

Study on Analysis of Application of IWRM Principles in Water Supply and Sanitation Projects in Dhaka



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Activity report: June to November 2012

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December, 2012

Environment and Population Research Centre (EPRC)
In Collaboration with
Bangladesh Water Partnership (BWP)

Preface

To prepare the report, the study conducted an analysis of IWRM principles in current water management practices for water and sanitation in the DWASA perspectives based on available project documents and interviews among related representatives of the stakeholders. This study was conducted by the Environment and Population Research Centre (EPRC) to do a preliminary brief review of the application of IWRM principles in the DWASA projects. It may be mentioned that the DWASA might have been implementing IWRM principles further more and at higher levels than that reported here.

We thank Dr Taqsim, Managing Director of DWASA, Additional Chief Engineer, Md. Bazlur Rahman, Project Directors Md. Shahajahan, Md. Walliullah Sikdar, Md Sirajuddin, Md. Abul Kasem and Executive Engineer Ms. Sharmin Hoque Amir for providing us with project documents to conduct the work. We are also thankful to Mr. Anamul Kabir and Mr. Abul Kalam Azad (Dipu) of EPRC who assisted in the field activities.

We thank Dr Bilqis A. Hoque, President, EPRC and Dean, School of Environment and Industrial Engineering, Uttara University, guided in conceptualize planning and carrying out all the activities of achieving the objectives.

The work was sponsored by Bangladesh Water Partnership and Global Water Partnership. We are acknowledging the Executive Committee of BWP for giving this opportunity to work on the issue. We sincerely thank Dr. Khondaker Azharul Haq, Vice President of Bangladesh Water Partnership for his support to the activities. Also, we are thankful to the interviewees from the various stakeholders who responded to our questions during the field activities.

EXECUTIVE SUMMARY

This is a study under the Bangladesh Water Partnership commissioned by the Environment and Population Research Centre (EPRC). The study describes the application of IWRM principles on the selected projects of DWASA. In order to do this, an approach was devised based on the available project documents in the DWASA. The study assessed the project experience against the background of a growing trend towards urbanization, particularly the pressure of population growth on the city of Dhaka, and in relation to the role and importance of water supply and sanitation services.

The main objective of the study was to evaluate the IWRM application in the selected projects of DWASA. The selected projects of DWASA were (i) Sayedabad Water Treatment Project (Phase-II) (ii) Dhaka Water Supply Sector Development Project (DWSSDP) (iii) Emergency Rehabilitation and expansion of Water Supply System Project (EREWSSP) (iv) Dhaka Water Supply and Sanitation Project (DWSSP) (v) Tetuljhara Bhakurta Well Field Construction Project. The methodology was followed based on the reports available in the DWASA of the selected projects and the interview with the DWASA officials, stakeholders, and community people. First, the four guiding principles that came out of the Dublin Conference were reviewed for this study. These guiding principles are (i) Water is a finite and vulnerable resource, essential to sustain life, development and the environment, (ii) Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels, (iii) Women play a central part in the provision, management and safeguarding of water, and (iv) Water has an economic value in all its competing uses and should be recognized as an economic good.

Each of the selected projects was evaluated on the basis of IWRM principles. The results revealed that during the project inception phase a baseline survey and feasibility studies were conducted for each of the projects. In addition, the project's goal was set to contribute to sustainable provision and operation of urban water supply services. After the implementation of the projects, regular monitoring of water quality and improvement of water monitoring system were evaluated regularly.

The participatory approach was giving no/less highlight in the project cycle; however, it gave more responsibility to the water users. The lack of the stakeholder involvement in the decision making process was also identified. The projects had also less focus on gender involvement. Before planning the project, the participatory approach was not followed properly to select the project area.

The organization review revealed that there was less co-ordination between agencies (DCC, DWASA, RAJUK) for certain aspects of service delivery, in particular sanitation within the slum areas which hindered for an effective and coordinated provision of all services. DWASA's local level officials have little or no incentive neither to support service provision to lower income and slum communities nor to coordinate service delivery with other programs of DCC.

Currently, water supply to the slum areas was coordinated by the Commercial Manager as an additional function. The function is managed on ad-hoc basis. The new division is under the Commercial Manager due to historical practice; however, the Commercial Manager does not have

any direct link with authority over the MODS zones which are responsible for service delivery. Thus, while the new organ gram has made an attempt to formalize the existing ad-hoc institutional procedures for the slum dwellers in order to get access to DWASA services, co-ordination between HQ and zone level remains difficult.

Hence, coordination among relevant stakeholders for efficient functioning of slum WSS facilities and low-income communities is absent in the head office of DWASA. There was also no such forum or body in the DWASA headquarters to conduct such coordination meetings among the stakeholders to assess the present state of affairs in the slums and low income communities. Therefore, sometimes illegal connection, poor management and less production compared to demand were responsible for water crisis.

During the interview with the women in Mirpur-2, Mirpur-14 Benarashi Palli, they explained their misery regarding water despite having access to the piped water connection. Despite huge water-related cost, the quality had been far from satisfactory. During the dry period, sometimes they were supplied with water of intolerable quality.

Therefore, to improve the water supply and sanitation services in DWASA, the IWRM principles should be strictly followed with the emphasis on (i) focus on stakeholders and beneficiaries, (ii) focus on co-coordinating mechanism, (iii) focus on gender issues, and (iv) focus on capacity development and empowerment

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List of Abbreviations

BBS	Bangladesh Bureau of Statistics
CBO	Community Based Organization
CEGIS	Centre for Environment and Geographical Information System
CM	Commercial Manager
DCC	Dhaka City Corporation
DESA	Dhaka Electric Supply Authority
DMA	Dhaka Metropolitan Areas
DSMA	Dhaka Statistical Metropolitan Area
DTW	Deep Tube Well
DWASA	Dhaka Water Supply and Sewerage Authority
GIS	Geographic Information System
GoB	Government of Bangladesh
GWP	Global Water Partnership
HQ	Head Quarters
INGO	International Nongovernmental Organization
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
MDG	Millennium Development Goal
MLD	Million Liter per Day
MODS	Maintenance Operations Development Services
MoWR	Ministry of Water Resources
NWMP	National Water Management Plan
O&M	Operations and Maintenance
PDB	Power Development Board
PRSP	Poverty Reduction Strategic Paper
PSTP	Pagla Sewerage Treatment Plant
RAJUK	Rajdhani Unnan Kartipakho
SWTP	Surface Water Treatment Plant
TAC	Technical Advisory Committee
ToR	Terms of Reference
TOT	Training of Trainers
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WHO	World Health Organization

INTRODUCTION**1.1 Background**

Integrated Water Resources Management (IWRM) has become a specialized field of natural resources management and by virtue of its nature of specialized field in integrating and managing the resource. Rational and consensus decision making, considering all aspects of stakeholder, is now becoming critical challenge to implement a successful IWRM program. The most important issues facing the world today is ensuring sustained functioning of existing water supply system and making safe and assured water accessibility to those not yet served, particularly the poor in the rural and urban areas. Water is economic and community resource while being a precious natural resource, involving many dimensions, social, economic, cultural, ethnic and political, converging when development and management of water are sought.

Dhaka, the capital of Bangladesh is one of the most populated cities in the world with a population of 10 million in an area of 1528sq.km (RAJUK, 2004). Many people from the whole country are forced to move from rural areas to the urban areas due to natural disasters like river erosion, cyclone, storm surges and dry spells/cold spells. For massive migration of people towards urban areas, population density in Dhaka city is increasing day by day, thereby putting enormous pressures on urban infrastructure, economy and service delivery systems of the city.

This report explains the application of the integrated water resource management (IWRM) in the existing water supply and sanitation projects of DWASA.

