly the public agencies shall undertake continuous programmes for staff development and institutional capacity strengthening.

4.11 Identification of WSS Consumers

Rural settings: shall be the responsibility of the local government institutions (LGIs) e.g. Union Parishad, and Upazila Parishad. Other WSS programme implementers including NGOs shall consult with LGIs to access the lists if available and, or seek assistance of LGIs to identify users.

Urban settings: LGIs such as Pourashavas and City Corporations shall be the responsible for identification of user/consumer categories. Additionally, where WSS programmes are implemented by WASAs, DPHE, LGED and any other government or semi-government agencies, they themselves will identify users in consultation with respective LGIs.

CHT contexts: LGIs (e.g. UP, Upazila, and Pourashava) shall take proactive roles in identifying consumer categories jointly with CHT Regional and District Councils in urban areas, and with local Karbaries and Headman (CHT traditional systems) for rural areas.

4.12 Private Sector Participation

Private sectors started to play an important role in the water supply and sanitation sector in Bangladesh. Therefore, public policies should keep provisions for private sector participation. This is required to facilitate expansion of unsubsidized commercial market as well as a fair competitiveness in terms of service improvements and cost recovery. This shall be targeted as an option for improving the WSS sector performance through:

- Infrastructure financing
- Cost recovery for sustainable services
- Affordable access and fair pricing
- Cross-financing of services, users and water uses

The opportunities for enhanced private sector participation may be initially explored by the public utilities such as WASAs. A detailed framework for PPP is outlines in the Sector Development Plan (SDP) 2010 for water supply and sanitation sector of Bangladesh, which should be followed up; and this shall be gradually brought under proposed regulatory framework of the WSS sector.

4.13 Taking into Account Factors Affecting Cost Sharing Goals

'Willingness to charge' is also as important as 'willingness to pay' when considering cost sharing. An immediate shift from low rate of consumers' cost sharing to a very high level rate (e.g. more than 100% increase) might not be accepted and justified by decision makers. Even where a substantial proportion of households do express effective demand (willingness and ability to pay) for improved services, it is often hard to convince decision makers to raise service prices and, in turn, levels of services. To address this issue, changes in the mindset of the decision makers and in the institutional arrangements are required.

Billing and collection efficiency of the most WSS service providers in Bangladesh is poor. Moreover, they lack ***adequate staffing and accounting*** for effective planning and implementation of WSS projects. The costs of such management weaknesses and inefficiency further weaken the WSS systems to be financially viable. Adequate staffing, accounting and increased billing and collection efficiency of the service providers shall be the pre-requisites for successful restructuring of cost sharing modalities.

Perceived health and economic benefits among the users are the pre-requisites of increased service charges. Unless these are well-perceived, offers for improved services at higher costs may be rejected.

Therefore, services providers shall take additional responsibilities of awareness raising to create service demand and promote ***demand responsiveness*** among themselves as well.

The WSS sector in Bangladesh has an adequate number of policies and strategies, but none of those are effectively disseminated among the stakeholders. This often brings low or no benefits of the policies. In terms of cost recovery, this has much more implications. The major ***service providers shall be timely and properly oriented on the relevant government policies and strategies***.

4.14 Adaptation to the Future Challenges of the Sector

Technical: Groundwater depletion has been compelling us to adopt new technologies, of which mostly are sophisticated and costly as well. In the near future, drinking water sources must switch to surface water from groundwater in such a context that we have merely safe surface sources. The cost of treatment of raw water to produce and supply as potable water is huge and usually compounds the burdens of cost sharing. There are many other technical problems like saline intrusion, arsenic contamination, etc.

Social: Influx of urban population, more particularly in the low income settlements, is already considered to be the pressing factor for the system-breakdown. Extension of service coverage is complex, and more importantly, with increasing demand for public resources for extension of services.

Environmental: Climate change impacts are of the top priorities of the government. Bangladesh, due to its geo-physical situation, is prone to natural calamities. Given the context, WSS infrastructures need to be climate resilient for sustainable service delivery. The affordability of general people of the country is under question, whereas, improved WSS infrastructures require additional funding.

