

# Study on WASH Financing in Bangladesh



**Mahfuz Kabir**



**SKS**



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*Conducted by:*  
Mahfuz Kabir



SKS

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## Foreword

The government and other development partners are promoting safe water supply, safely managed sanitation system (SMSS) & hygiene habits to meet public health requirements. SKS Foundation has been engaged in the promotion of safe water, sanitation & hygiene (WASH) since its journey in the development arena in 1987. During this wide period, SKS has gained experience & learning in the field of WASH promotion alongside other development interventions. Presently SKS Foundation is taking the FANSA-Bangladesh mission forward as the secretariat of the network. As part of it, SKS Foundation is coordinating the implementation of *Rising for Rights for Strengthening Civil Society Networks in South Asia to Achieve SDG 6 (hereinafter Rising for the Rights)* project under the banner of FANSA-Bangladesh with support from the Bill & Melinda Gates Foundation.

The Project focuses on SMSS in the city/urban areas with the promotion of City-wide Inclusive Sanitation (CWIS) by the service providers. To strengthen FANSA- Bangladesh's policy advocacy targeting the promotion of SMSS following the CWIS approach, SKS Foundation under the *Rising for the Rights* project has conducted a Study on WASH Financing in Bangladesh. The study reviewed the WASH financing & sector investment status considering the country's current progress & achievement against the commitments to achieve SDG-6 in Bangladesh. The study findings will create scope for FANSA-Bangladesh to know the track of

national/govt. investment in the country's WASH promotion, gaps in financing, and, in turn, run evidence-based advocacy effectively to ensure safe WASH facilities for all in line with SDG 6.

I take pleasure in expressing our gratitude to Dr Mahfuz Kabir, Research Director, Bangladesh Institute of International and Strategic Studies (BIISS) who took the pain in conducting this comprehensive study.

My special thanks to the concerned government officials, sector professionals, LGI representatives, relevant stakeholders, local allies & FANSA-Bangladesh members who supported the study sharing valuable information & views in making the study an authentic document.

Thanks to my colleagues for making their efforts in publishing the study. I believe the document will be useful as a valued document to the relevant policy-makers, duty-bearers, professionals & potential researchers, and information seekers.

**Rasel Ahmed Liton**

Chief Executive  
SKS Foundation

## Preface

SKS Foundation, the FANSA-Bangladesh Secretariat, conducted this study under the *'Rising for Rights for Strengthening Civil Society Network in South Asia to Achieve SDG 6'* project. This advocacy project is being implemented by FANSA-Bangladesh targeting to ensure a Safely Managed Sanitation System (SMSS) following the Citywide Inclusive Sanitation (CWIS) approach in some selected cities/towns in the coastal, *char & haor* regions. The study conduction covered the broad objective to analyze the state of the WASH sector investment covering both water & sanitation, and to generate financial information/ investment in Bangladesh's WASH sector in general and the sanitation sub-sector in particular. In line with its objectives, the study revisited the SDG investment requirements for water & sanitation in Bangladesh, and has estimated per capita cost for the construction, operation & maintenance of public toilets and fecal sludge/wastewater management treatment plants, etc.

The study focused on the relevant national plans, policies & strategies as the principal guidelines & directives for public finance in the WASH sector. Those included the *8<sup>th</sup> Five Year Plan, 2nd Perspective Plan, Sector Development Plan (FY 2011-25)- Water Supply and Sanitation Sector in Bangladesh, Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh 2020, National Strategy for Water Supply and Sanitation 2021*, and MTBF document.

The study findings reflect that in line with the mentioned policies & strategies, the Government of Bangladesh has been implementing WASH projects i.e. technical support, construction of WASH infrastructure, and

providing new technologies to cover the country in general with special intervention covering the vulnerable and hard-to-reach regions, viz. *chars*, *haors*, coastal & hilly areas. However, the majority of public resources in the WASH sector are spent by 4 WASAs covering the urban people. Alongside, there is no separate WASH project in 7 out of 12 city corporations in the country. The study also confirms that rural areas are performing well compared to urban areas despite receiving less amount from the national budget. The allocated budget for WASA & WASH remains heavily unutilized, which indicates a link of considerable gap between the target & achievement of SDG 6 in Bangladesh.

Taking the overall WASH situation into consideration, the study projects that the coverage of safely managed water & sanitation will be merely 62.19 & 40.49% in the end line of SDG in 2030, respectively if the current growth rate continues. Therefore, it's necessary to move far beyond the business as usual (BAU) scenario and take a fast track to achieve the NPTs within the timeline. In doing so, the study emphasizes that public finance has to be increased. A targeted increase in public investment should take an 'exponential' path to achieve the full coverage of safely managed water & sanitation.

However, the simulation results demonstrate that public investment in Bangladesh on WASH needs to increase gradually, from US\$0.63 billion in 2023 to US\$3.33 billion in 2030 at current prices and exchange rates. The total amount of required spending would be US\$14.81 billion in the next 8 years. To cover the poor households, a dedicated project will need to be developed with an allocation of about US\$103 million per annum



for transferring safe sanitation technology (covering both capital & recurrent costs). However, to cover the second benchmark population, about US\$175 million per annum should be allocated in the national budget for technology transfer (covering half of the capital cost and no recurrent cost).

Out of a set of policy recommendations, the study pinpoints that the principles of equity, equality & social justice should be followed to make an investment decision to ensure the availability, access & utilization of safe WASH facilities, especially for poor, vulnerable and hard-to-reach people. Public investment should also be backed up by the proper calculation of economic and social rates of return. Alongside, the development partners should enhance partnership and support to achieve SDG 6 within the stipulated timeline. They can support new ventures, especially in enhancing the capacity of LGIs in both cities & rural areas through financial support, technical assistance, and technology transfer.

The study conduction followed a comprehensive process as part of its methodologies and has upheld a clear reflection concerning the present provisions & projection of financial investment for WASH promotion in Bangladesh. This research publication will contribute to the FANSA-Bangladesh and other relevant networks, professionals, researchers & information seekers as a ready reference for running advocacy in the WASH sector and other relevant concerns.

### **Joseph Halder**

Director– Advocacy & Communication  
SKS Foundation, and  
Convener, FANSA-Bangladesh

## Executive Summary

Bangladesh has achieved considerable progress in socio-economic development in recent years. Despite strained by COVID-19 and the global economic slowdown, the country has marked notable progress in economic growth, poverty reduction & employment generation. Bangladesh is committed to achieving Sustainable Development Goals (SDGs). However, attaining SDGs within the stipulated timeline is critically dependent on SDG 6, i.e., Water, Sanitation & Hygiene (WASH) as it's related to other core goals, such as poverty, food security & improved nutrition, women's empowerment, health & education, combating impacts of climate change. The Government of Bangladesh (GoB) has set two major National Priority Targets (NPTs 17 & 18) related to WASH in which the country is experiencing non-trivial challenges. The public sector plays a predominant role in developing WASH infrastructure & services. Nevertheless, the enormous gap between the target & realization in SDG 6 implies considerable financing & investment gaps, as well as the predominance of issues related to the utilization, social justice in resource allocation, and civic participation & monitoring. The present study aims to analyze the state of financing in the WASH sector with special attention to the sanitation sub-sector.

### ***State of SDG 6 in Bangladesh***

Full coverage of safely managed drinking water (SDG 6.1.1) is committed under NPT 17. According to the WHO-UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) 2023 database, the population using safely managed drinking water services was 59.1% at the national level (62.4% in rural & 54.2% in urban areas) in 2022. It implies that 69.46 million people did not have access to safely managed drinking water, while the corresponding numbers were 32.03 million in rural and 24.63 million in urban areas in 2022. Full coverage of safely managed sanitation (SDG 6.2.1) is also committed under NPT 18. Only 31% population was covered by safely managed sanitation at the national level (32.4% coverage in rural and 28.8% in urban areas) in 2022. As many as 117.18 million people did not have access to safely managed sanitation, while the corresponding numbers were 78.46 million for rural and 38.28 million for urban areas. As much as 95.8% of the richest and 59.4% of the poorest households use improved sanitation (JMP, 2023). People living in hills, islands, coastal, drought-prone & depression (*haor*) areas had less access to safe water & safely managed sanitation services.

## **Financing WASH Sector - Policies, Directives & Guidelines**

The principal guidelines & directives for public finance in the WASH sector come from national plans, policies & strategies. It includes the *8th Five Year Plan, 2nd Perspective Plan, Sector Development Plan (FY 2011-25) - Water Supply and Sanitation Sector in Bangladesh, Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh 2020, National Strategy for Water Supply and Sanitation 2021*, and MTBF document.

The objective of the *Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh 2020* is to ensure the availability & sustainable management of safe water & sanitation for all with a strong emphasis on “leaving no one behind, for everyone everywhere always” with attention to the underprivileged & extremely poor. The strategy involves identifying “hardcore” (extreme) poor households among them and prioritizing the allocation & distribution of resources to help them gain access to safe drinking water & sanitation facilities. The Strategy mentioned that hardcore poor households that do not have access to Safe water supply & sanitation facilities in line with the *National Water Rules 2018* and SDG 6 need to be identified as below basic minimum level water supply & sanitation services. The subsidy will be provided in case of delivery of a basic minimum level of water supply & sanitation. *National Strategy for Water Supply and Sanitation 2021* provides a comprehensive framework for increasing coverage of WASH services & improving its quality, and addressing persistent & emerging challenges in the WASH sector.