1.2 Drinking Water Supply and Sanitation Situation in Bangladesh context

Safe water-supplies and environmental sanitation are vital for protecting the environment, improving health and alleviating poverty. Safe water is also crucial to many traditional and cultural activities. An estimated 80 percent of all diseases and over one third of deaths in developing countries are caused by the consumption of contaminated water, and on average as much as one tenth of each person's working time is reduced due to water related diseases. Concerned efforts during the 1980s brought water and sanitation services to hundreds of millions of the world's poorest people. The most outstanding of these efforts was the launching in 1981 of the International Drinking Water Supply and Sanitation Decade, which resulted from the Mar del Plata Action Plan adopted by the United Nations Conference in 1977. The commonly agreed premise was that "all peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of quality equal to their basic needs".

Bangladesh, being a riverine country, has been facing dual challenges from water: firstly, unlimited flood water during wet season and secondly, increasing scarcity during dry season. However, one in eight people does not have access to safe drinking water and two of five people do not have adequate sanitation worldwide (Water Aid, 2010). Life cannot sustain beyond a few days without water. Moreover, lack of access to adequate safe water leads to the spreading of diseases. Children and women bear the greatest health burden associated with poor water and sanitation. WHO (2002) estimated that 1.73 million deaths occur each year due to diarrheal diseases attributed from poor water supply, sanitation and hygiene. Dhaka city has been expanding with an annual rate of 3.5

percent following an unsystematic approach (Islam *et al.*, 2009) to accommodate huge population influx of more than seven million (BBS, 2009) people.

Such urban sprawl exerts immense pressure on the infrastructures of the city. The city inhabitants, therefore, are deprived of basic amenities of urban life where water supply has appeared as the most critical issue. At present, water demand has surpassed the water supply where 25 percent of the total population of Dhaka city has no direct access to potable water (Nishat, *et al.*, 2008). Dhaka Statistical Metropolitan Area (DSMA) covers an area of 1353 Km², out of which Dhaka Metropolitan Area (DMA) constitutes 27 % (360 Km²). Until 1989, Dhaka Water Supply and Sewerage Authority (DWASA) operation was limited to DMA bulletin 1990; it extended operating area to adjacent Narayanganj metropolitan as well.

In Bangladesh, the National Policy for Safe Water Supply and Sanitation (1998) declares state ownership to water. Even though the policy acknowledges that access to safe water is essential for socio-economic development of the country but no special provision has been made to ensure citizen's right to water. Rather, the policy in the article 4.3 (paragraph f) addresses water as an 'economic good' by keeping provision of conferring water right to private or community bodies to provide secure, defensible and enforceable ownership rights for attracting private investment. Moreover, the proposed Water Act 2010 in its preamble defines 'right to water' as acquired access and use rights. In addition, the act does not acknowledge 'citizen right to water' and state's obligation to supply safe water; rather it encourages privatization of water through a general authorization or license. In urban areas, the policy aims to ensure each household has safe drinking water and easy access to a sanitary latrine, with options ranging from pit latrines to water borne sewerage. Measures are proposed for the provision of solid and liquid waste disposal in urban areas and for production of compost.

These provisions conflict with the spirit of constitutions deceleration on rights to the basic necessities. The Government of Bangladesh (GoB) has also planned to develop and manage water resources efficiently in Poverty Reduction Strategic Paper (PRSP), but 'right to water' issue remained overlooked there as well. Under the umbrella of PRSP and sectoral development policies, many projects have already been implemented or some are at the implementing stage, but 'right to water' has remained an under treated issue.

Table 1.1: Indicative targets for water supply, sanitation and storm water drainage

Indicative target	2005	2010	2025	2050
Water supply				
Access to safe water for basic needs	98%	100%	100%	100%
Provision of household piped water	65%	75%	90%	95%
Sanitation				
Access to appropriate sanitation	90%	100%	100%	100%
Provision of household water borne sanitation	60%	70%	85%	90%
Storm water drainage	50%	70%	100%	100%

1.3 Introduction to Dhaka WASA

DWASA is a public service institution, operating on a commercial footing. Since 1971 Dhaka is growing rapidly in terms of area and population. Increasing demands for basic city services the most important one being the demand for safe and reliable water supply. It is a great challenge for DWASA to ensure water of adequate quantity and quality round the year.

The objective of Dhaka WASA is to improve the life standards of the mega city of Dhaka and Narayanganj by supplying safe and potable water and improving the sewerage and drainage system. The major responsibilities of DWASA are as follows:

- i. Construction, operation, Development and Maintenance of necessary infrastructure (Deep Tube well, Water Treatment Plant) to supply purified water to residential, industrial and commercial bodies.
- ii. Construction, development and maintenance of sewerage treatment and sewerage system.
- iii. Construction, development and maintenance of storm sewer lines to remove water congestion in the city.
- iv. Solid waste management.

Dhaka WASA is mandatory to:

- (a) Provide safe and sufficient water for drinking, industrial and commercial use.
- (b) Ensure sanitation and good hygienic condition through proper disposal of domestic and industrial sewage.
- (c) Ensure efficient storm-water drainage.

The water supply system of Dhaka WASA is dependent on groundwater. The 87 % of water is from under groundwater sources and 13 % is from surface to meet the water demand per day. It is mandated to cater the water supply, sewerage and storm water drainage services to the dwellers of metropolitan Dhaka City and Narayanganj town through 10 (ten) Maintenance Operations Development Services (MODS) Zones and Narayanganj MODS. DWASA is obliged to extend its service to the poor enclaves and slums, which conforms to the poverty reduction aspirations of the Government. The major services including standards, quality and time frame and how/where to get them specifically includes but not limited to the following:

1.3.1 *Water Supply*

Water supply includes:

- Production of both surface (18 %) and groundwater (82 %) with conjunctive use and supply of potable water on a round the clock basis in conforming to the country's acceptable health standards through about 2,500 Km of distribution mains to the domestic, commercial and institutional entities within its service area of about 400 sq km and services provided to the population of about 10 million. Ensure proper operation and maintenance of the total water

supply system including 490 DTW, three SWTP: one at Sayedabad, other at Chandnighat and one at Narayanganj.

- About 60 % of the DTW are installed with standby generators and almost 100 % DTW are equipped with chlorination facilities.
- In case of any emergency breakdown disrupting the supply due to technical or any other reasons, organize supply of water to meet the demand of the consumers at a specific rate by using the tank lorries belonged by DWASA.

1.3.2 Sewerage

The sewerage system of Dhaka city was initiated in 1923 and was improved subsequently. Due to lack of resources, the sewerage system in many areas of Dhaka city has not been expanded.

In specific areas (covering about 20 % of the city dwellers), the aim is to collect and transmit liquid wastes from domestic, commercial and industrial units through piped sewer of about 881 Km and undertake their pre-disposal treatment before final disposal, ensure continuous monitoring of the O&M aspects of the system and keep it fully operational and functional.

1.3.3 Storm Water Drainage

Storm water drainage includes:

- Install, operate and maintain about 233 Km of underground conduits of storm water drainage & 65 Km of open channel and 8 Km of Box culvert in an efficient manner for timely collection and disposal of storm water and non-sanitary waste water generated by households and other units.
- Organize and manage prompt disposal of stagnated water from any area under its domain by using direct pumping. DWASA deals with the Primary Storm Water Drainage facilities and whereas the DCC deals with the Secondary and Tertiary drainage works within the Metropolis.

1.4 Overview of IWRM and IWRM Principles

IWRM is defined by the Global Water Partnership (GWP, 2000). Integrated Water Resources Management (or IWRM) is “a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (GWP-TAC, 2000).

A more functional definition is used by the United States Agency for International Development (USAID): “IWRM is a participatory planning and implementation process, based on sound science, which brings together stakeholders to determine how to meet society’s long-term needs for water and coastal resources while maintaining essential ecological services and economic benefits.”