4.15 Overall Tariff Administration

The revised SDP has recommended for a Regulatory Commission for WSS Sector to monitor and control the provision of public services like water supply and sanitation, whether they operated and owned by private or public. The main objective of regulation will be to:

- Ensure equity and fairness among users and service providers, and compliance with the standards of acceptable services
- Set tariff that provides sufficient revenue for the service providers to achieve the service standards
- Monitor performance, determine whether the service providers are in compliance with the desired service standards, and take appropriate actions if they are not
- Monitor users' obligations, i.e. payment of bills, acceptance of awareness building, etc.
- Protect environment and natural resources from abuse, and
- Provide certainty for private sector participation

Until the regulatory body is established, the SDP also recommends for creating a 'Water and Sanitation Cell' within the framework of Local Government Division. As intended, the WS Cell will be gradually transformed into the full-fledged Regulatory Commission for overall tariff administration in the WSS sector.

4.16 Risks and Assumptions

The service providers shall take into account the major factors which may adversely affect the cost sharing and recovery systems established at the local level or hinder cost collection include:

- *Lack of willingness at central level to allow tariff adjustment* to sustainable level, and unwillingness of LGIs (political leaders) to increase WSS tariffs
- *Reluctance of service providers in enforcing policies and regulations* related to cost sharing at various levels which may be derived from their political wills to provide services free of cost to protect so-called vote banks;
- *Natural or man-made disasters* which occur frequently, especially floods and fire hazards, may seriously affect the lives of the poor, destroying and damaging homes, land, crops and communications;
- *Migration* is high amongst the poor people as they tend to search for employment, food and shelters, often as a result of river erosion, slum evictions, lack of employment opportunity in rural areas, etc.
- *Non-existence of regulatory authority* which is essential to facilitate tariff designs and implementation to be done by the service providers at sparse rural and urban areas, and to monitor performances of such providers to ensure desired fairness, and to provide equitable services amongst the user categories

4.17 Implementation Road Map

A road map for implementation of the Cost Sharing Strategy for Water Supply and Sanitation in Bangladesh is proposed and presented in Table 4.1 below. This incorporates some issue-based key action points for the major WSS service providers (e.g. DPHE, WASAs, City Corporations, Pourashavas, Union Parishads, NGOs, and Private Operators) with tentative timeframes. The road map also consists of associate responsibilities from government ministries and departments, as well as indicative milestones to be achieved aligning with the goals and purposes of the cost sharing strategy set-forth.

Table 4.1 Implementation Road Map for WSS Cost Sharing Strategy

Key steps	Responsible	Recommended actions	Key milestones to achieve by short-term period (2011-15)
- Aligning cost sharing strategy with organizational goals, strategies and plans - Determining WSS service levels/standards and improvement targets - Assessment and redefining of consumer categories - Economic pricing of WSS services and Tariff restructuring - Planning and implementation of WSS service provision for floating population - Planning for WSS service provision during emergencies - Formulating organizational subsidy management strategy and a plan for gradual phasing out of subsidies by 2025 - Organizational policies for private sector participation	Local Government Division (LGD)	Government notification based on specific requirements forwarded by WASAs, CCs and LGIs	Major WSS service providers are authorized to formulate and implement cost sharing strategy
	Policy Support Unit (PSU) of LGD	Take central leadership in mobilizing resources and policy supports required for WSS sector; Outsource capacity strengthening supports for major WSS service providers	An enabling policy environment is created to act on the cost sharing purposes; Reviewed and adjusted strategies are on place
	Department of Public Health Engineering (DPHE)	Continue leadership in establishing improved WSS service delivery following cost recovery strategies at LGIs; Capacity building of LGIs, rural in particular	WSS service coverage and standards are improved as per target; Strategy operationalized
	WASAs	WASA Act 1996 to be amended as per need and WASAs would need to undertake necessary reforms	Policy and institutional reforms took place and are leveraged for strategy implementation
	Local Government Institutions (LGIs)	Act as per guidelines of the cost sharing strategy	Self-initiatives and impacts are demonstrated;
	NGOs and Private Sectors	Align with and implement the cost sharing strategy	Private sectors and NGOs are supportive to public agencies

Section 5

COST SHARING PRINCIPLES AND RECOMMENDED MODALITIES

5.1 Forms of Cost Sharing

The forms of cost sharing among service providers and users will be varying at levels and in different settings. The strategy document used the current forms of cost sharing practiced by different service providers (public, private and NGOs) in Bangladesh, as presented in the table below.