*The 8th Five-Year Plan (2020-2025)* pledged to enhance access to safe water & sanitation for the rural & urban population to improve hygiene standards in Bangladesh. It mentions enhancing people’s access to safe water & sanitation facilities in both urban & rural areas. The Government will establish suitable pricing policies to promote private piped water supply, hygiene & environment-friendly household sanitation. *The Sector Development Plan (SDP)* promotes increasing private sector involvement in sanitation services. *The Second Perspective Plan (2021-2041)* aims at ensuring the availability of safe water in all villages with special attention paid to areas prone to salinity, arsenic, hilly terrain, *haor* & *char* areas. It mentions that a gradual increase in piped and mini-piped water supply will be implemented in densely populated villages across the country. Additionally, efforts will be made to improve sanitation & fecal sludge management to restore the aquatic environment in rural areas.

## ***Financing WASH Sector***

The Government of Bangladesh has been implementing WASH projects that include technical support, construction of WASH infrastructure, and providing new technologies to cover the entire Bangladesh in general with special intervention for the vulnerable regions, viz. *chars* (riverine & coastal islands), *haors* (wetland), coastal & hilly areas of the country. Water Supply & Sewerage Authority (WASA) of Dhaka, Chattogram, Rajshahi & Khulna are the public agencies to provide water & sanitation services in these megacities. City Corporations and WASAs are responsible for supplying water through pipelines. The Department of Public Health Engineering (DPHE) provides public water & sanitation services in municipalities & rural areas. Local Government Institutions (LGIs) also allocate money from their budget to promote WASH services.

Four WASAs spend the majority of public resources in the WASH sector of Bangladesh. There is no separate development project on WASH in the remaining 7 out of 12 city corporations in Bangladesh. Activities of LGD, implementing agencies of WASH-related services, primarily water supply through pipelines in urban areas facilities, are the remaining 7 city corporations (viz. Sylhet, Gazipur, Narayanganj, Cumilla, Mymensingh, Barishal & Rangpur). However, DPHE spends the rest of the budget of WASH which covers the population of urban areas including municipalities & rural areas.

Despite receiving a low share of the national budget (about one-third of the development budget in the WASH sector), rural areas are performing well compared to their urban counterparts. It implies that despite spending a proportionately high amount of public spending. The WASH sector receives a very low share of the actual budget of LGD. WASAs received more than half of the WASH budget consistently since FY2019-20. Yet, urban areas weigh below the rural areas in access to safely managed water & sanitation services. The allocated budget for WASA & WASH remains heavily unutilized, which can be linked to the considerable gap between the target & achievement of SDG 6 in Bangladesh.

## ***Leave No One Behind: WASH for the Marginalised***

Access to safely managed water & sanitation by the poor, marginalized, vulnerable & out-of-reach groups in urban & rural areas including remote & geographically vulnerable is important to achieve the WASH-related NPTs. It's particularly important to address the 'Leave No One Behind' principle of the SDGs (39+1 NPTs) to ensure equity in WASH service delivery for these populations.

The 8FYP presents the miseries of lack of WASH facilities in hard-to-reach areas, climate hot-spots and geographically vulnerable regions & climate hotspots, such as *chars*, *haors*, hilly areas & coastal regions. It underscores the imperatives for special intervention for them. According to the *National Strategy for Water and Sanitation Hard-to-Reach Areas of Bangladesh 2012*, coastal regions have the second highest number of hard-to-reach unions in the extreme category, second only to hilly areas. This means that coastal areas face significant difficulties in accessing essential WASH services. The combination of low WASH service levels and the vulnerability of coastal areas to climate impacts exacerbates the challenges faced by the hard-to-reach communities in these regions. Efforts to address these issues are crucial to improving the well-being and living conditions of the affected populations.

The *National Strategy for Water and Sanitation Hard to Reach Areas of Bangladesh 2012* addresses the challenges faced by urban slums. Tailored interventions are necessary to ensure sustainable WASH services in areas vulnerable to climate change & hilly regions. It's crucial to pay sufficient attention to the WASH needs of women and other vulnerable groups who are disproportionately affected by climate-induced challenges. The 8FYP attaches priority to providing water & sanitation services in the hill districts, areas prone to coastal salinity & cyclones, and districts with low access in the northern region.

The 8FYP outlined WASH solutions for backward, hard-to-reach and vulnerable areas. Feasible solutions for community water supply include the establishment of Desalination Plants, Rainwater Harvesting Systems, Arsenic-iron Removal Plants, Pond Sand Filters, and elevated drinking water and sanitation infrastructure in coastal areas. The 8FYP acknowledges that surface water sources like springs & streams are suffering from seasonal variations and are often heavily polluted in hilly areas. Rainwater Harvesting Systems with sufficient storage capacity will be implemented at both individual & community levels to address these challenges.

Some of the most vulnerable & disadvantaged people of Bangladesh live in urban slums & poor households in lowlands and wetlands often lack access to safe WASH services. To address these challenges, the 8FYP mentions that community-based organizations (CBOs) will play a crucial role in maintaining community water points & sanitation blocks within the densely populated slums to enhance accessibility for women, children & persons with disabilities.

A total of 20 specialized projects are currently being implemented by the government in coastal climate-vulnerable, *char*, *haor* & hilly areas, which is about 28% of the ADP under DPHE. Unfortunately, no project has been found targeting the urban poor & slum dwellers even though this category of population has been identified by the 8FYP and the *National Strategy for Water and Sanitation Hard to Reach Areas of Bangladesh 2012*.

Field visits to Rising for Rights project urban intervention areas (Gaibandha & Sreemangal municipalities) reveal that inadequate facilities of safely managed water & sanitation services exist for the slum & floating population of these areas. People living in *char* areas have few Tube-wells installed by the DPHE for public use, but those normally get inundated during floods & heavy rainfall. Safely managed sanitation service hardly exists in *char* areas. Sreemangal municipality has some public toilets for the population living in slum-like conditions as well as a cleaner community, but these are inadequate and not managed well. Open defecation still takes place in tea gardens and streams because of the inadequacy of public toilets for the workers. Thus, the principle of 'Leave No One Behind' in SDG 6 is significantly compromised for the disadvantaged population in Bangladesh.

### ***Imperatives for Long-term Investment***

The trend of progress reveals that the coverage of safely managed water & sanitation will be merely 62.19 & 40.49% in the end line of SDG in 2030, respectively if the current growth rate continues. Therefore, it's necessary to move far beyond the business as usual (BAU) scenario and take a fast track to achieve the NPTs within the timeline. In doing so, public finance has to be increased. However, the ability of the government to spend additional resources depends on the level of development of the country. Therefore, a targeted increase in public investment should take an 'exponential' path to achieve the full coverage of safely managed water & sanitation.

The simulation results of the exercise demonstrate that public investment in Bangladesh on WASH needs to increase gradually, from US\$0.63 billion in 2023 to US\$3.33 billion in 2030 at current prices and exchange rates. The total amount of required spending would be US\$14.81 billion in eight years. The simulation results of the SDG cost estimation by the General Economic Division (GED, 2017) reveal that the additional required investment is comparatively low for this period, only US\$6.28 billion.



To cover the poor households, a dedicated project will need to be developed with an allocation of about US\$103 million per annum for transferring safe sanitation technology (covering both capital & recurrent costs). However, to cover the second benchmark population, about US\$175 million per annum should be allocated in the national budget for technology transfer (covering half of the capital cost and no recurrent cost). In addition, US\$24.7 million will be required per annum for transferring recurrent costs to poor households through a special social security program.

## ***Policy Recommendations***

- Fixed safe water points need to be established to cover slums & floating populations. Therefore, water points need to be established in elevated platforms in *chars* & slum areas subject to inundation during floods & rainfall and enabling them to collect water within 30 minutes. In addition, solar-powered water pumps can be installed in *chars* to supply piped water at fixed points. Community groups can be formed for operation & maintenance in which the recurrent costs can be covered through user fees.
- NGOs that work in *chars* can provide training to the households on fecal sludge and wastewater management. They can also install plants in *chars* to produce compost, which in turn can be used in soil conditioning.
- Installing an adequate number of public toilets to cover the floating population in both cities & rural areas (e.g., upazila & union parishad headquarters, marketplace & transport stations) is important to provide access to safely managed sanitation service to the floating population. The LGIs need to install the facilities while local NGOs can take responsibility for their operation & maintenance as well as fecal sludge and wastewater management.
- Households are located very sparsely in difficult terrain in hilly areas, especially in the CHT. They need to be supported with Rainwater Harvesting Systems and Water Treatment technological options. In addition, support should be provided for installing safe sanitation & orientation for fecal sludge management.
- About one-fifth of the entire Bangladesh is a water-stressed area, which includes hilly, tea garden, arsenic-prone & coastal areas. Therefore, a comprehensive urban water supply mapping is required to trace deprivation in accessing safe water and ensure public finance accordingly.

- A large number of the municipalities have turned out to be capacity-deficient in providing sanitation and fecal sludge management services as the population of urban areas has increased significantly. Therefore, public-private and public-NGO partnerships can play a supplementary role in enhancing the capacity of the municipalities in this regard.
- NGOs should be encouraged to work in urban slums, rural, remote & coastal areas by installing Shallow & Deep Tube-wells, and fecal sludge and pilot wastewater treatment plants as developing cases individually and in partnership with LGIs. They can monitor and oversee the WASH budget at local & national levels.
- Hypertension, pregnancy-related complications, cholera and other water-borne diseases are increasing due to an increase in water pollution & salinity. Budget allocation is required to combat water pollution & climate change. Water points and public toilets should be installed in high plinths considering flood water levels.
- Principles of equity, equality & social justice should be followed to make an investment decision to ensure the availability, access & utilization of safe WASH facilities, especially for poor, vulnerable and hard-to-reach people. Public investment should also be backed up by the proper calculation of economic and social rates of return.
- Besides installing WASH infrastructure for vulnerable regions & communities, it's important to develop community ownership so that users can collectively ensure proper maintenance of the infrastructure.
- Public-private partnership (PPP) can be promoted in establishing a large Effluent Treatment Plant (ETP) in major industrial clusters. The budget should be allocated to regularly monitor industrial pollution and to protect water sources from pollutants.
- Finally, the development partners can enhance partnership and support to achieve SDG 6 within the stipulated timeline. They can support new ventures by social enterprises & NGOs along with the government, especially in enhancing the capacity of LGIs in both cities & rural areas, and climate hotspots including safe water supply in salinity-prone coastal areas through financial support, technical assistance, and technology transfer.