The above reference continues to say that “IWRM helps to protect the world’s environment, foster economic growth and sustainable agricultural development, promote democratic participation in governance, and improve human health.”

It is important to note that IWRM is a process, not a product, and that it serves as a tool for assessment and program evaluation. IWRM does not provide a specific blueprint for a given water management problem but rather is a broad set of principles, tools, and guidelines, which must be tailored to the specific context of the country or region or a river basin.

1.4.1 The Dublin Principles

At the International Conference on Water and the Environment (ICWE), held in Dublin, Ireland in 1992, over 500 participants representing 100 countries and 80 international and non-governmental organizations, the following principles were recommended to guide global water management and development efforts:

Principle 1 “Ecological”: Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.

Principle 2 “Institutional”: Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.

Principle 3 “Gender”: Women play a central part in the provision, management, and safeguarding of water.

Principle 4 “Instrument”: Water has an economic value in all its competing uses and should be recognized as an economic good.

Later that same year, the Dublin principles were incorporated into the Agenda 21 recommendations put forth at the UN Conference on Environment and Development (UNCED) in Rio de Janeiro. Since then, these principles have strongly influenced the development of IWRM. The four principles are discussed below, together with how they guide general IWRM approaches:

Principle 1- “Ecological”: It calls for a holistic approach to WRM, “linking social and economic development with protection of natural systems” (ICWE, 1992). Recognizing the catchment area or river basin as the most appropriate unit for WRM, Principle 1 calls for coordination across the range of human activities that use and affect water in a given river basin. IWRM approaches incorporate this principle into its emphasis on integration between all concerned water sectors.

Principle 2-“Institutional”: This participatory approach is to raise awareness of water issues among policy-makers and the general public. It emphasizes subsidiary - management decisions should be taken at the lowest appropriate level, with central government retaining regulatory and support roles. It advocates increased accountability of management institutions and full consultation and involvement of users in the planning and implementation of water projects. The capacity of certain disadvantaged groups may need to be enhanced through training and targeted pro-poor development policies for full participation

Principle 3-“Gender”: The approach emphasizes the important synergy that exists between gender equity and sustainable water management. Worldwide, women play a key role in the collection of water for domestic – and often agricultural use, but in many societies, women are excluded from water management decisions. IWRM includes an emphasis on empowering women in its focus on participatory management and capacity building.

Principle 4-“Economic”: Known as the “instrument principle”, the approach emphasizes the importance of economic tools in helping achieve efficient and equitable use of water resources. The human right to access clean water and sanitation at affordable prices must be recognized, but the scarcity of water demands that economic perspectives should not be ignored. In conditions where water is especially limiting, where supply augmentation is not a feasible option, economic tools should play a larger role in determining how limited water resources should be distributed efficiently and equitably. Managing water as an economic good is also a key to achieving financial sustainability of water service provision, by making sure that water is priced at levels that ensure full cost recovery.

GWP takes its guiding principles from the Dublin and Rio statements (1992), from the Millennium Assembly (2000), which gave rise to the Millennium Development Goals, and from the World Summit on Sustainable Development (2002) Plan of Action, which set a target for the preparation of IWRM and Water Efficiency plans. Over time, GWP has adapted and elaborated these principles to reflect international understanding of the 'equitable and efficient management and sustainable use of water'. The guiding principles are:

- Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment.
- Water development and management should be based on a participatory approach involving users, planners and policy makers at all levels.
- Women play a central part in the provision, management and safeguarding of water.
- Water is a public good and has a social and economic value in all its competing uses.
- Integrated water resources management is based on the equitable and efficient management and sustainable use of water and recognizes that water is an integral part of the ecosystem, a natural resource, and a social and economic good, whose quantity and quality determine the nature of its utilization.

Center for Environmental and Geographic Information Services (CEGIS) has been designated to conduct the Training of Trainers (ToT) on IWRM and they plan to organize a six-day long training program on ToT course on Integrated Water Resources Management (IWRM) concept and its practices for district level Water Managers. The training was held from 09 June to 14 June, 2012. The first part (09 June to 11 June) of the training was held at Dhaka and the second part (12 June to 14 June) was held at Jessore. The main objective of the training was to enhance the knowledge and capacity of the professional trainers of various organizations on Integrated Water Resources Management (IWRM). To make participants familiar with field work, South-west Area Integrated Water Resources Planning and Management Project (SWAIWRPM) has been selected and their concepts and IWRM experiences were shared with the participants. Mid level Water Resources Managers who are involved in water resources planning, development and management will participate in the ToT course.

1.5 Necessity of IWRM in Water Supply and Sanitation

The IWRM approach facilitates mainstreaming water issues in the political economy of a country, and as such in all societal sectors. It focuses on better allocation of water to different water user groups and in doing so stresses the importance of involving all stakeholders in the decision making process. It also calls for gender mainstreaming in land and water management decision making. And it supports the integration of water supply and use with the management of waste, sewage and groundwater protection, while recognizing that the protection and quality improvements of water

are preconditions for sustaining both human livelihoods and natural ecosystems. This approach is also recognized as a framework for the adaptation of water management to climate change and the management of floods and droughts.

Demographic and urban growth and the worldwide progress of industrialization combine to increase the demand for water. The ecosystems which produce and regenerate this resource, are threatened, polluted or destroyed. The world population tripled during the 20th century, its water needs have multiplied by six. Therefore, 1/6 of the world population has no access to drinking water, 1/3 is not connected to a waste water treatment system, and 7 million people die each year from diseases transmitted by water. Irrigated areas have multiplied by five during the last century, and 70–80 % of the water used worldwide serves the agricultural sector. Again, 70 % of industrial sewage in developing countries is fed into water ways without any form of waste treatment, 50 % of the world's wet zones have disappeared during the 20th century and 1/3 of catchment areas have lost up to 75 % of their forests.

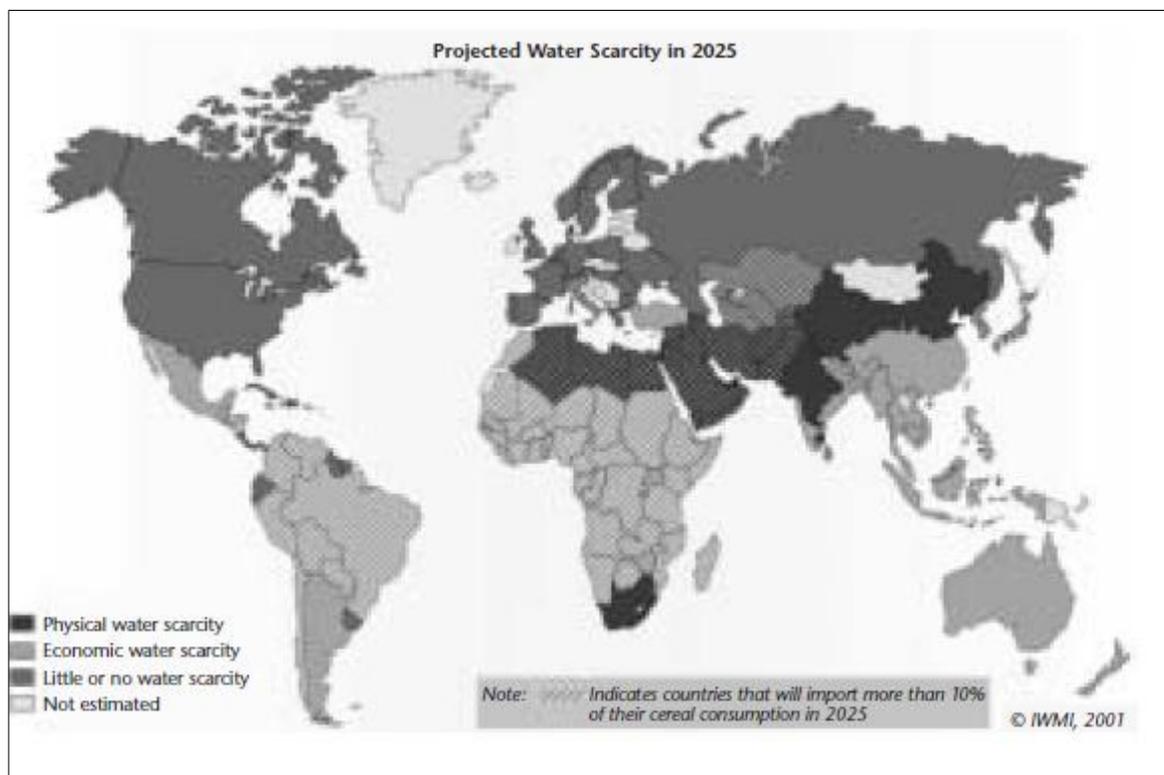


Figure 1.1: 40% of the world population live in a potentially stressed hydrographic basin (IWMI 2001, based on the colour original).