WSS Service Components	***Forms of Cost Sharing***	
	From Service Providers' End	***From Users/ Consumers' End***
Water Supply:		
Urban Piped Water Supplies	Land, Grant, loan, subsidy	Space, cash, material, tariff and O&M at point of use
Urban Non-Piped/Point Source Supplies	Grant, subsidy	Space, cash and O&M
Rural Piped Water Supplies	Grant, subsidy, sponsor contribution	Space, cash, tariff and O&M
Rural Non-Piped/Point Source Supplies	Grant, subsidy	Space, cash and O&M
Sanitation:		
Off-site Sanitation: - Sewerage and storm-water, wastewater drainage - Small-bore sewer, surface drains, etc.	Land, grant, loan, subsidy	Tariff for sewerage and storm-water drainage; Tax (levied with holding/ conservancy taxes)
Solid Waste Management	Grant, subsidy	
On-site Sanitation (e.g. household and community latrines)	Grant, subsidy	Space, cash and O&M

5.2 Guiding Principles

The basic premise of cost sharing is that water and sanitation is an economic good with a social responsibility to make those available to all. It is widely accepted that the overall sustainability of the WSS sector depends on its ability to become economically self-sufficient. Without necessary revenue, the service providers will be unable to continue providing water supply and sanitation services. In all instances, it will be essential to recover full financial cost or, in low income rural and urban areas, at least the operational and maintenance costs with support from government subsidies or cross-subsidies amongst consumers. Accepting the facts, the overall guiding principles of the strategy shall be to:

a) Operate and maintain water supply and sanitation systems in an efficient, transparent and accountable manner following commercial practices;
b) Adopt cost recovery measures for water supply and sanitation services in a manner that will ensure recovery of at least operation and maintenance costs, including rehabilitation of degraded

systems, and gradually recover capital costs of existing and new facilities required to meet future demand (for increased services and service areas);

c) Cost of unaccounted for (or non-revenue) water should reflect in the pricing (*but for fairness reasons, the management efficiency of the public utilities must be enhanced gradually to reduce the rate of unaccounted for water at least to 15-20% from the present rate which is globally acceptable to avoid the extra taxation to the consumers*) of water supply services;
d) Provide a safety net for the poor, hard to reach areas and population, and address the needs of women, children and people with disability; and
e) To ensure fairness and social justice between customers and service providers, while establishing service standards and tariffs.

5.3 Recommended Cost Sharing Modalities

The cost sharing strategy is a dynamic (or, rolling) document, which needs to be periodically reviewed and adjusted with the users' contexts as well as with relative market prices of goods and services. Considering the need for tariff restructuring by different service providers, and the current inflation trends and non-linear price influx of goods and services, it is recommended that the strategy is revised every five years, which is also coherently aligned with the Implementation of the Sector Development Plan (SDP) currently being revised for WSS Sector in Bangladesh. Therefore, the cost sharing modalities proposed in this strategy document shall be effective initially for the next (first) five years from its inception (and final approval by the Government) and to be revised and adjusted onwards.

5.3.1 Urban Water Supply

Cost sharing for urban piped water supply services shall be mainly in the form of tariff. For calculating the consumers' tariff rates, an Increasing Block Tariff (IBT) approach (*which is often called Progressive Tariff*) shall be applied. Pricing of the initial volume of consumable water shall be less expensive and the effect of steep increases in price, once the initial volume is exceeded, will be targeted to cut down wastage of water. The cost sharing for urban point-source supplies shall be in the form of 'capital cost contribution'.

For urban poor, a special (i.e. lifeline) tariff rate shall be prepared. The setting of tariffs for the urban poor shall take into account the ownership of the infrastructure and the distribution of responsibility for O&M. Cross-subsidies shall be allowed as a means of delivering affordable services in urban slums and low income settlements. If there is not enough high income consumers to provide the cross-subsidy in the community, government or donor subsidies shall be used through the service providers.

The issue of inequities in the allocation of costs in case of 'group users' shall be overcome by adopting a point system/sub-metering or an equal allocation/sharing of the bill among the users/households unless point supplies are metered/sub-metered (*the instances of solving such similar problems in billing/charging through sub-metering are created by ERC/REB in Power Sector in Bangladesh, which can be replicated in WSS sector*).

The core principle of 'full financial cost recovery' shall govern the tariff designs for urban piped water supply. The cost components and the calculation shall follow a uniform but reasonably flexible process, and shall be based on population, connection demand and costing projections; or alternatively be done on the basis of calculating volume of production and costs incurred for that.