# 1. Introduction

Bangladesh has achieved considerable progress in socio-economic development in recent years. Despite manifold challenges emanating from the cumulative effects of COVID-19 and the global economic slowdown, Bangladesh has marked notable progress in terms of economic growth, poverty reduction and employment generation. According to the *Report of the Household Income and Expenditure Survey 2022 (BBS, 2023)*, the population living under moderate and extreme poverty lines became 18.7% and 5.6% respectively, which were 24.3% & 12.9% respectively in 2016. Bangladesh is committed to achieving Sustainable Development Goals (SDGs). However, attaining SDGs within the stipulated timeline is critically dependent on SDG 6, i.e., Water, Sanitation & Hygiene (WASH) as it's related to other core goals, such as poverty, food security and improved nutrition, women's empowerment, health and education, combating impacts of climate change. The Government of Bangladesh (GoB) has set two major National Priority Targets (NPTs)<sup>1</sup> related to WASH in which the country is experiencing non-trivial challenges.

The public sector plays a predominant role in developing WASH infrastructure and services in both urban and rural areas. However, the private for-profit and non-profit sectors are also gradually becoming important in service provision, through investment in commercial provision and social innovation. Nevertheless, the enormous gap between the target and realization in SDG 6 implies considerable financing and investment gaps, as well as the predominance of issues related to utilization, social justice in resource allocation, and civic participation and monitoring.

The government and other development partners promote safe water supply, safely managed sanitation system (SMSS), and hygiene habits to meet public health requirements. As part of the advocacy network covering the South Asian countries, Freshwater Action Network South Asia (FANSA)-Bangladesh is also performing the task of sensitizing the policy-makers, duty-bearers & civil society on the promotion of WASH services and budgetary intervention. Currently, FANSA-Bangladesh is focusing on SMSS in the urban areas with the promotion of City-wide Inclusive Sanitation (CWIS) by the service providers under a project titled “Rising for Rights for Strengthening Civil Society Networks in South Asia to Achieve SDG 6” (*Rising for Rights*).

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<sup>1</sup> [https://sdg.gov.bd/page/thirty\\_nine\\_plus\\_one\\_indicator/5#1](https://sdg.gov.bd/page/thirty_nine_plus_one_indicator/5#1)

Given this broad backdrop, the present study aims to analyze the state of investment in the WASH sector including both water & sanitation. In doing so, it analyses to financing or investment in the WASH sector in general and the sanitation sub-sector of WASH in particular. The broad objective of the study is to analyze the state of WASH sector investment covering both water & sanitation, and to generate financial information/investment in the WASH sector in general and the sanitation sub-sector in particular. The specific objectives of the study are:

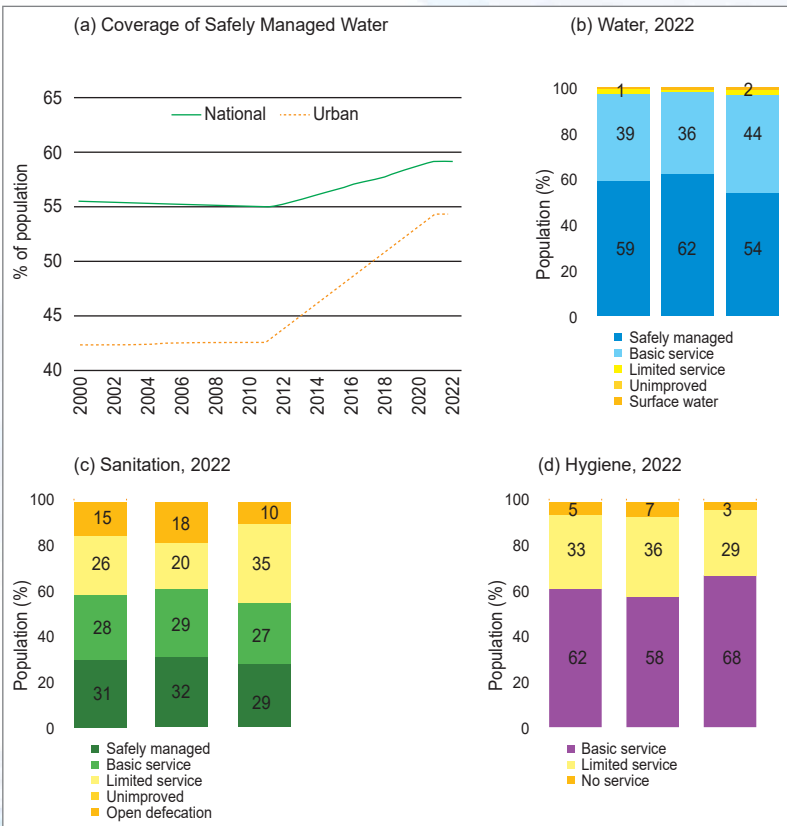
- a. Review existing literature and data relevant to the WASH sector in Bangladesh;
- b. Review the existing/current WASH sector financing policies, directives, guidelines, etc of the country;
- c. Revisit the SDG investment requirement for water & sanitation in Bangladesh, and estimate per capita cost for the construction, operation & maintenance of public toilets and fecal sludge/wastewater management treatment plants, etc, and compare the result with the SDG cost estimation by the General Economic Division (GED) of GoB;
- d. Analyse WASH budget allocation and spending at the national & sub-national level, viz. Rising for Rights project intervention areas in selected urban & rural Local Government Institutions (LGIs) in the past 5 years based on the budget documents of the government agencies and LGIs;
- e. Identify budget allocation/expenditure to address “Leave No One Behind” to ensure equity in WASH service delivery covering the poor, marginalized, vulnerable and out-of-reach groups;
- f. Project the required budget for achieving SDG 6 by 2030 and compare it with the trend of allocation & utilization as per the government’s budget; and
- g. Suggest concrete policy recommendations and ways forward based on the findings of the study.

This study aids FANSA-Bangladesh in understanding the trend and magnitude of public investment in the promotion of the WASH sector and financing gaps. This study outcome will facilitate policy advocacy to ensure WASH facilities for all in line with SDG 6.

## 2. State of SDG 6 in Bangladesh

The Government of Bangladesh has taken steps in the process of SDG implementation. The ministries have developed an action plan for the SDGs that focuses on new projects & programs to be implemented. To ensure effective monitoring of the progress of implementation, an SDGs Tracker has been introduced that regularly updates data based on indicators. Additionally, a financing strategy for the SDGs has been completed, which identifies a funding gap of US\$928.5 billion from FY2017 to FY2030 (GED 2020).

Figure 1: Status of SDG 6 Attainment in Bangladesh

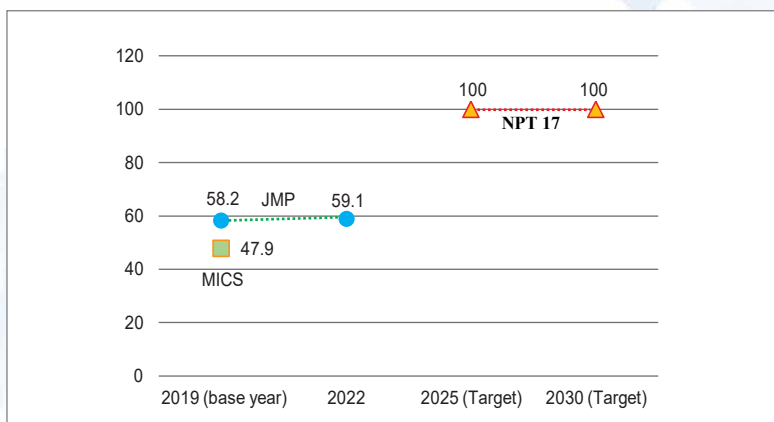


Source: Based on WHO and UNICEF, JMP 2023

### Indicator 6.1.1: Proportion of Population using Safely Managed Drinking Water Services

Full coverage of safely managed drinking water<sup>2</sup> (SDG 6.1.1) is committed under NPT 17. The relevant global target is universal and equitable access to safe & affordable drinking water for all. According to the WHO-UNICEF *Joint Monitoring Programme for Water Supply and Sanitation (JMP) 2023* database, 98.1% of household members used improved sources of drinking water (at least basic-improved within 30 minutes) at the national level, which was 98.3% for rural & 97.8% for urban areas in 2022 (JMP 2023). However, the proportion of the population using safely managed drinking water services was 59.1% at the national level, i.e., more than 40% of the population is deprived of access to safely managed water despite significant budgetary allocation in water.