Having recognized the severity of this crisis, world leaders committed themselves, at the United Nations Millennium Summit in 2000 and the World Summit on Sustainable Development in Johannesburg in 2002, to “reduce by half the proportion of people without sustainable access to safe drinking water and waste water treatment facilities by 2015.” This millennium objective has been recognized as a common concern and top priority worldwide, yet it is unrealistic even today. To implement it, 400,000 persons would have to be connected to a water supply and treatment system

each day! Furthermore, it does not adequately integrate the issues of water regeneration and availability.

Improved development and management of water resources, based on a true and inclusive stakeholder involvement, provides a direct link to the MDGs addressing poverty, hunger, gender equality, health, education and environmental degradation. In recognition of this link, an important short term target was agreed upon at the World Summit for Sustainable Development in Johannesburg in 2002 and included in the Johannesburg Plan of Implementation: “To develop integrated water resources management and water efficiency plans by 2005, with support to developing countries”, or in short the “IWRM Target” . This target was intended to highlight the vital role of improving water management through IWRM as a means towards the achievement of the Millennium Development Goals. Since 2002, many countries have progressed towards this target, as reported by the Global Water Partnership (GWP), UNEP, UNDP and the Japan Water Forum in survey reports presented at the 4th World Water Forum in 2006.

By the end of 2005, 25 % of the 90 countries surveyed had made “good progress”, while 50% had made “some progress” and 25 % had made limited or no progress towards the IWRM Target (GWP, 2002). Although the surveys recognized that considerable progress had been made, it was clear that many countries still had a long way to go in achieving the target, and most countries still faced considerable challenges in implementation. For example, in Chile, an IWRM approach evolved to address the equity and environmental issues caused by a narrow adherence to ‘economic efficiency’ in the development and allocation of the country’s water resources. This evolution can also be seen in the case of China’s controversial three Gorges project, which began with an almost exclusive focus on infrastructure but ended with more than half the budget being used to fund community relocation and environmental remediation, and ultimately led to a fundamental change in the country’s approaches to water resource management (www.gwpforum.org).

1.6 Objectives of the study as stated by BWP

The objective is to describe the IWRM principle, being applied on the selected project of DWASA.

1.7 Limitations

Dhaka WASA is a huge public utility and a very complex organization with multi faceted functions and services. It is quite difficult to have a comprehensive understanding of the whole organization in such a short period of time. Given the limited duration of the study (three months) and the logistical requirements, the fieldwork is also limited to five selected projects.

However, there is shortage of information related to the selected projects and difficulties in accessing information from secondary literature.

METHODOLOGY**2.1 Introduction**

The aim of this report is to examine the influence of IWRM in water supply and sanitation projects in DWASA. The data has been collected from the secondary sources and primary field study.

2.1.2 Secondary data

The secondary data regarding the project proposal have been collected from DWASA. Further, relevant books, articles, and reports have been collected from different government, non-government organizations and internet. Each of the projects has been evaluated based on the following framework:

- Summary of the project context (national and local issues that may influence outcomes)
- Approach (IWRM principles on the activities of the water supply and sanitation program)
- Scaling-up (is the approach likely to be applied within the IWRM principles?)

2.1.3 Primary data

Questionnaires were designed and developed to target water resources consumption and practices in the pilot areas. Specific questionnaires were prepared based on the review of available literature to address the IWRM in water supply and sanitation projects in DWASA. The questionnaires target was not only to assess the IWRM application, but also to include awareness issues with respect to water conservation and management.

In order to get the information and data required, the DWASA office was visited. The officials within the organizations that have adequate knowledge and insight in their organization have been interviewed. The officials of the projects (represented by one or two) were interviewed for about 30 mins. The interview was of semi-structured kind; topics that had to cover were determined on a high level, but respondents had a large degree of freedom in answering the questions. The reason to choose the semi-structured approach is that it was not supposed to limit the answering of the respondents.

In each case, the interview was conducted for the study involved:

- Interviews with DWASA officials.
- Interviews with important stakeholders within DWASA.
- Interviews with the community people.

RESULTS AND DISCUSSION

3.1 Introduction

A study has been conducted to see the IWRM application on the selected water supply and sanitation projects. In this regard, the following projects are selected for review the IWRM application in these projects. The selected projects are:

- (a) Dhaka Water Supply Sector Development Project (DWSSDP)
- (b) Syedabad Water Treatment Project (Phase-II)
- (c) Emergency Rehabilitation and expansion of Water Supply System Project (EREWSSP)
- (d) Dhaka Water Supply and Sanitation Project (DWSSP)
- (e) Tetuljhara Bhakurta Well Field Construction Project

In this section, summary of the projects, perception of the DWASA officials, stakeholder and community stakeholder are assessed to identify the IWRM application in the selected projects.

3.2 Dhaka Water Supply Sector Development Project (DWSSDP)

3.2.1 Project description

The objective of the project is to contribute to sustainable provision and operation of urban water supply services, particularly in Dhaka city, by rehabilitating and strengthening the water supply system based long term policy and investment roadmap. Main components under the Dhaka Water Supply Sector Development Project are:

Component A: Distribution System and Quality Improvement

This component will involve physical rehabilitation and strengthening of DWASA's water distribution network to minimize losses and to enable 24 hour pressurized water supply, and provision of water quality assurance and control measures, particularly within four out of six selected MODS zones. Its subcomponents are:

- Distribution Network Rehabilitation and Strengthening
- Water Quality and Monitoring System Improvement

Component B: Capacity Building and Institutional Strengthening

This component will essentially include:

- institutionalization of sound financial management, efficient billing, revenue collection and customer record systems

- provision of comprehensive training for all levels of DWASA staff to optimize operational performance and upgrading of training facilities; and
- extensive demand control and awareness campaign for consumers

Pertinent sub-components are:

- Financial Management Improvement
- Training and Capacity Building
- Demand Control and Public Awareness

Component C: Project Management and Implementation Support

Its main subcomponents are:

(a) Consulting services entailing

- project management and monitoring
- detailed planning and design activities under the Project
- contract structuring, tendering, execution, and management
- construction supervision
- preparation of a demand control, resource conservation and public awareness campaign, including the tariff awareness program; and
- Identification and development of various institutional strengthening measures, training modules and guidelines/manuals and provision of training.

(b) Consulting services will also include engagement of NGOs to manage parts of the demand control and community awareness program.

Additionally, consulting services will be provided to assist DWASA in conducting a feasibility study for an optimal location of the future 500mld SWTP.