5.3.1.1 Piped Water Supply

According to the principles adapted, the cost sharing modalities for urban piped water supply shall be as follows:

i. The unit of costing shall be based on 'm^3 (1000 liters) of water', and cost of production shall be estimated on the basis of:

    a) Cost of operation and maintenance (which includes fixed costs such as salaries and variable costs such as electricity, generator, bleaching and other treatment costs,
    b) Depreciation of the system,
    c) Cost of unaccounted for water or system loss (but should be reasonably acceptable), and
    d) Debt Service Liabilities such as interest, bad debts, if any

ii. Other costs involved in connection fees, internal plumbing including materials and labor, metering, construction of water reservoirs and tanks (i.e. underground, roof-top), quality testing, and in-house O&M shall be borne by the consumers/users.

iii. Consumers shall be broadly categorized into two groups. The first group shall be consisted of domestic, institutional and community users, and the second group shall be of commercial and industrial users (ref: Box 2);

iv. Tariffs for the first group shall be set according to the actual production costs, while a higher rate of water tariff shall be designed for the high consumer group of commercial and industrial users;

v. Consumers shall be categorized as per consumption blocks within each category, and the base (initial block) tariff for domestic, institutional and community use shall be based on actual costs estimated as per instruction (i) above, and the base tariff for commercial and industrial users shall be at least 300% higher than the base tariff of domestic use.

vi. The tariff rates for upper consumption blocks (both in case of domestic and commercial use), for example Block 2, 3, 4, 5 and so on shall be increased at 25%, 50%, 75% and 100% respectively from the base tariffs in order to achieve the target of 'cut-down wastage of water';

vii. A special (i.e. lifeline) tariff rates shall be applied for the urban poor and hardcore poor. According to this principle, 50% of the base tariff rate shall be applicable for the poor and 25% for the hardcore poor consumers, given that their consumption is within the Basic Minimum Service Levels (i.e. 20 liter per capita per day); and billing of water in such cases shall be based on water volume consumed per month by a single household irrespective of their connection natures (i.e. individual or group/bulk metered);

viii. For non-metered supplies, 'fixed charge' tariff approach shall be applied for all kind of users, in which the principle of rate calculation shall be similar to the users of metered connection. Billing of water use, in this case, shall be based on pipe diameters (i.e. 0.75", 1.00", 1.50", and 2.00").

ix. Consumers shall be responsible for paying their monthly bills (tariff) prepared by the service providers as per water volume consumed

Considering the complexities of tariff structuring, calculation, billing, and effectively managing system losses, the strategy strongly recommends for metering of the water supply services as quickly as possible.

5.3.1.2 Point Source (Non-Piped) Water Supply

The possible cost components of a point source supply along with distribution of costs among the service providers and users in an urban setting shall be as presented in the following table.

Cost Components	*Sharing of Cost by Forms*	
	Service Provider	*Users*
Physical spaces/lands for system construction	If spaces are of public	If places are of private
Estimated capital costs based on: - Costs of capital hardware/equipment (i.e. pump-head, pipes and accessories, hardware for other alternative options), and - Installation of pumps and construction of platforms, etc.	75-90% subsidy or grants	25% contribution for poor and 10% for hardcore poor users
Operation and maintenance (O&M)	No subsidy	100% contribution
Permissible fees and taxes	No subsidy	100% contribution

5.3.2 Urban Sanitation

5.3.2.1 Sewer Service

Cost sharing for sewer services shall be in the form of tariff. For the short term period (2011-15), sewer tariff shall be kept as per current cost calculation done by WASAs. From the medium term (2015-20) and onwards tariffs shall be calculated and charged on the basis of full cost of O&M and administration of the system. The cost sharing for sewer services shall be as follows.

a) For the water and sewer connected holdings, tariff shall be at least equal to the amount of water bills
b) For the water connected holdings which are not sewer connected but sewer line is within 100 feet, tariff shall be 16.60% of annual valuation of holdings but not exceeding amounts of water bill
c) For only sewer connected holdings, tariff shall be 45.84% of annual valuation of holdings
d) Minimum rate per month for both water and sewer shall be revised and charged with an proportionate increase (18%) from the present rates (based on pipe diameters)

5.3.2.2 Drainage Services

Cost sharing for urban drainage services shall be in the form of Taxes. For the short-term period (2011-15), taxes shall be as follows:

a) Tax rates shall be at least 3% of annual valuation of holdings for all cases (i.e. large cities and Pourashavas) where drainage facilities are existed; or according to the respective City Corporation and Pourashava rules and laws;
b) Taxes shall be revised and adjusted periodically in order to incorporate actual costs of operation and maintenance (O&M) of the facilities provided, and that has to be done as per provision of respective laws and ordinances of WASAs, City Corporations and Pourashavas.

5.3.2.3 Conservancy Services

a) Conservancy services shall include solid waste management, sweeping roads and footpaths, cleaning and maintenance of small drainage, etc.

b) Tax (tariff) rates shall be at least 5% of annual valuation of holdings for all City Corporations and at least 4% of annual valuation of holdings for all Pourashavas.