**Figure 2: NPT 17– Ensure 100% Population using Safely Managed Drinking Water Services (SDG Indicator 6.1.1)**



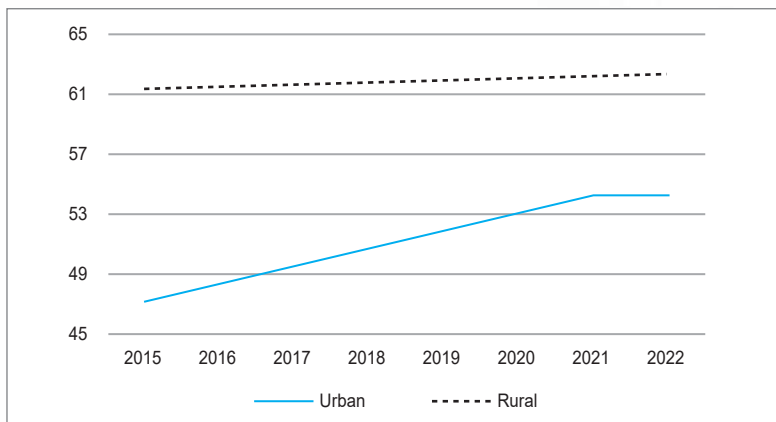
Source: MICS 2019, JMP 2023, and NPT

The access to safe water was 62.4% in rural and 54.2% in urban areas in 2022. It implies that despite spending a proportionately high amount of public resources, the coverage of urban areas by safely managed water is lower than that of their rural counterparts. Considering the data of the Population and Housing Census of 2022 (BBS, 2023), it has been found

<sup>2</sup> Safely managed water refers to the provision of water that is accessible, comes from a reliable source, is free from E. coli bacteria and contains less than 50 parts per billion (ppb) of arsenic. It should also be available whenever needed.

that 69.46 million people did not have access to safely managed drinking water, while the corresponding numbers were 32.03 million in rural & 24.63 million in urban areas in 2022.<sup>3</sup>

Figure 3: Access to Safely Managed Water Services (% of Population)



Source: JMP 2023

### Indicator 6.2.1: Proportion of Population using Safely Managed Sanitation Services

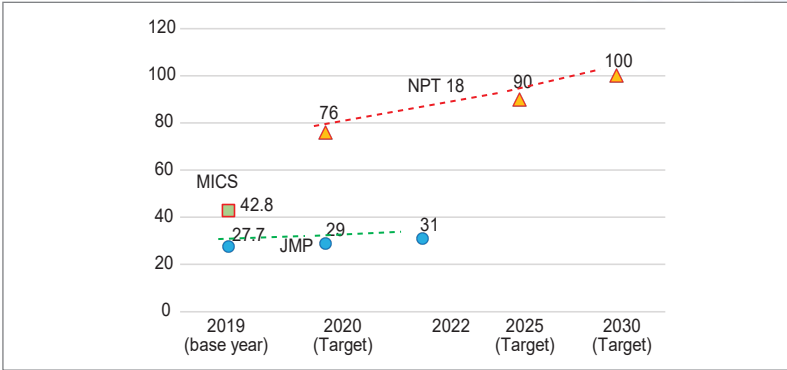
Full coverage of safely managed sanitation<sup>4</sup> (SDG 6.2.1) is also committed under NPT 18. The corresponding global target is adequate & equitable sanitation for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations. However, the population of the country is exposed to considerable deprivation in access to safely managed sanitation services in both urban & rural areas.

Though the country scored 85.2% coverage of improved sanitation in 2022 (82.1% coverage in rural, 90.1% in urban areas), only 31% population was covered by safely managed sanitation at the national level in the same year (JMP 2023).

<sup>3</sup> Author's calculation based on JMP 2023.

<sup>4</sup> Safely managed sanitation refers to the use of improved and private sanitation systems that ensure the safe disposal of excreta.

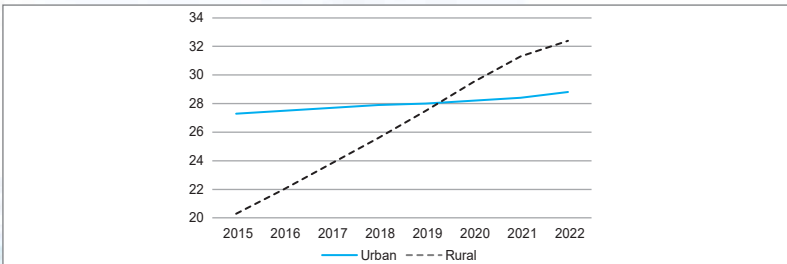
Figure 4: NPT 18– Ensure 100% Population uses Safely Managed Sanitation Services (SDG Indicator 6.2.1)



Source: MICS 2019, JMP 2023, and NPT

On the question of equitable access, the coverage of urban areas by safely managed sanitation is considerably lower than that of their rural counterparts (32.4% coverage in rural & 28.8% in urban areas). While less than 1% of the population were practicing open defecation, 14.8% used unimproved latrines, 28% used limited (improved & shared) sanitation facilities, and 59.3% used at least basic (improved & not shared) sanitation (JMP 2023). A major concern in NPT 18 is that the overwhelming majority of the population is living without access to safely managed sanitation. Considering the data of the Population and Housing Census of 2022, as many as 117.18 million people did not have access to safely managed sanitation, while the corresponding numbers were 78.46 million for rural and 38.28 million for urban areas. On the other hand, as much as 95.8% of the richest and 59.4% of the poorest households use improved sanitation (JMP 2023).

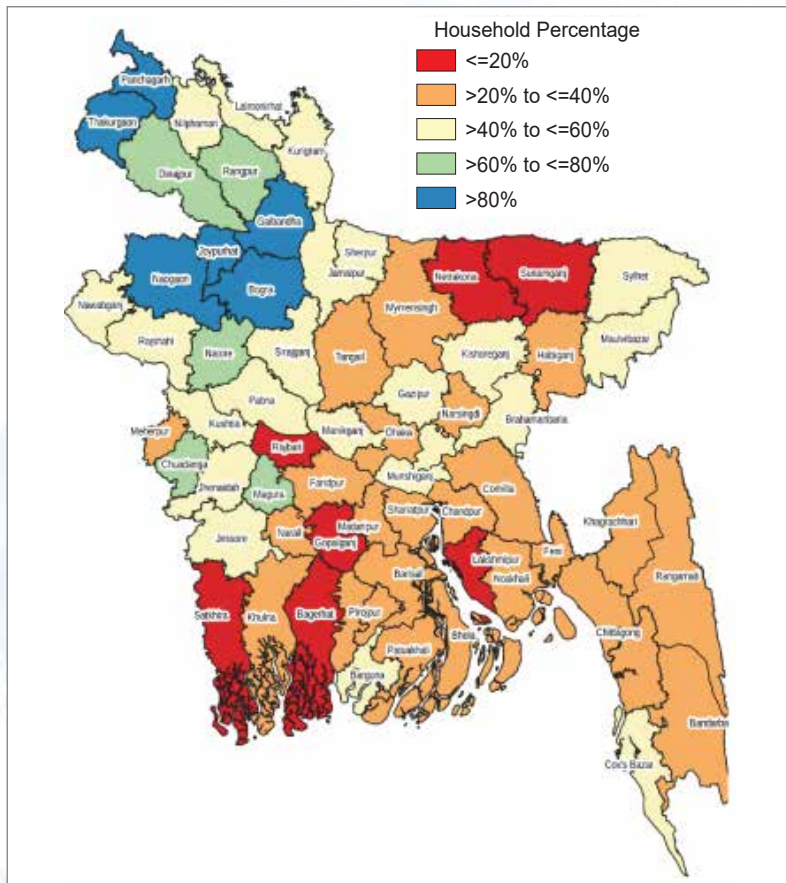
Figure 5: Access to Safely Managed Sanitation (% of Population)



Source: JMP 2023

One of the emerging challenges of safely managed sanitation is the sudden influx of almost one million Rohingya in the Teknaf area which puts enormous pressure. However, a portion of them (35,059 individuals) are currently living in *Bhasan Char*<sup>2</sup> as of 31 March 2024 where they are using safe sanitation. However, it is difficult to ensure safely managed drinking water and sanitation in Teknaf despite concerted efforts of national & international agencies for the Rohingya community.

Map 1: Proportion of Households Covered by Access to Safely Managed Water by District



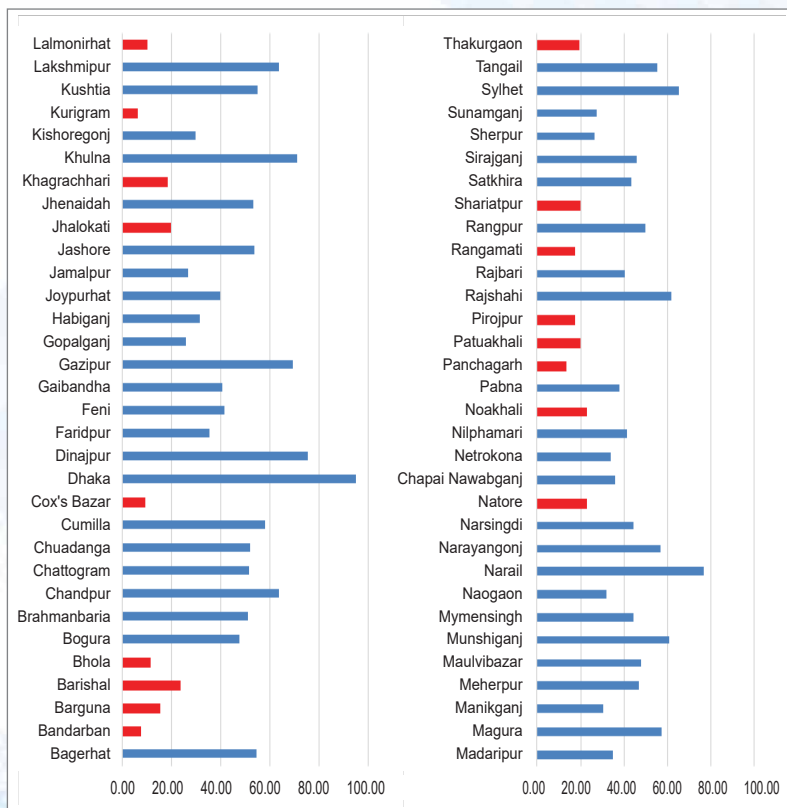
Source: BBS, DPHE & UNICEF 2021

<sup>2</sup> See, *Bhasan Char* Population Factsheet (as of 31 Mar 2024), GoB and UNHCR. Available at <https://reliefweb.int/report/bangladesh/rohingya-refugee-responsebangladesh-bhasan-char-population-factsheet-31-march-2024>, accessed on 17 May 2024.