Project Output:

Consistent with project objectives, explicit project outputs will entrain rehabilitation and strengthening of the water supply system in the Dhaka city, and building the capacity of DWASA to optimize its system and provide improved services to the urban dwellers of Dhaka, stretching to the year 2025. The projected output will result in:

- (a) Strengthened institutional, governance and managerial structure and capacity of DWASA
- (b) Improved financial and operational management capacity of DWASA and trained staff and resources for DWASA adequately operating and maintaining the system
- (c) Enhanced policy framework for improved physical condition of the water supply system
- (d) Rehabilitated and strengthened distribution network
- (e) Improve water quality and monitoring system

Following output is also specifically included:

Identification and development of various institutional strengthening measures, training modules and guidelines/manuals and provision of training is included. The project also includes engagement of community based organizations to manage parts of demand control and community awareness

program. In addition, the component will provide assistance to DWASA in conducting a feasibility study for an optimal location of the future 500MLD surface water treatment plant and long-term sustainable raw water intake.

3.2.2 Principles as incorporated in the document and discussions

Principle 1: “Ecological”: Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.

During the project inception phase, a baseline survey on existing and possible pollutant sources was conducted. In addition, the projects goal was set to contribute to sustainable provision and operation of urban water supply services.

-Feasibility study has also been done to see the long term sustainable **Sayedabad**
-Regular monitoring of water quality and improvement of water monitoring system has been identified.

Principle 2: “Institutional”: Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.

-In this project, the principles underlie the water management strategy. The participatory approach was given less/no highlights in the project cycle, however, the water users were given more responsibility in the participatory approach. There is lack of the stakeholders involvement in the decision making process. The participation of local users through community groups requires a commitment to training and education to ensure they have the ability to make their views heard.

-Lack of legal mechanisms at the various levels.

- Local communities have been given less priority to address water quality and quantity changes.

-The policy is in place but little information has been disseminated to the public, rendering it ineffective. Lack of co-ordination is found with the relevant government departments (DCC, DESA etc.)

Principle 3: “Gender”: Women play a central part in the provision, management, and safeguarding of water.

- Internationally, it is acknowledged that men and women have distinctive roles to play in the management of water resources. None of the projects adopted this wider view of gender, and actually reported more on the role of women. This implies that issues such as ensuring adequate representation of poor or marginalized groups still do not receive the attention deserved.
- Less focus of the participation of women on local water source decision making bodies
- Although there is an enabling environment in many projects but less consider the gender approach. It is not highlighted how many female staff will be employed during the project implementation and the proportion of women staff is extremely limited. Any of the projects does not present the figures for the breakdown of staff gender at the national or regional level.

Principle 4: “Instrument”: Water has an economic value in all its competing uses and should be recognized as an economic good.

- DWASA never conducts with the relevant stakeholder organization and community people to fix the water charge for household, commercial, and industrial purposes.

3.3 Sayedabad Water Treatment Project (Phase-II)

3.3.1 Project description

The main objective of this project is to provide additional 225 MLD safe water for Dhaka with improvement of city’s environment, in particular management of surface water and to go ahead to achieve the MDG’s goal through poverty reduction to city dwellers. The current production capacity of surface water treatment plant of Sayedabad water treatment (phase-1) is 225mld.

Therefore, after the successful completion, operation and maintenance of Sayedabad phase I, Sayedabad phase II is being implemented with the assistance of Danida to produce and supply additional 225mld water in the system from surface water and groundwater sources contribution as 50: 50 within very short time. The Sayedabad Water Treatment Plant Phase II is being implemented with an estimated total cost of 1140 crore taka.

The prime objectives of the project are:

- (i) Extend the provision of potable water to Dhaka city to 450,00m³/d through the construction of an additional phase of 225,000m³/d from Sayedabad Water Treatment plant
- (ii) Construction of about 10km of water transmission line and
- (iii) Construction of 450,000m³/d capacity of biological pre-treatment unit to be used for Sayedabad Water Treatment Plant Phase I and Phase II.

The treated water at Sayedabad is compliance with guidelines set by the World Health Organization and Bangladesh drinking water standard. Existing laboratory facilities in Sayedabad Water treatment plant is also regular monitoring to maintain the water quality of treated water.

3.3.2 IWRM Principles as incorporated in the document and discussions

Principle 1: “Ecological”: Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.

- During the project inception phase a baseline survey on existing and possible pollutant sources was conducted. In addition, the projects goal was set to contribute to sustainable provision and operation of urban water supply services,
- Feasibility study has also been done to see the long term sustainable **provision**.

- Regular monitoring of water quality and improvement of water monitoring system has been identified.
- Proper measures for environment protection, along the river and its surrounding zones from where the raw water is withdrawn are also considered. Environmental protection along the river is a multidimensional and multi-departmental issue to be taken care of in a coordinated way. One of the major sources of river water quality deterioration is the indiscriminate industrial effluent discharge into the river. Department of Environment (DOE) has already issued notification to establish and operate Effluent Treatment Plant (ETP) in the industries concerned. On the other side, Dhaka WASA has taken with the collaboration of the World Bank project for implementation of sewerage system in the area. The feasibility of the project is also completed.

Principle 2: “Institutional”: Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.

- The project will not have any adverse effect on environment like land, water, air and bio-diversity. After implementation, women are benefited as the water supply is being improved and so they can easily maintaining their household.
- Most cost effective method has been selected to supply safe water for human consumption. Substantial number of people of different categories will be employed during execution as well as after completion of the project operation and maintenance; this will help in reduction poverty.
- Not clearly stated but there is currently scope of working atmosphere with joint collaboration seemed to be effective by the urban NGOs. It has been assumed that co-ordination among the various social development agencies, government departments and implementation groups could have a greater impact to reduce those problems in WAT/SAT/HYE sector.

3.4 Emergency Rehabilitation and expansion of Water Supply System Project (EREWSSP)

3.4.1 Project description

The main objective of this project is to provide 600mld safe water for Dhaka with improvement of city’s environment, in particular management of surface water and to go ahead to achieve the MDG’s goal through poverty reduction of city dwellers.

DWASA has also identified the following risks before the project implementation:

- (a) Progressive depletion of the groundwater in the project area may cause groundwater mining and environmental degradation
- (b) Land subsidence due to groundwater over abstraction
- (c) Exposure to arsenic contamination of groundwater

To achieve the Millennium Development Goal, DWASA projects are designed to address the safe water supply, sanitation and hygiene problems of the hardcore poor and vulnerable slum dwellers of

Mirpur zone-4 under Dhaka City Corporation through a joint effort among national, international NGOs, Govt. agencies and department and private sector actors.

3.4.2 IWRM Principles as incorporated in the document and discussions

- Private sector/local govt. or NGOs participation is not considered.
- Mentioned liaison maintains with govt. agencies like DCC, PDB. DESA etc.
- Mentioned only that the sample would be collected from the wells and supply lines located in different parts of the city and then specific tests would be conducted on the quality control lab frequently.
- Considered environmental sustainability that about 864 MLD potable water will be produced which will not create any adverse effect on the environment rather it will help to improve public health..
- The impact of the projects on the women and children is considered that the women who are concern water for maintaining their household will be benefited together with their children as water supply will improve the public health and the environment as a whole.

Further, substantial number of people of different categories will be employed during execution as well as after completion of the project for operation and maintenance and as such it will help in reduction of poverty.

3.5 Dhaka Water Supply and Sanitation Project (DWSSP)

3.5.1 Project description

The objective of the project is to improve the sustainable delivery of services on storm water drainage, wastewater disposal from the city and water supply to the low income community living in and around the city by the Dhaka Water and Sewerage Authority (DWASA) to the population of Dhaka.

Project output:

- (i) The installation of selected storm water pumping stations and the rehabilitation of selected canals to help improve drainage and minimize urban flooding.
- (ii) The rehabilitation, repair and expansion of priority investments in the city's sewerage network and treatment plant to help improve the urban environment.
- (iii) Supporting DWASA's pilot expansion of water and sanitation services into selected Dhaka slums to help increase services to the urban poor.