5.3.2.4 Conventional Sanitation Facilities

Conventional sanitation facilities will include individual and community latrines, public toilets, small-bore sewer with septic tank, and similar other arrangements. Cost sharing modalities for conventional sanitation facilities in urban settings shall be based on required cost estimates as presented below.

Cost Items	***Sharing of Costs by Forms***	
	Service Providers	***Users***
Land/physical spaces for system construction	Allocated, if lands are of public	Shared, if lands are of private
Estimated capital costs based on: - Costs of capital hardware (i.e. rings, slabs, CC pipes, and other construction materials) - Construction costs of septic tank	75-90% subsidy or grants	25% contribution for poor and 10% for hardcore poor users
Sludge disposal (desludging) and management	No subsidy	100% contribution
Operation and Maintenance (O&M)	No subsidy	100% contribution

5.3.3 Rural Water Supply

Cost sharing for rural water supply shall be based on estimated capital costs of the relevant option, and shall be applicable only for community or group use. Space for system installation and the costs of O&M shall be provided by the consumers/users.

Community Water Supply Options *(including platform, outlet drain, and water quality testing)*	***Recommended in *NPSWSS '98***	***Present practices***	***Proposed user contribution (% of estimated capital cost)***		
			Non-poor	*Poor*	*Hardcore poor*
Shallow TW with No. 6 & Dev Hand pump	50%	0 - 20%	100%	50%	25%
DTW with No. 6 & Dev Head hand pump	20%	10 - 20%	100%	20%	10%
Ring Well with No. 6 & Dev Hand pump	20%	3 - 20%	100%	20%	10%
Rain Water Harvesting System (RWHS)	20%	20%	75%	20%	10%
Pond Sand Filter (PSF)	20%	5 - 20%	50%	20%	10%
Shallow Shrouded Tubewell	50%		100%	50%	25%
Very Shallow Shrouded Tubewell	50%		100%	50%	25%
Iron Removal Unit (IRU)	20%	20%	50%	20%	10%
IFG with No. 6 Hand Pump	20%	15 - 20%	50%	20%	10%
Gravity Fed System (GFS)	20%	15 - 20%	50%	20%	10%
Super Tara/Tara-II/Hand pump/Deep set/Tara dev head	20%	10 - 20%	75%	20%	10%
Village Piped Water Supply	20%	0 - 20%	30%	20%	10%
Hand pump up-grade/rehabilitation	Not mentioned		100%	20%	10%
Pond re-excavation	20%		50%	20%	10%

**NPSWSS: National Policy for Safe Water Supply and Sanitation 1998*

The proposed user contributions are determined based on present cost sharing practices, and on field consultation with the major service providers and users.

5.3.4 Rural Sanitation

Community and Institutional Sanitation Options *(including water supply facilities)*	***Recommended in *NPSWSS 1998***	***Present cost sharing practices by different Organization***	***Proposed User Contribution (% of estimated capital cost)***		
			Non-poor	***Poor***	***Hardcore poor***
Pit latrine (single)	0% and 100% (Hard core poor and non-poor respectively)	0-100%	100%	50%	25%
Pit latrine (twin)		0-100%	100%	50%	25%
Community latrines			50%	40%	20%
Other Options:					
School latrine	Not mentioned	0-44%	25%		
Small drainage at GC	Not mentioned	0-20%	25%		
Public toilet at GC	Not mentioned	0-10%	25%		
Toilets at places of worships	Not mentioned		25%		
Rehab/upgradation of GC WSS options	Not mentioned	0-20%	25%		

*GC: Growth Center; *NPSWSS: National Policy for Safe Water Supply and Sanitation 1998*

Cost sharing modalities proposed for rural sanitation shall be applicable only for community options. User Contribution for school sanitation and sanitation in growth centers shall be borne by respective school management committee, growth center or market management committee, etc. Space for system installation and the costs of O&M shall be provided by the consumers/users.

All the water supply and sanitation options may not be required or applicable for a particular village or union. For all the rural water supply and sanitation options, non-poor users shall not be subsidized in principle, but in exceptional grounds like people residing in hard-to-reach areas, high arsenic contaminated region, technically difficult areas, where feasible technologies are expensive and inaccessible, disaster affected areas, subsidies may be initially (in the short and medium terms) granted in those cases.