The geographical distribution of access to safe water and safely managed sanitation demonstrates less access to these services for people living in hills, islands, coastal, drought-prone & depression (*Haor*) areas. The households mostly deprived of safe water live in Satkhira, Bagerhat, Gopalganj and Lakshimpur districts in the coastal areas (suffering from salinity); and Netrakona and Sunamganj (*Haor* areas). Performance is quite dismal in Chattogram hill districts (Bandarban, Khagrachhari & Rangamati), poverty-stricken northern districts where riverine *chars* are located (Kurigram & Lalmonirhat), and some coastal districts (Pirojpur, Patuakhali, Jhalokathi, Noakhali, Cox's Bazar, Bhola, Barguna & Barishal) in terms of safely managed sanitation.

Figure 6: Proportion of Households Covered by Access to Safely Managed Sanitation by District



Source: Author's Calculation Based on MICS 2019



## **Hygiene**

Global Target 6.2 requires achieving access to adequate and equitable hygiene for all by 2030. The hygiene-related indicator is access to a hand-washing facility with soap & water. Indeed, hygiene is intrinsically interwoven with sanitation outcomes, population with a basic hand-washing facility (with water & soap) at the national level was 61.7% in 2022 (*JMP 2023*). Thus, 71.84 million people were deprived of basic handwashing facilities.<sup>6</sup> Here, urban areas are doing well compared to their rural counterparts (57.7% coverage in rural & 67.9% in urban areas) (*JMP 2023*).

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<sup>6</sup> Ibid.

### 3. Financing WASH Sector- *Policies, Directives & Guidelines*

The principal guidelines & directives for public finance in the WASH sector come from national plans, policies & strategies. It includes the *8th Five Year Plan, 2nd Perspective Plan, Sector Development Plan (FY 2011-25) - Water Supply and Sanitation Sector in Bangladesh*<sup>7</sup>, *Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh 2020*, *National Strategy for Water Supply and Sanitation 2021*, and MTBF document.

*Pro-Poor Strategy for Water and Sanitation Sector in Bangladesh 2020* is formulated based on the objective of guaranteeing secured and well-managed water supply & sanitation services for the underprivileged, particularly those in extreme poverty. The Government of Bangladesh has developed a Work Plan for SDGs that aligns with this objective. Consequently, a new third aspect has been incorporated into the revised strategy of 2020. The Strategy focuses on achieving SDG 6 by 2030, which involves ensuring the availability and sustainable management of safe water & sanitation for all with a strong emphasis on “leaving no one behind, for everyone everywhere always”. In this given context, the Strategy aims to establish a foundation for providing WASH (water, sanitation & hygiene) services by identifying households or communities that lack access to basic water & sanitation facilities. The Strategy involves identifying “hardcore” (extreme) poor households among them and prioritizing the allocation and distribution of resources to help them gain access to safe drinking water & sanitation facilities. To address the needs of the poorest households directly, minimum services to meet their basic needs should be guaranteed by involving them in the decision-making process and entrusting them with the responsibility of managing & maintaining water sources & sanitation infrastructures. Throughout the service delivery process, safe water should be viewed as a community asset, while sanitation should be regarded as a personal asset. Community-based sanitation facilities, such as community latrines, should be considered community assets.

One of the pillars of the Pro-Poor Strategy is to develop a mechanism for administering subsidies or public finance. It also mentioned that hardcore poor households that do not have access to safe water supply & sanitation facilities in line with the *Bangladesh Water Rules 2018* and SDG 6 need to be identified as below basic minimum level water supply & sanitation services. In the case of delivery of a basic minimum level of water supply & sanitation services through the subsidy with a focus on context/area-specific technology. Here priority will be given to the hardcore poor households in delivering the subsidy.

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<sup>7</sup> It has been formulated before the adoption of SDGs. However, it includes broad long-term policy and financing guidelines for WASH sector.

*Criteria for the basic minimum level of safe water supply services according to Bangladesh Water Rules, 2018*

- a. The basic minimum level of services is 50 litres per person/day for the purpose of drinking, cooking & personal hygiene;
- b. Collection time of safe drinking water from the source should be within 30 minutes of the household premise;
- c. Drinking water must meet the national water quality standards as per the *National Strategy for Water and Sanitation Hard to Reach Areas of Bangladesh 2012*.

*Criteria for the latrines with the basic minimum level of hygienic sanitation service as per Pro Poor Strategy for Water and Sanitation Sector in Bangladesh 2020*

- i. Confinement of feces;
- ii. Sealing of the passage between the squat hole and the pit to effectively block the pathways for flies and other insect vectors;
- iii. Considering the technology and place, it needs to vent out of the foul gases generated in the pit through a properly positioned vent pipe to keep the latrine odor-free;
- iv. Have individual hygienic latrine facilities for each household (not shared with other families). Moreover, there should be arrangements for confinement and/or transfer of faeces to other places hygienically ensuring proper processing;
- v. If it's not possible to ensure a separate 'hygienic latrine' for each household, a maximum of 2 households (or 10 persons) can share one latrine. For community latrines or public toilets, separate arrangements with proper operation & maintenance facilities should be in place both for male & female users. Necessary infrastructural arrangements should be ensured which is friendly for women/girls and persons with disability (PWD) along with necessary menstrual hygiene management facilities;
- vi. Latrine will indicate the total infrastructure of a 'latrine' including the safe and sustainable superstructure which will be usable all time for all. This infrastructure includes the provision of safe and appropriate provisions, particularly for women, children, elderly people, PWD and pregnant women.

LGD will implement the Strategy through three Local Government Institutions (LGIs), viz. Union Parishad, Municipality & City Corporation. The Strategy recommends providing full subsidy for the 'hardcore' poor to access safely managed water and sanitation. However, they are required to bear the full operational & maintenance costs of the facilities.

*National Strategy for Water Supply and Sanitation 2021* provides a comprehensive framework increasing coverage of WASH services and improving its quality; and addressing persistent & emerging challenges in the WASH sector. Sectoral governance, coordination, monitoring & reporting are pivotal to obtaining positive results in the WASH sector towards attaining SDG 6.

*8th Five Year Plan (2020-2025) (8FYP)* pledges to enhance the access to safe water and sanitation of the rural & urban population to improve hygiene standards in Bangladesh. It mentions enhancing people's access to safe water & sanitation facilities in both urban & rural areas. In doing so, the government aims to significantly invest in water supply & sanitation during the 8FYP period. The 8FYP recognizes that the demand for water & sanitation services surpasses the capacity of municipalities, particularly in small towns. While private participation can help bridge this gap to some extent, the municipalities can significantly enhance their capacity by implementing effective cost recovery policies that follow the principles of beneficiary & polluter pays.

The 8FYP undertakes the following strategies to improve rural water supply & sanitation:

- Piped water supply in the densely populated villages, while a different strategy for sparsely populated villages keeping in 'willingness to pay' for the service;
- Priority to 117 arsenic-prone upazilas and salinity-prone coastal upazilas;
- Pond digging in coastal areas to supply safe water;
- Gradually replace the 'pit latrine' with improved latrine;
- Suitable strategies for fecal sludge management in rural areas.

The Government of Bangladesh acknowledges that it alone cannot cover the full water supply & sanitation facilities. Therefore, as part of the 8FYP, the Government will establish suitable pricing policies to promote private piped water supply, hygiene & environment-friendly household sanitation. The beneficiary pays principle can be adopted to determine prices, particularly for the urban middle-class population.

The Government will focus on implementing the beneficiary pays principle through the increased involvement of LGIs during the planned period. In doing so, the Government aims to establish WASAs in all remaining divisional cities by 2025 beyond Dhaka, Chattogram, Rajshahi & Khulna. It will also introduce robust financial accounting & reporting standards to enable a more accurate estimation of the unit cost of services provided including capital costs. Finally, each urban LGI will have a computerized Management Information System (MIS) developed to provide essential information on the number of customers, water production & supply, hours of water availability, condition of water & sanitation infrastructure, revenue collection, and discrepancies between revenue & water usage among others. The Government will support establishing the Water and Sanitation Regulatory Agency (WASRA) during the 8FYP period. Its primary role will be to regulate both public & private utilities that provide water & sanitation services as well as to determine prices.

The 8FYP acknowledged that municipalities face challenges in terms of insufficient human resources, financial limitations, and a lack of technology & resources to ensure the sustainable provision of water & sanitation services. The Government of Bangladesh will implement measures to address these issues to deliver universal access to improved water & sanitation services in a financially sustainable manner.