Project Component:

Component 1: The existing sewerage system will be rehabilitated and strengthened. A master plan for a cost effective and socially and environmentally sound waste water management system for Dhaka will be prepared. About 24 km of trunk sewer mains from Gulshan-Pagla and about 100km existing old, undersized and unworkable sewer lines out the city are to be replaced. About 4 sewerage lifting/pumping stations (Hazaribagh, T&T Arambagh, Tejgaon & Bashaboo) have been identified initially to be rehabilitated which might be changed as per recommendation to

consultants. About 160kms of branch sewers is expected to be laid to be expanded the coverage area of the existing Pagla Sewerage Treatment Plant (PSTP). On the other hand, capacity augmentation of this treatment plant is also an important sub-component of this project. In addition sewer cleaning equipment and other technical assistance for improvement of operation and maintenance (O&M) would be provided, as well as support to initiate actions to establish the proper O&M of the sewerage system. A pilot implementation of septic sludge handling will also be carried out.

Component 2: The storm water drainage system will be rehabilitated and strengthened. The storm water drainage master plan for Dhaka will be updated. Two storm water pumping stations will be installed at critical locations (Rampura and Kamalapur) of Dhaka city to mitigate periodic flooding in the city. The hydraulic performance of selected khals is to be improved through re-excavation, re-profiling and canal protection of selected khals, starting with group of 13 khals. Further khals are expected to be develop/rehabilitate in later phases. In addition, drains cleaning equipment and other equipment (including safety equipment) will be obtained. Other technical assistance for improvement of operation and maintenance would be provided. This includes support for solid waste management along khals rehabilitated under the project and technical assistance to formulate and implement institutional arrangements to maintain the open drains and box culverts.

Component 3: Where necessary environmental management and social safeguards activities (including resettlement, compensations of project affected persons) will be carried out. DWASA capacity for environmental and social analysis will be enhanced through training, GIS mapping, and the provision of related equipment including laboratory equipment, fixtures, and spare, chemicals/consumables, office equipment and book/journals

Component 4: Water and sanitation services will be extended to a number of Dhaka slum and peri-urban areas.

Component 5: DWASA's project management and institutional capacity will be enhanced through a range of technical assistance for project implementation, project monitoring, DWASA's communications program, engineering, financial, legal, environmental and social monitoring and evaluation. Specific technical assistance includes operational/internal/procurement consultancies, and financial management consultancy. Project management and operational equipment will also be provided.

3.5.2 IWRM Principles as incorporated in the document and discussions

- Strengthened Institutional, governance and managerial structure and capacity of DWASA
- Improved financial and operational management capacity of DWASA and trained staff and resources for DWASA adequately operating and maintaining the system
- The rehabilitated and strengthened distribution network
- Improved water quality monitoring system
- Currently scope of working atmosphere with joint collaboration seemed to be effective by the urban NGOs.
- Engagement of community based organizations to manage parts of demand control and community awareness program (Not mention the organization name).

Table 3.1: Evaluation of project activity based on IWRM principles

Sl No.	Activity	Remarks
1	Reduction of water and number of days of water logging in the eastern part of Dhaka city	1. IWRM principle 1 is being applied in this projects
2.	About 6150 households have new access to sewerage services	
3.	Increase in population in the project area, slum people with access to safe water	
4.	Increase in population in the project area, slum people with access to improved sanitation	
5.	Increase in population in the project area peri-urban unions with access to safe water	
6.	Increase in population in the project area peri-urban unions with access to improved sanitation	

3.6 Tetuljhara Bhakurta Well Field Construction Project

3.6.1 Project description

The main objective is to carry out the detailed feasibility study and design of well field in the Singair and Tetuljhara-Bhakurta area for water supply to Dhaka city including assisting in preparation of bidding documents.

The project target is to make immediate arrangement for urgent water supply, cost rationale and to gather experience for implementing the project. The project area includes part of Savar Upazila of Dhaka district and Singair upazila of Manikganj district. First, aquifer system is being studied to see the hydrostratigraphy, nature of the aquifer system, groundwater flow situation and hydrological division which suggested that the aquifer is fully potential for development and there is no sign of groundwater level depletion due to minimum level of abstraction. Groundwater samples are also collected for laboratory analysis. Parameter analyses in the laboratory are:

- (a) Field parameters: Temperature, pH, Eh, EC, DO and TDS
- (b) Major constituents: Ca^{+2} , Mg^{+2} , Na^+ , K^+ , Cl^- , CO_3^{-2} , HCO_3^- , SO_4^{2-} and SiO_2
- (c) Minor constituents: Fe, B, I, F, PO_4^{-2} , NO_3^- , NO_2^- , $\text{NH}_3\text{-N}$, $\text{NH}_4\text{-N}$ and CO_2
- (d) Trace elements: As, Pb, Cd, Zn and Mn

Regarding concentration of major elements, minor elements, and trace elements all tested parameters are within safe limit of human consumption as per WHO and standard except Fe concentration (1.63mg/l-1.75mg/l), is also higher than Bangladesh standard of 0.1mg/l.

Isotope sampling and analysis has been carried out to determine the recharge process and possibility of recent water infiltration in the aquifer systems. Isotope study has been carried out in regional level for understanding of isotope nature of aquifer characteristics of the target aquifer systems and its relation and connectivity with the regional aquifer systems. Here only environmental isotopes have been analyzed. The stable isotope results confirm the seepage of the river water into the upper aquifer system. The shallow groundwater is either recharged by the river water or rain water, but the deeper aquifer may be recharged by the rainwater from upper terrain under different climatic conditions. The study results revealed that about 293MLD water is available for abstraction

considering 14m rated drawdown in the aquifer basin of Tetuljhara-Bhakturta well field area. Keeping 40% water for local use 176MLD water would be available for production.

Considering the higher concentration of Fe (Iron) in the well field area aquifer yield, it is proposed to construct Iron Removal Plant (IRP) at the well field before transmitting the water at over groundwater reservoir (OGR) to avoid clogging of booster pump and transmission main and to provide safe drinking water to city dwellers.

3.6.2 IWRM Principles as incorporated in the document and discussions

Environmental impact studies before implementation of the projects indicate that gender was not addressed. Lack of information of community participation and policy matter is a major concern. Based on analysis of all available information and considering the severe water shortage of city water supply, it is suggested that the construction of well field can be a good option as sustainable water supply source. After implementation of the projects the water quality parameters as stated above will be regularly monitored.

3.7 Summary

The summary of IWRM Principles as incorporated in the document of the five selected projects is given below:

Table 3.2: The application of IWRM principles in the selected DWASA projects: at a glance

Name of projects	Principle 1: Ecological	Principle 2: Institutional	Principle 3: Gender	Principle 4: Instrument
Syedabad Water Treatment Project (Phase-II)	√	X	X	√
Dhaka Water Supply Sector Development Project (DWSSDP)	√	Mentioned only but strategies are not clearly defined	X	
Emergency Rehabilitation and expansion of Water Supply System Project (EREWSSP)	√			
Dhaka Water Supply and Sanitation Project (DWSSP)	√			
Tetuljhara Bhakturta Well Field Construction Project	-Water quality monitored -Feasibility studies have been done	Participatory water quality monitoring is not considered	X	X

Table 3.2 shows that all of the projects follow the IWRM principle 1. Every project followed the environmental sustainability before started the project activity. Gender was not focused but only impact of project on women and children was considered. Before planning the project the

participatory approach was not followed to select the project area. Only water quality parameter is monitored in the laboratory after implementation of the project. There is also lack of co-ordination between the different zonal office and head office about the monitoring of the project activities.