5.3.5 Vendors' Water Supply and Sanitation Services

Vendor's types	**Water Supply Services**	**Sanitation Services**
NGOs and small private operators (buy and resell to poor consumers)	- Shall be eligible to buy at subsidized (50% costs of the base) rates and be restricted to resell it only to the poor consumers without profit	Tariff structures as stated in Section 5.3.2.4 and Section 5.3.4 shall be applicable.
Small and medium enterprises who buy raw water from public utilities and reproduce for marketing	- Shall be treated as 'commercial and industrial' consumers; - Shall be brought under licensing system and within regulatory control.	
Small and medium enterprises who run independent systems and undertake commercial marketing	- Licensing should be introduced with a reasonable fees to be determined by respective LGIs under which territory the business is operated; - Additional (50% of license) fees for groundwater abstraction to be determined by LGIs; - Pricing shall be fair and equitable to the users including poor;	Licensing with fees to be determined by respective LGIs; Pricing shall be fair and equitable to the users including poor.

Vendor's types	Water Supply Services	Sanitation Services
Large manufacturing industries who buy (raw) water from public utilities and reproduce for commercial marketing (in bottled or any other forms)	- Shall be charged as 'commercial and industrial' consumers; - Shall be brought under licensing system and within regulatory control.	Licensing and quality control to continue; Shall be gradually bring under WSS regulatory control
Large manufacturing industries who run independent systems and undertake commercial marketing	- Licensing and quality control to continue; - Shall be gradually brought under WSS regulatory control.	

5.3.6 WSS Service Provision for Floating Population

The WSS facilities (i.e. street hydrants, stand pipes/posts[14], shared taps, tubewells, bathing facilities and toilets with or without treatment) for floating population shall be installed in the public places and services in general be offered to the floating users at free of costs. Improved services at public places may also be offered on payments. These facilities shall be hosted by the authorities concerned (*for example, street hydrant installed at the railway station shall be hosted by Railway Department, shared tap installed at bus terminal shall be hosted by Bus Owners Association, and so on*), and they shall be held responsible for users fees and WSS tariff payment. Local Government Division, on government's behalf, shall be responsible for financing the deficits between actual production and delivery cost of services and the cost recovered from the hosting agencies. User fees for improved services shall be determined by the respective authorities as per economic convenience of the users. But in all these cases, lifeline tariff rates (50% of normal base tariffs) shall be applied.

5.3.7 Cost Sharing for Research and Action Research WSS Initiatives

Testing, piloting and action research: the costs of WSS service options (i.e. infrastructure, O&M) shall be borne by the providers for the period of piloting or action research. In case of options are succeed irrespective of urban and rural, the portion of costs shall be shared by the users as per cost sharing schedule.

Research: the full costs (i.e. infrastructure and O&M) of research activities on WSS services shall be borne by the providers for the period of the research.

5.4 Special Service Provision during Emergencies (e.g. Disasters, etc.)

Public Services:

a) Service providers in large cities and towns shall gradually install fire hydrants or any other suitable options for emergency fire fighting purpose at free of cost;
b) Emergencies caused by storms, cyclones, earth quake, floods and flash floods, and water logging shall be met with sufficient WSS services by public service providers. Services, in these situations, shall be provided free of cost during and, immediate post emergencies;
c) Special emphasis shall be given for providing WSS services to the most vulnerable groups of population including slums, floating people and other low income groups at free of cost.

[14] A pipe riser with a tap (faucet) used as a source of water, usually located publicly

Private Services:

a) Private demand for additional water supply and sanitation including rehabilitation services by the disaster affected but affluent users shall be provided with at least half of regular price.
b) Similar demand of the poor and low income users shall be met with half of the price charged for the affluent/non-poor user groups.

5.5 Special Service Provision for High Arsenic Contaminated Areas

According to the Arsenic Mitigation Policy and Plan 2004, all mitigation programmes shall adhere to the Bangladesh Standards for drinking water as defined in 'Environmental Conservation Act 1995 and Rules 1997, Schedule - 3'. Users shall be given special rebate on the cost sharing for the following alternative water supply options.

- Rain Water Harvesting System (RWHS)
- Pond Sand Filter (PSF)
- Iron Removal Unit (IRU)
- Deep set TW
- Village Piped Water Supply, among others

In addition, users of alternative technologies that are costlier than other options shall be provided additional subsidies irrespective of their economic status. Special discount on cost sharing for pond re-excavation and for any other system based on surface water shall be given in order to encourage the use of surface water rather than groundwater.

Section 6

OPERATIONAL GUIDELINES FOR MEASURING SERVICE LEVELS

6.1 Coverage of Services

6.1.1 Urban Water Supply

The coverage of urban water supply is planned to be based on percentage of population served such as 60% in the short-term, 60-90% in the medium-term, and more than 90% by the long term (*ref: Section 3.4, Table 3.1*).