The Sector Development Plan (SDP) promotes increasing private sector involvement in sanitation services. However, the country has not yet witnessed significant private-sector participation in this sector. Some private sector entities are currently involved in fecal sludge management (FSM) services with inadequate incentives that hinder establishing a market for the service. The plan opines to establish suitable business models and offer attractive financing options to encourage and stimulate private sector engagement in sustainable service delivery.

The SDP also emphasizes capturing the entire sanitation value chain for an effective FSM in all city corporations & municipalities. It aims at establishing treatment facilities or plants in municipalities to process the fecal sludge to either convert the sludge into compost for reuse or to safely discharge it into the environment.

In the area of sanitation, the strategy entails municipalities. It aims to contain the fecal sludge by emptying it properly and transporting those to a

treatment facility so that there is no leakage to the external environment. The treatment facilities or plants would need to be widely built and maintained in municipalities to process fecal sludge for further use as compost or for safely discharging into the environment. There are fecal sludge treatment plants (FSTPs) at selected municipalities that collect sludge from households subject to emptying fees. The collected sludge is treated in co-composting plants and finally, the compost is packaged & sold in the market to local farmers for use as a soil conditioner. Sakhipur Fecal Sludge & Co-composting Plant in Tangail district generates revenue from the tariffs for waste collection and from compost sales that recover nearly 70% of the cost. It implies that there is a scope for public-private partnership (PPP) in FSM through establishing a viable incentive structure.

*Second Perspective Plan (2021-2041) (PP2041)* gives utmost priority to ensuring the availability of safe water in all villages with special attention paid to areas prone to salinity, arsenic, hilly terrain, *haor* & *char* areas. It mentions that a gradual increase in piped and mini-piped water supply will be implemented in densely populated villages across the country. Additionally, efforts will be made to improve sanitation & fecal sludge management to restore the aquatic environment in rural areas. The *PP2041* strategy aims to tackle water & sanitation issues by expanding public services and promoting private-sector involvement. This will involve implementing proper regulations and adopting a suitable cost-recovery policy.

The plan proposes providing incentives to encourage PPP in water supply & sanitation. The public sector can engage in co-financing arrangements for various environmental services through partnerships with private suppliers & communities. For instance, programs for clean rural water supply, sanitation, public toilets & bathing facilities can be implemented through public subsidies to private suppliers or through cost-sharing agreements with the community. There are significant prospects for cost recovery from water supply, sanitation & solid waste management. Currently, there is minimal cost recovery from water & sewerage services provided by WASAs and municipalities with only partial recovery of operational costs. The pricing policy will be revised to mobilize funding for new investments and ensure efficient water usage. By FY2020, the water & sewerage pricing policy should aim for full operating cost recovery and full capital cost recovery by FY2031.

The *PP2041* mentions that ensuring access to safe water will be a primary focus in all villages with particular attention to areas prone to salinity, arsenic contamination, hilly terrain, wetlands & riverine islands. Piped and

mini-piped water supply will gradually be expanded in densely populated villages across the country. Additionally, significant efforts will be made to improve sanitation & fecal sludge management to restore the aquatic environment in rural areas. The *PP2041* strategy to address water & sanitation issues involves a substantial expansion of public services, while also promoting private sector involvement. This will be achieved through the implementation of appropriate regulations and a cost-recovery policy.

Key policy reforms include increasing public spending on water resources from the current 0.8% to 2% of GDP by FY2020, allocating at least 0.5% of GDP for operation & maintenance (O&M) expenditures by FY2020, and providing incentives to promote PPP in water supply, water transport, river dredging & sanitation. The plan mentions that programs for safe rural water supply & sanitation, improvement of rural bathing ponds, and establishment of public toilets & bathing facilities can be implemented through public subsidies to private suppliers or through cost-sharing arrangements with the community. The *PP2041* will actively explore and pursue these options.

The plan finds significant prospects for cost recovery in water supply & sanitation. Currently, there is minimal cost recovery from water & sewerage services provided by WASAs & municipalities as the pricing policy only covers a portion of the operational costs. The pricing policy will be revised to mobilize funding for new investments and promote efficient water use, which would include a water & sanitation pricing policy to achieve full operating cost recovery by FY2020, and full capital cost recovery by FY2031. However, the target of FY2020 has not yet been realized.



## 4. Financing WASH Sector

The Government of Bangladesh has been implementing various development projects concerning WASH promotion. The projects include projects for technical support, construction of WASH infrastructure, and provide new technological options to cover the entire country in general with a special focus on the vulnerable regions, viz. *chars* (riverine & coastal islands), *haors* (wetland), coastal & hill areas of Bangladesh.

Table 1: SDG 6- Targets & Indicators

<i>SDG 6: Ensure Availability and Sustainable Management of Water and Sanitation for All</i>	
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.	6.1.1 Proportion of population using safely managed drinking water services.
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.	6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.
6.A By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.	6.A.1 Amount of water- and sanitation- related official development assistance that is part of a government- coordinated spending plan.
6.B Support and strengthen the participation of local communities in improving water and sanitation management.	6.B.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management.

Source: <https://sdgs.un.org/goals/goal6>





Water Supply and Sewerage Authority (WASA) of Dhaka, Chattogram, Rajshahi and Khulna are the public agencies to provide water & sanitation services in these megacities. City Corporations & WASAs are responsible for supplying water through pipelines. The DPHE provides public water & sanitation services in municipalities & rural areas. Therefore, they have the primary responsibility to achieve SDG 6 from the public sector. LGIs also allocate money from their budget to the WASH sector, and work in collaboration with the WASAs & DPHE.

Table 4: Key Performance Indicators (KPIs)

Indicator	Unit	Revised Target	Actual	Target	Revised Target	Medium Term	Term	Targets
		2021-22		2022-23		2023-24	2024-25	2025-26
1. Safe water supply coverage	% of coverage	50	57	64	69	73	79	81
2. Sanitation coverage (basic sanitation)	% of coverage	67	41	70	43	45	57	59

Source: Finance Division (2023)

Concerning allocation & spending of public resources through the development budget, 4 WASAs (Dhaka<sup>8</sup>, Chattogram, Rajshahi & Khulna) spend the majority of resources in the WASH sector of Bangladesh covering the population of 4 large city corporation areas of the country. There is no separate development project on WASH in the remaining 7 out of 12 city corporations in Bangladesh. According to the medium-term strategic objectives

<sup>8</sup> Dhaka WASA Covers both Dhaka North & South City Corporations.

& activities of LGD, implementing agencies of WASH-related services, primarily water supply through pipelines in urban areas' facilities, are the respective 7 city corporations (viz. Sylhet, Gazipur, Narayanganj, Cumilla, Mymensingh, Barishal & Rangpur). However, DPHE spends the rest of the budget on WASH, which covers the population of urban areas including municipalities (*Paurasabhas*) & rural areas.

Table 5: Budget Allocation & Spending on Annual Development Programme

	Actual 2021-22	Revised 2022-23	Medium- Term	Expendi- ture	Estimates
			2023-24	2024-25	2025-26
Dhaka WASA	16,718,379	27,095,000	29,110,300	29,405,800	53,569,800
Chattogram WASA	6,337,600	15,425,000	13,499,900	12,100,000	8,530,000
Khulna WASA	577,054	2,740,800	4,355,200	676,000	471,600
Rajshahi WASA	85,620	6,274,300	8,309,800	11,258,800	9,788,300
DPHE - Urban	1,433,028	7,770,600	10,207,600	10,637,950	2,350,400
Total Urban	25,151,681	59,305,700	65,482,800	64,078,550	74,710,100
DPHE - Rural	15,109,597	32,517,300	37,506,000	35,149,250	30,705,400
Total Development Projects	40,261,278	91,823,000	102,988,800	99,227,800	105,415,500
Urban % of Total	62.47	64.59	63.58	64.58	70.87

Source: Author's Calculation Based on Finance Division (2023) Data

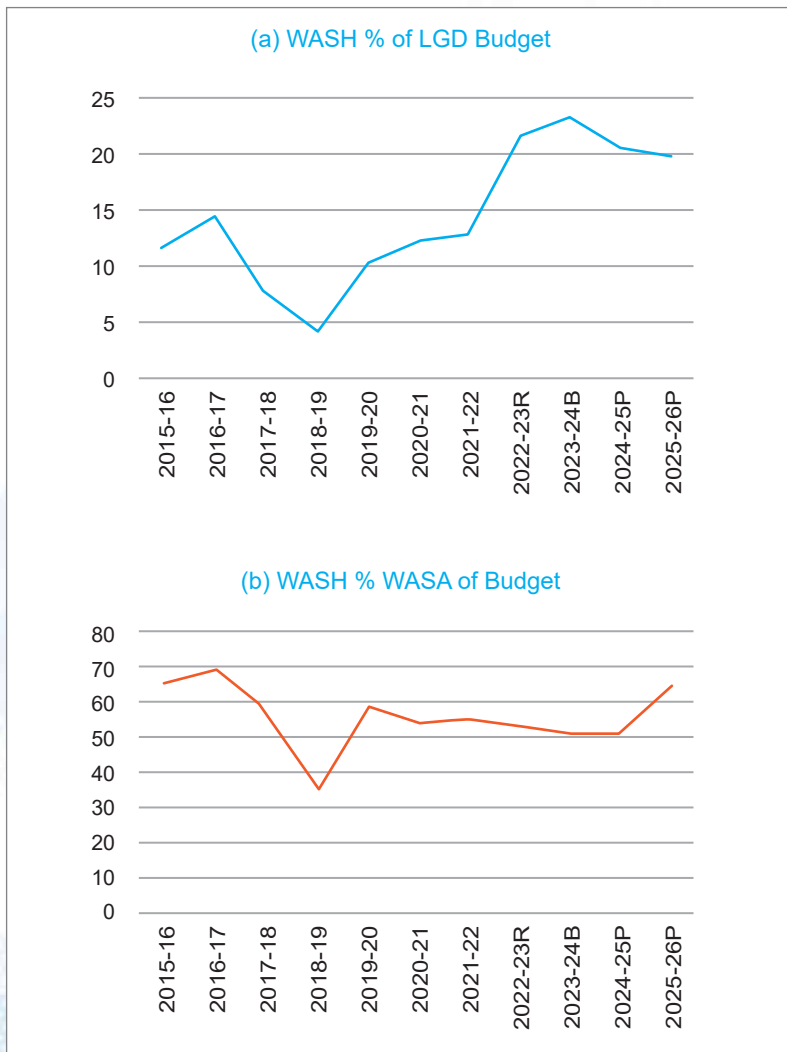
Despite receiving a low share of the national budget (about one-third of the development budget in the WASH sector), rural areas are performing well compared to their urban counterparts.