3. 8 Analysis based on Interview

DWASA is multi-faceted organization; it has a lot of projects. All the projects have different dimensions with the objectives of supplying safe and potable water and improving sewerage and drainage system. The interview with the officials of five selected projects (discussed above), one officials of stakeholder institution DCC, and two community peoples in Mirpur area has been done. The qualitative summary of the interviewee is given below:

3.8.1 Findings from the DWASA officials

In practice, the commonly held view is that not much coordination is happening. According to one interviewee, the implementation of the projects in DWASA goes their own way. One other senior observer of the water sector commented the implications of the concept of IWRM were not yet understood. There is more than a lack of interest; there is a lack of awareness of the importance of better integrating the different parts of the water sector. People do not understand the connectivity of water. It needs an institutional mechanism for dialogue. The dialogue is ‘absent’ at local level and it is ‘not happening very much’ at national level. And, in terms of possible inter-sectoral coordination, there are also doubts whether other sectoral Ministries, beyond the water sector, like Public Health, will consider the project plan.

The different levels of officials who are directly involved in the project implementation and operation and maintenance and monitoring activities are at per their stated responsibility:

Responsibility of Senior Community Officer:

- (i) To make communication with the Low Income Community in the vulnerable areas and to organize them and help them to form CBOs.
- (ii) They have a responsibility to provide water and sanitation services to the CBOs with the help of NGOs.
- (iii) Organizing training for the CBOs for smooth functioning of the water points and sewerage facilities.
- (iv) To coordinate among INGOs, NGOs, CBOs, Donors, DCC and Public and Social leaders.
- (v) To facilitate proper working of the CBOs and set up different ToR for smooth functioning of the CBOs and ensue their proper management.
- (vi) To meet with CBOs and community leaders on a regular basis and to have close understanding with them on different issues and problems.
- (vii) To help organize Workshops, Seminars and Gatherings with different Stakeholders.

(viii) To monitor and supervise the activities of CBOs and NGOs with regard to the water supply and sanitation services and hygiene behavior.

(viii) To keep close liaison with Maintenance Operation Distribution and Services (MODS) zones, other departments within DWASA and different departments, public leaders, CBOs etc.

Responsibility of Monitoring and Documentation Officer:

(i) To prepare the community demand for new areas through mobilizations of hard-core poor and for processing their case.

(ii) To conduct base line surveys of the project area.

(iii) To get involved in the implementation of the demand based activity plans

(iv) To get involved in the budget preparation.

(v) To supervise and implement the project works.

(vi) To supervise staff work, follow-up and monitor for hardware (construction) and software activities (mobilization) along with MODS ZONES officials and staffs.

(vii) To develop monitoring tools and prepare guidelines.

(viii) To develop and maintain management information system.

(ix) To coordinate the networking with the stockholders

(x) To maintain office records and materials.

(xi) To organize and facilitate different types of training workshops, Focus Group Discussion (FGD),

(xii) To arrange Semi Structural Interview (SSI) and meetings.

(xiii) To carryout Supervision, Flow up and Monitor.

(xiv) To prepare monthly, quarterly and annual work progress reports and record documents.

Responsibility of Consumer Relation Officer:

(i) To have consumer relations with different types of WASA consumers and to form different platform and groups so that all stakeholders can have a say regarding WASA services.

(ii) To help Senior Community Officer and Community Organizer in making proper survey with the help of MODS Zones in establishing new services in different LIC

(iii) To help organize regular meetings with the different stakeholders to find out difficulties of DWASA consumers and to suggest ways and means for their redress.

- (iv) To help Senior Community Officer in establishing sustainable mechanism so that the problems of different stakeholders are taken proper care off.
- (v) To keep records of problem solving issues and to issue regular press release.
- (vi) Immediately after the eviction of slums the remnants of Water Points and other facilities are to be sealed and the concerned Zones are to be informed immediately.

Responsibility of Planning and Engineering Officer:

- (i) To prepare and maintain a register of all low income and slum areas across the whole of DWASA service area
- (ii) To coordinate, with input from Zonal/MODS team, a service delivery plan to increase low income and slum service delivery line with DWASA targets
- (iii) To coordinate all planning activities in relation to low income and slum service delivery

Responsibility of Community Organizer:

- (i) To work in the low income communities (LIC) to help mobilize and form CBOs.
- (ii) To train the CBOs for their sustainability, so that CBOs can function properly.
- (iii) To will help CBOs to have WatSan services from Dhaka WASA in conjunction with NGOs.
- (iii) To will educate CBOs for proper maintenance of records; facilitate training for smooth running off Water Points and Sanitation services on a timely fashion.
- (iv) To will conduct regular hygiene sessions among the members of the CBOs and motivate them to pay regular bills to DWASA.
- (v) To will educate the members of the CBOs to minimize water wastage and to make best use of water.
- (vii) To conduct Base line Survey.
- (viii) To form CBOs and/or Slum Management Committee (SMC).
- (ix) To ensure CBO/ SMC meeting.
- (x) To conduct hygiene session and campaign.
- (xi) To ensure Implementation of hardware (constriction) support.
- (xii) To prepare monthly work plan and report.
- (xiii) To maintain relevant records and documents.

From the interview with officials it is identified that there is a lack of co-ordination at the headquarters level and zonal level.

DWASA charges social rates for households (Tk. 5 per 1,000/ of water) and commercial rates (Tk14 per 1,000/ of water) for institutions operated on a commercial basis. DWASA provides bills on a bi-monthly basis and all the water points are fitted with meters. A DWASA meter reader inspects meters on a regular basis and prepares bills accordingly.

From the discussion with the officials, it is apparent that water supply to the slums is coordinated by the Commercial Manager (CM) as an add-on function and managed on ad hoc basis. There is no institutional structure in place to manage and coordinate the slum level service delivery function within DWASA. Hence, coordination among relevant stakeholders for efficient functioning of slum WSS facilities and low-income communities is absent in the head office of DWASA. There is also no such forum or body in the DWASA headquarters to conduct such coordination meetings among the stakeholders to assess the present state of affairs in the slums and low income communities.

The existing mechanism essentially functions on an ad hoc basis to provide WSS service to the slums. There is a need for central level coordination mechanism to effectively provide WSS services. All functional departments/units need to be integrated both within the HQ as well as between HQ and MODS zone to ensure effective services to the slums.

At the zone level there is an established coordination mechanism with other stakeholders led by the respective Executive Engineer of MODS zone. Zone wise coordination meetings are held on a quarterly basis under the chairmanship of the zone in-charge, the Executive Engineer where concerned Assistant/Sub-Assistant Engineer, Revenue officer/project manager, NGO representative, CBO representatives, Ward sanitation taskforce member and DCC representative take part. Hence all sorts of problems and difficulties are discussed in the quarterly coordination meetings to find out solution for local problems. But important issues such as new area development or development of existing services are referred to head office for decisions as zone in charge have limited authority.

Therefore, sometimes illegal connection, poor management and less production compared to demand are responsible for water crisis.

3.8.2 Findings from the stakeholder

An interview was conducted with the officials of DCC about the co-ordination of DWASA during the implementation of projects in the DCC area. He informed that

Dhaka City Corporation (DCC) has conducted the following activities for the connection of water points to the slum community:

- (i) Provides permission for using government land for construction of water points.
- (ii) DCC provides permission for the seating of water points on road side spaces on a temporary basis. A permission letter of DWASA and DCC creates the necessary legal basis to set up a water point.
- (ii) Undertakes technical supervision during the construction phase.
- (iii) Mobilizes public opinion through elected ward commissioners.

(iv) Undertakes policy advocacy.