Operational guideline (step-wise):

i) The number of households connected by water supply will be multiplied by the number of average household members to arrive at the actual number of population served.

   Note: The average number of household members will vary from place to place. In a multi-storied building where a single connection is given, total number of users will be divided by the number of households to arrive at the average number of household members.

ii) The actual number of population served (billed) will be divided by the total population under the territory of the service provider(s), and the result will further be multiplied by 100 (used to convert to percentage) to arrive at the percentage of population covered.

iii) The level of water supply coverage will be accepted, if that fulfills the planned requirement of service levels, for example, each individual of served population has access to a minimum quantity of water per day and to standard of water.

The calculation of service coverage provided through other than piped water systems (i.e. point sources) shall follow the calculation procedures used for rural water supply.

6.1.2 Rural Water Supply

The coverage of rural water supply is planned to be based on population per point source served such as 50 population per point source in the short-term, which will be gradually reduced to an average of 25-30 population per point source in the medium-term, and less than 25 population per point source in the long term (*ref: Section 3.4 and Table 3.2*).

Operational guideline (step-wise):

i) The actual total population of a village or a community will be divided by the actual total number of water point sources (e.g. tubewell, ring well, RWHS, PSF, etc.) to arrive at population per point source.

ii) Likewise, total population of a service area will be divided by the actual number of functioning point sources (used in that area) to arrive at the population per functional point source.

iii) The level of water supply coverage will be accepted, if that fulfills the planned requirement of service levels, for example, each individual of served population has access to a minimum quality/standard of water supply.

6.1.3 Urban and Rural Sanitation

Operational guidelines for measuring sanitation services in urban and rural areas are presented in a combined section, as coverage of sanitation for both the settings is planned to be based on similar (but through different technological options) percentage of population served, such as 60% in the short-term, which will be gradually increased to at 60-90% in the medium-term, and more than 90% in the long term (*ref: Section 3.4, Table 3.3 and 3.4*).

Operational guideline:

i) The actual number of population served by sanitation options (e.g. water sealed pit latrines, latrine with septic tank, limited sewer, etc.) will be divided by the total number of population of a village/community/moholla/area, and then the result will be multiplied by 100 (used to convert to percentage) to arrive at percentage of population covered.

This sanitation coverage will be acceptable if that fulfills the planned requirement of service levels, for example, each individual of served population has access to a minimum standard of sanitation services.

6.2 Service Levels

Service levels of water supply and sanitation are defined by a set of parameters. This includes: i) supply hours per day, ii) consumption per capita per day, and iii) water quality such as level of Arsenic and Bacterial concentration in water for urban water supply. For rural water supply, sanitary status of the point sources is added to the water quality parameters.

The gradual development of technologies for urban and rural sanitation is determined as the measure of service level improvement. This also includes operating efficiency (O&M status) of the options which is also expected to increase by time. The following is the operational guideline for measuring service levels.

6.2.1 Urban Water Supply

In the short term (2011-15) of SDP implementation, supply hours of each piped water system are expected to be an average of 6 (six) hours per day, and which is expected to produce and deliver at least 70 liter of water per capita per day. According to that estimate, monthly consumption of water of a typical household with 5 members will be (70 x 5 x 30) 10,500 liters (*ref: Section 3.4, Table 3.1*).

Operational guideline: Metered connection

The supplied drinking water will have less than 0.05 mg/l of arsenic concentration and 0/100ml fecal coliform (i.e. bacteria).

Operational guideline: water sample testing by field test kit or laboratory tests.

In the medium (2016-20) and long term (2021-25), the service levels are expected to be progressive. The supply hours in the medium term will be between 6-12 hours a day, water consumption will be increased to about 100 liter per capita per day, and concentration of arsenic and bacteria in water will be 0.05-0.01 mg/l and 0/100ml respectively in the medium term, while these qualities will be gradually improved in the long term (see figure 4.2).

6.2.2 Rural Water Supply

The target for rural water supply service quality is to ensure providing water having arsenic concentration below 0.05 mg/l, and 0/100 ml bacterial concentration with a sanitary score of 6-10 (as per example checklist below) in the short term (*ref: Section 3.4 Table 3.2*).