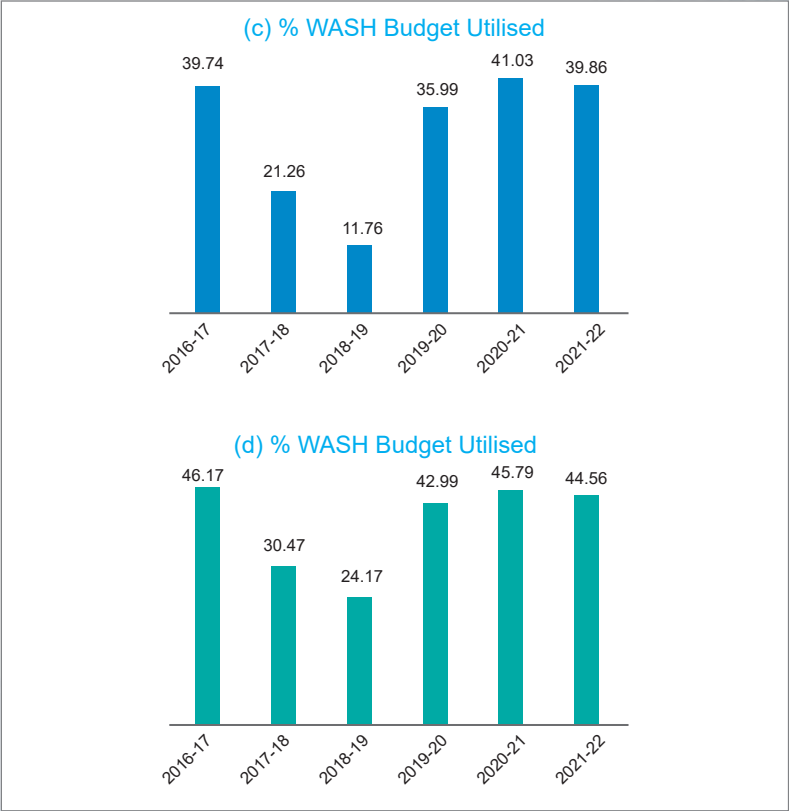
However, initial estimates<sup>9</sup> demonstrate that the WASH sector received a very low share of the actual budget of LGD. WASAs received more than half of the WASH budget consistently since FY2019-20. Yet, urban areas

<sup>9</sup> Author's Estimation Based on the Data of the Finance Division

weigh below the rural areas in access to safely managed water & sanitation services. On the other hand, the allocated budget for WASA & WASH remains heavily underutilized, which can be linked to a considerable gap between the target and achievement of SDG 6 in Bangladesh.

Figure 7: Trend of Explicit WASH Budget





Source: Author's Calculation Based on Finance Division's Data (Various Years)

A portion of the LGD budget goes to WASH-related activities. However, it's not easy to disentangle direct WASH allocation & spending from macro-level documents as the city corporations that do not have WASA also spend on piped water & sanitation from their budgets. In addition, municipalities spend money for WASH services in their respective jurisdictions, which cannot be traced from national budget documents.

“Safe Water Supply Throughout the Country” is the flagship project to supply safely managed water in rural areas all over Bangladesh. The project has commenced in 2020 and is expected to end in June 2025. The Department of Public Health Engineering (DPHE) has been implementing the project with the full amount of domestic resources by installing the

required number of safe water sources in line with the *National Safe Water Supply and Sanitation Policy 1998*. The following safe water supply facilities will be installed under this project:

- 90,636 Shallow Tube-wells and 123,877 Deep Tube-wells
- 206,664 Shallow Tube-wells and 170,222 Deep Tube-wells with submersible pumps & reservoirs
- 3,379 Ring-wells
- 3,210 Rainwater Harvesting Units
- 491 Rural Piped-water Supply Schemes
- 320 Solar-powered Plants
- 29,570 Arsenic-iron Removal Plants
- 8,838 Community-based Water Supply Units<sup>10</sup>

The installation of a Deep Tube-well under the project has been found on the premises of Saghata Union Parishad, a Rising for Rights project intervention area, during the field visit. It aims to supply safe water through pipelines at the houses of nearby households with a user fee to cover maintenance costs. According to the Chairman of the UP, the existing drinking water contains considerable levels of iron and bad smell. The Chairman informed that only 5 Deep Tube-wells of this type have been installed in Saghata union which is extremely inadequate compared to the population coverage.

According to *Bangladesh National WASH Accounts 2020*, the WASH sector's expenditure in Bangladesh was Tk.598 billion in 2020, equivalent to 2.18% of the country's total GDP. Of this amount, around Tk.172 billion, constituting 28% of the total WASH spending was allocated to capital investment for the construction of new water supply, sanitation & hygiene services. It encompassed expenses related to hardware & software, including the procurement of pipes, detailed design and associated training. On average, households in Bangladesh spend Tk.11,574 annually on WASH-related expenses. Within this amount, Tk.1,502 was allocated to water, Tk.1,985 to sanitation, and Tk.8,087 to hygiene. Notably, this accounted for 4.3% of annual household income, which totals nearly Tk.471 billion. Low-income households in both urban & rural areas dedicated a significant portion of their income to WASH expenses. The richest income quantile accounted for 2.8% of their income in WASH spending, while the corresponding proportion for the poorest income quantile was 7.8% (BBS, 2023c).

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<sup>10</sup> <https://www.banglanews24.com/economics-business/news/bd/763951.details>

## 5. Leave No One Behind: *WASH for the Marginalised*

Access to safely managed water & sanitation by the poor, marginalized, vulnerable and out-of-reach groups in urban & rural areas including remote & geographically vulnerable is important to achieve the WASH-related NPTs. It's particularly important to address the 'Leave No One Behind' principle of the SDGs (39+1 NPTs) to ensure equity in WASH service delivery for these populations.

The 8FYP presents the miseries of the lack of WASH facilities in hard-to-reach areas, climate hotspots & geographically vulnerable regions, and underscores the imperatives for special intervention for them. It mentions that the provision of WASH services is significantly lacking in climate hotspots, such as *chars*, *haors*, hilly areas, and coastal belts. The challenges are especially severe in coastal belts, which are particularly vulnerable to the adverse effects of rising sea levels, salinity intrusion, freshwater scarcity and decline in groundwater levels. According to the *National Strategy for Water and Sanitation Hard-to-Reach Areas of Bangladesh 2012*, coastal regions have the second highest number of hard-to-reach unions in the extreme category, second only to hilly areas. This means that coastal areas face significant difficulties in accessing essential WASH services.

One of the main issues faced by the coastal belt is the intrusion of & rise in groundwater salinity which disproportionately affects the poor. As a result, approximately 2.5 million people in the southwest coastal region of Bangladesh already experience shortages of drinking water, according to the *World Banks Bangladesh WASH Poverty Diagnostic (BWPD)* study. Furthermore, by 2050, it's projected that water scarcity may impact as many as 5.2 million poor individuals and 3.2 million extremely poor individuals in this region (Komatsu & Joseph, 2016). In their search for water, the poor are more likely to resort to using water from unprotected freshwater sources like ponds, putting themselves at risk of serious health consequences.

Overall, the combination of low WASH service levels and the vulnerability of coastal areas to climate impacts exacerbates the challenges faced by the hard-to-reach communities in these regions. Efforts to address these issues are crucial to improving the well-being and living conditions of the affected populations.

The *National Strategy for Water and Sanitation Hard to Reach Areas of Bangladesh 2012* also addresses the challenges faced by urban slums. Many slums are located in low-lying areas, making them prone to waterlogging and natural disasters. Additionally, the scarcity of freshwater and inadequate drinking water supply are significant issues in hilly regions (especially in Chattogram Hill Tracts, CHT), along with insufficient sanitation facilities. Tailored interventions are necessary to ensure sustainable WASH services in areas vulnerable to climate change. It's crucial to pay due attention to the WASH needs of women & other vulnerable groups who are disproportionately affected by climate-induced challenges. The 8FYP attaches priority to providing water & sanitation services in the hill districts, areas prone to coastal salinity & cyclones, and districts with low access in the northern region.

The 8FYP outlined WASH solutions for backward, hard-to-reach and vulnerable areas as well. Construction of elevated platforms is required for the implementation of drinking water & sanitation infrastructure in coastal areas. Feasible solutions for community water supply include the establishment of desalination plants and rainwater harvesting systems. For smaller scale usage, recommended technologies involve the use of Tube-wells with suitable treatment units for arsenic & iron as well as pond sand filters to treat water from the pond surface.