DCC has been playing a key role in providing approval for using public land, particularly the land they own and administer. Presently there is little or no coordination between DWASA and DCC service provision in the slums. Under Statute, both DWASA and DCC have a specific mandate to provide water and sanitation services to the slums. DCC has a relatively long established mechanism for provision of services to slum areas through the Slum Development Unit. DWASA on the other hand has only recently established a mechanism to provide services to slums. Coordination between these two organizations remains ad hoc with little effectiveness.

It should be noted that that DWASA is making progress towards more equitable service delivery notably it has achieved limited delinking of service delivery with tenure and has established mechanisms whereby even slum dwellers without land titles can apply for water connection through CBOs/Water and Sanitation Task Force. However, there are specific issues within the existing policy-legal framework, which needs to be addressed to enable DWASA to serve the urban poor more effectively. DWASA rules and procedures do not allow private participation in water production and sale. This can prove to be a hindrance in regulating the quality of service and pricing of informal (and presently illegal) water vendors.

3.8.3 Views of Community Peoples

Interviewed with women in Mirpur-2, Mirpur-14 Benarashi Palli, they explained their misery regarding water despite having access to the piped water connection. She faced no such problems even five years ago until last summer. Landowner controls water supply to accommodate the increasing demand with limited water and supplies water to the tenants two times in a day for an hour every time. This is terrible for her to manage the household works with limited water in a specific time binding. She pays 400 BDT per month to the landowner for supplied water. Including bottled drinking water, her water costs nearly 1200 BDT, which is six percent of her total family income. Despite huge water-related cost, the quality has been far from satisfactory. Sometimes she is supplied with water of intolerable quality.

3.8.4 Overall Discussion

The elements of the capacity building will include: Organizing appropriate logistics, providing orientation to central as well as Zonal committees; training to the professional staff of the every projects based on a needs assessment. In order to provide quality services to the slum dwellers and the low-income community, it is necessary to equip DWASA and staff with necessary management, communication and technical skills adjusted to the particular need of the poor community. Capacity building should also focus on developing sensitivity and understanding on pro poor strategies and programmes of DWASA.

Management training up to the level of sub-assistant engineers covering policy guidelines, leadership, understanding of the plans and programmes, advocacy and networking, staff and, programme management etc. are to be given on a regular basis.

CONCLUSIONS

4.1 Conclusions

The following section presents the main conclusions from the review of the projects in the light of four principles of IWRM and interview with the officials, stakeholders and community peoples.

4.1.1 Focus on stakeholders and beneficiaries

The methodological approach of engaging stakeholders in the overall programme has to be embedded from the start with empowerment as the key focus. During the Inception Phase and Detailed Design Phases, stakeholders and beneficiaries must be actively involved in formulating the final design of the project. This will involve sensitization workshops with key stakeholders, in particular tiers of government, community representatives, and where possible private sector actors and business associations. A detailed design workshop involving stakeholders and ultimate beneficiaries should be conducted with the purpose of achieving a consensus on a common vision for the project and associated participatory monitoring mechanisms.

For improvement of services in the slums and LIC, the authority of headquarters and zone needs to be increased coordination among the stakeholders discussed above. This in turn will help to solve various day-to-day problems and increase service quality for the low income community.

4.1.2 Focus on coordinating mechanisms

It may be appropriate to create one “coordination unit” (or another suitable mechanism) which coordinates the involvement of stakeholders and ministries in strategy selection and planning. Good co-ordination should facilitate and maximize the learning across and between institutions, programmes and plans on water and sanitation programmes, environmental programmes and consequently enable more efficient use of resources.

4.1.3 Focus on gender issues

Women are the main collectors of water in the family. In comparison to men, women are generally available in the community throughout the day. Special attention has to be made to address the role of IWRM in water supply and sanitation through improved safe water and hygiene condition in particular issues related to gender roles in communities and those of women who have significant responsibilities in ensuring water management. Every effort should be made to ensure that women play an active role in the various stages of the project and the establishment of special groups (or building on existing groups) is to be encouraged.

4.1.4 Focus on capacity development and empowerment

It is widely recognized that Millennium Development Goals and the principles of IWRM can only be achieved through effective capacity development that embraces the empowerment of groups that have erstwhile been marginalized. During the detailed design phase, a holistic approach should be adopted to determine the development needs of these groups in order to ensure interventions which

will contribute to sustainability. Considerable flexibility, within budgetary constraints, should be permitted with final decisions on the types of interventions to be agreed with stakeholders and beneficiaries alike to ensure their active involvement in the project processes. It is important to conduct a training needs assessment for the professional staff of the proposed circle and accordingly provide training to them (both in-country as well as international training). It is also important to organize orientation programme for the central as well as Zonal officials to ensure proper understanding and coordination with them.

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Annex-I

List of Interviewee

Name	Name of Organization	Telephone No.
Md. Abul Latif	Executive Engineer, Dhaka Water Supply and Sanitation Projects, Dhaka WASA	01911-397541
Md. Mustafizur Rahman	Executive Engineer, Sayedabad Water Treatment Plant Project Phase-II, Dhaka WASA	
Md. Moshiur Rahman	Sub-assistant Engineer, Sayedabad Water Treatment Plant Project Phase-II, Dhaka WASA	01716-529391
Mst. Sharmin Hoque Amir	Executive Engineer, Tetuljhara Bhakurta Well Field Construction Project, Dhaka WASA	01715-025686
Md. Ariful Islam	Executive Engineer, Dhaka Water Supply Sector Development Project (DWSSDP), Dhaka WASA	01715-006326
Md. Waliullah Sikdar	Project Director, Emergency Rehabilitation and expansion of Water Supply System Project (EREWSSP), Dhaka WASA	01715-103213
Ashim Kumar Ghosh	Executive Engineer, Water (R&D) Division-3, Dhaka WASA	01714-178317
Mst. Rabeya	Mirpur-1, Dhaka	
Mst. Reshmi	Mirpur-14, Benrashi Palli, Slum Area, Dhaka	
Mst. Joba	Mirpur-14, Benarashi Palli, Slum Area, Dhaka	
Md. Babul	Mirpur-14, Benarashi Palli, Slum Area, Dhaka	

Annex-II

List of Documents

1. Project proposal of five selected projects
2. National Water Policy
3. National Water Management Plan

Check list

1. Does the project plan describe the participatory process used to build ownership for the plan?
2. Does the project plan consider the major issues raised during the participatory process?
3. Who are the potential beneficiaries being identified?
4. Who might be adversely impacted by the projects is considered?
5. Have vulnerable groups who may be impacted by the project been identified?
6. Are gender interests adequately identified and represented? Please mention the interests?
7. Does the plan envisage its linkage to other national development plans and government documents which do, or should, address sustainable management and development of water resources?
8. How to consider the environmental sustainability?

Land and Water Resources	Indicator
	Freshwater availability per capita
	Internal groundwater availability
	total land area (including inland waters) having very low anthropogenic impact
	total land area (including inland waters) having very high anthropogenic impact
Environmental Health	Death rate from water borne diseases
	Child death rate from respiratory diseases
	Children under five mortality rate per 1,000 live births

9. How adequate are the existing water data (hydrologic, quality) before project planning?
10. To what extent has the analysis of the problems considered current thinking on water resources management?
11. What parameter is considered to monitor the quality of treated water?
12. Are these indicators and targets appropriate and consistent with the policy and strategy choices in the plan?
13. How to involve the people after the project implementation?
14. What type of training, awareness programme is arranged?
15. What type of monitoring programme is considered? What is the time with and without project?
16. Is consider available fund for repair and rehabilitation?
17. Which factor considered for the benefit of the women and children after the project implementation?
18. Is local Gov. or NGOs participation are considered? If yes, please describe how will they involve?
19. To what extent are participatory and gender constraints and impacts of present water resources management systems addressed?
20. Is the reliability, accuracy and precision of the monitoring and evaluation systems should be confirmed during the monitoring stages?