Example: Sanitary Inspection Checklist for a Tubewell (TW)

Specific Diagnostic Information for Sanitary Inspection		***Risk***
1.	Is there a latrine within 10m of the TW?	Y/N
2.	Are there any other sources of faecal pollution within 10m of TW?	Y/N
3.	Is the nearest source of faecal pollution on higher ground than the TW?	Y/N
4.	Is the drainage faulty allowing ponding within 2m of the TW?	Y/N
5.	Is the drainage channel cracked, broken or need cleaning?	Y/N
6.	Is the platform less than 1m in width/radius?	Y/N
7.	Does spilt water collect in the apron area?	Y/N
8.	Is the apron cracked or insanitary?	Y/N
9.	Is the hand-pump loose at the point of attachment to apron?	Y/N
10.	Is the fence missing or faulty?	Y/N

Ref: WSP Training Manuals for Engineers, WHO 2008

Total Score of Risks …..……../10
Risk score: 9-10 = Very high; 6-8 = High; 4-5 = Medium; 0-3 = Low

Operational guideline: Field or laboratory test of water samples for Arsenic and Bacterial presence, and sanitary inspection of individual point sources.

The service levels of rural water supply will be gradually improved in the medium and long term as shown in the section 3.4 (second and third rows respectively in the Table 3.2). Similar ***operational measures*** need to be taken for quality measurement.

6.2.3 Urban Sanitation

In the short term, targeted population (60%) will have access to and use single and double pit water sealed latrines with poor O&M status. In the medium term, it is expected that more (60-90%) population will use limited sewer, septic tank and small bore sewer with safe desludging and disposal. The O&M status at this stage will be moderate. In the long term, more than 90% population in Pourashavas will have access

to and use conventional and small bore sewer with sewage treatment facilities and having those well maintained (*ref: Section 3.4 Table 3.3*).

Operational guideline: physical verification of the options used.

6.2.4 Rural Sanitation

In the short term, about 60% population will have access to and use single pit water sealed latrines. About 60-90% population will have access to double pit water sealed latrines and more than 90% population will use latrines with septic tank and safe desludging and disposal facilities by medium and long term respectively (*ref: Section 3.4 Table 3.4*).

Operational guideline: physical verification of the options used.

6.3 Operating Efficiency

6.3.1 Urban Water Supply (Piped)

The unaccounted for water (UfW) due to causes like pipe leakage, illegal use, water used by either legal or illegal users but not billed, etc., will remain below 35% in the short term, 20-35% in the medium term, and below 20% in the long term (*ref: Section 3.4 Table 3.1*).

Operational guideline:

a) To arrive at the volume of water unaccounted for, the actual volume of water consumed by (billed to) authenticated users for a particular period will be deducted from the volume of water actually produced.

b) Therefore, to arrive at the UfW rate, the actual volume of water unaccounted for the particular period will be divided by the actual volume of water produced, and then the result will be multiplied by 100 (to convert it to percentage).

The bill collection efficiency of the service providers is targeted to be about 75% in the short term, which will be ranging between 75-95% in the medium term, and be more than 95% in the long term.

Operational guideline:

a) The actual revenue (in Taka) collected in a year will be divided by the total billed amount (Taka) to the consumers, and then the result will be multiplied (to convert it to percentage) to arrive at the collection efficiency of a particular provider.

6.3.2 Rural Water Supply

It is expected that the percentage of (physically) non-functional point sources will remain below 20% in the short term, 10-20% in the medium term, and less than 10% in the long term (*ref: Section 3.4 Table 3.2*).

Operational guideline:

a) Non-functional point sources mean the options which cannot yield water for any reason (mechanical or due to lack of repair and maintenance).

b) Whatever the case, to arrive at the percentage of non-functional point sources the actual number of such non-functional point sources will be divided by the total number of point sources in a particular area, and then the result will be multiplied by 100.

6.3.3 Urban Sanitation

In the short term, there will be low operating efficiency in safely managing sludge from on-site sanitation, while operating efficiency will be medium and high in the medium and long term respectively. Sludge disposal and treatment efficiency of conventional and small bore sewer will be high in the long term. (*ref: Section 3.4 Table 3.3*).

Operational guideline: physical verification and MIS reports

The recovery of O&M cost will remain low in the short term (2011-15), and that will be gradually increased to medium and thereafter to high level in the medium (2016-20) and long term (2021-25) respectively.

Operational measure(s): checking financial statements of service providers

6.3.4 Rural Sanitation

The Operation and Maintenance (O&M) status of the sanitation options used by the community is expected to be poor in the short term (2011-15), moderate in the medium term (2016-20), and well & good in the long term (2021-25) (*ref: Section 3.4 Table 3.4*).

Operational guideline: physical verification and MIS reports