The 8FYP mentions that WASH facilities often suffer damage from heavy rainfall-led floods in *char* areas. These areas are predominantly inhabited by poor & marginalized communities who lack access to WASH. Similar to other flood-prone regions, WASH structures need to be built on elevated platforms to mitigate the impact of flooding. To address the water & sanitation needs, suitable technologies such as Rainwater Harvesting System and community-level options will be installed for removing arsenic & iron from groundwater.

The 8FYP acknowledges that surface water sources like springs & streams that are utilized for drinking & other activities are subject to seasonal variations and are often heavily polluted in hilly areas. Low sanitation coverage in CHT, as observed from MICS 2019 microdata, is the outcome of inadequate sanitation facilities. Rainwater Harvesting Systems with sufficient storage capacity will be implemented at both individual & community levels to address these challenges and ensure access to safe drinking water, and to promote sustainable sanitation practices in hilly areas.



Some of the most vulnerable & disadvantaged people of Bangladesh live in urban slums. They often lack access to WASH services due to issues of land ownership and gaps in development plans. The location of urban slums in lowlands and wetlands makes them prone to waterlogging that exacerbates the lack of access to safely managed water & sanitation. To address these challenges, the 8FYP mentions that community-based organizations will play a crucial role in maintaining community water points & sanitation blocks within the densely populated slums. By ensuring the construction and effective operation of these facilities, it will be possible to enhance accessibility for women, children & PWD. Proper maintenance, including the upkeep of hygienic conditions, will enable a significant number of people utilizing these shared facilities to have adequate access to WASH services. The plan also mentions that safe water & sanitation services should be established and maintained as climate-resilient infrastructure. Overall, the plan pledges to enhance the availability of hygienic latrines for rural & urban slums, extend water & sanitation facilities to underserved municipalities, and deliver improved water supply to areas that are currently lacking access or are hard-to-reach.

**Table 6: Budget Allocation & Spending on Annual Development Programme (ADP) under DPHE**

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Preparation of water development plan at Moheshkhali Matarbari area of Cox's Bazar district.	0	11,600	0	0	0	Coastal climate-vulnerable area
Technical assistance project for groundwater exploration in Cox's Bazar (TAPP)	0	0	3,800	0	0	Coastal climate-vulnerable area
Emergency assistance project for water supply & sanitation at Ukhia & Teknaf upazila in Cox's Bazar district.	1,565,426	1,288,400	2,900,000	0	0	Coastal climate-vulnerable area

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Safe water supply project by installing environment-friendly solar water desalination unit.	128,133	102,200	0	0	0	Coastal climate-vulnerable area
Safe water supply & sanitation project for rural areas in South Sunamganj upazila of Sunamganj district.	150,000	25,000	35,000	0	0	Haor area
Safe water supply and sanitation project for rural areas in Jagannathpur upazila of Sunamganj district.	150,000	25,000	35,000	0	0	Haor area
Expansion and development project of water supply and sanitation system in Chowmuhani Paurasabha of Noakhali district.	125,591	73,400	0	0	0	Coastal climate-vulnerable area
The project for safe water supply and sanitation management for different villages of Khagrachari district.	17,708	234,800	2,500	0	0	Hill area
Project on improvement of sustainable water supply, sanitation & hygiene system in haor areas.	104,084	2,384,600	1,821,500	0	0	Haor area
Safe water supply & sanitation project in Rupsha, Digholia and Terokhada upazila of Khulna district.	79,985	71,200	1,000	0	0	Coastal climate-vulnerable area

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Community based water supply project at low water table area under Naogaon district.	40,265	119,300	0	0	0	Drought-prone area
Char Development and Settlement Project-IV (CDSP-IV) - Additional financing (DPHE component).	0	162,600	139,100	0	0	Char area
Development of safe water supply and sanitation system in Bishwanath Upazila of Sylhet district.	0	20,100	355,700	0	0	Haor area
Safe water supply and sanitation project in rural areas of Pargachha upazila of Rangpur district.	0	120,200	200,500	123,300	0	Char area
Safe water supply and sanitation project in Bhandaria upazila of Pirojpur district.	0	200,000	162,100	0	0	Coastal climate-vulnerable area
Safe water supply and sanitation project in Paikgachha and Koira upazilas of Khulna district.	0	180,000	162,400	67,900	0	Coastal climate-vulnerable area
Project for safe water supply and sanitation management for Gangachara upazila in Rangpur district.	0	50,000	131,900	63,700	0	Char area
Safe water supply & sanitation project in Asashuni, Kaliganj & Debhata upazilas of Satkhira district.	0	110,400	300,900	196,400	0	Coastal climate-vulnerable area

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Safe water supply project through rainwater harvesting in Mathbaria upazila of Pirojpur district.	0	80,000	250,000	0	0	Coastal climate-vulnerable area
Water supply project in coastal area through rainwater harvesting system.	0	1,500,000	6,080,000	4,423,400	0	Coastal climate-vulnerable area
Rainwater harvesting project in Morelganj and Sharankhola upazilas of Bagerhat district.	0	60,200	183,300	0	0	Coastal climate-vulnerable area
Community-based water supply project at low water table area at Patnitala and Dhamorhat upazila in Naogoan district.	0	86,100	367,000	0	0	Drought-prone area
Total: ADP	16,542,625	40,287,900	47,713,600	45,787,200	33,055,800	
% of ADP of DPHE	14.27	17.14	27.52	10.65	0.00	

Source: Author's Analysis Based on Finance Division (2023)

Access to safely managed water & sanitation by the poor, vulnerable & disadvantaged segments of the population depends critically on the resource allocation of the government as they lack the financial capability to afford these services as per the SDG targets. The pattern of budgetary resources shows that a total of 20 specialized projects are currently being implemented by the government, which is about 28% of the ADP under DPHE. However, 12 of them are dedicated to coastal and coastal climate-vulnerable areas. The rest are dedicated to *char*, *haor* & hilly areas. Unfortunately, no project has been found targeting the urban poor & slum dwellers even though this category of population has been identified by the 8FYP and the *National Strategy for Water and Sanitation Hard to Reach Areas of Bangladesh 2012*.

Discussion with DPHE, municipality officials & UP representatives under the Rising for Rights urban intervention areas (Sreemangal Municipalities & Saghata UP) reveals that inadequate facilities of safely managed water & sanitation services exist for the slum & floating population of these areas. Also, according to the Chairman of the Saghata Union, people living in *char* areas have few Tube-wells installed by the DPHE as public water collection points, but those get inundated during floods and heavy rainfall. However, safely managed sanitation service hardly exists in *char* areas. Sreemangal municipality has some public toilets for the population living in slum-like conditions as well as a cleaner community, but these are inadequate and not managed well. The DPHE of Sreemangal upazila provides water & sanitation services for tea garden workers, who are extremely poor. However, open defecation still takes place in tea gardens and streams at regular intervals because of the inadequacy of public toilets for the workers. Thus, the overarching principle of 'Leave No One Behind' in SDG 6 is significantly compromised for the marginalized segments of the population in Bangladesh.

## 6. Looking Ahead: *Imperatives for Long-term Investment*

In this part, a costing model has been developed for the projection of budget allocation and utilization up to 2030 based on the business-as-usual scenario and works out the required annual public investment for achieving SDG 6 by 2030.

The formula for determining the target path of safely managed water (W) is as follows:

$$W_T = W_0(1 + g_W)^t \quad (1)$$

From Equation (1), we obtain

$$(1 + g_W) = \left(\frac{W_T}{W_0}\right)^{\frac{1}{t}} \quad (2)$$

Rearranging Equation (2), we obtain the growth rate ( $g_W$ ) as follows

$$g_W = \left(\frac{W_T}{W_0}\right)^{\frac{1}{t}} - 1 \quad (3)$$

Similarly, for safely managed sanitation, we obtain

$$g_S = \left(\frac{S_T}{S_0}\right)^{\frac{1}{t}} - 1 \quad (4)$$

Now, the periodic value of targeted attainment for safely managed water & sanitation are:

$$W_1 = W_0 \times (1 + g_W), W_2 = W_1 \times (1 + g_W), \dots, W_T = W_{T-1} \times (1 + g_W) \quad (5)$$

$$S_1 = S_0 \times (1 + g_S), S_2 = S_1 \times (1 + g_S), \dots, S_T = S_{T-1} \times (1 + g_S) \quad (6)$$

Finally, we derive the required expense for safely managed water & sanitation as follows:

$$C_{W1} = (\Delta C_W / \Delta W) \times \Delta W_1, C_{W2} = C_{W1} + (\Delta C_W / \Delta W) \times \Delta W_2, \dots, C_{WT} = C_{WT-1} + (\Delta C_W / \Delta W) \times \Delta W_T \quad (7)$$

$$C_{S1} = (\Delta C_S / \Delta S) \times \Delta S_1, C_{S2} = C_{S1} + (\Delta C_S / \Delta S) \times \Delta S_2; \dots, C_{ST} = C_{ST-1} + (\Delta C_S / \Delta S) \times \Delta S_T \quad (8)$$

where

$W_0$  = Initial period value of coverage of safely managed water (% of population), 2022

$W_T$  = Final period value of coverage of safely managed water (100% of population), 2030

$S_0$  = Initial period value of coverage of safely managed sanitation (% of population), 2022

$S_T$  = Final period value of coverage of safely managed sanitation (100% of population), 2030

$g$  = Growth rate

$t$  = Number of periods

$C_{WT}$  = Cost required for attaining the targeted coverage of safely managed water at the final period

$\Delta W$  = Observed annual additional coverage of safely managed water

$\Delta C_W$  = Observed annual average additional public investment to attain  $\Delta W$

$\Delta W_T$  = Targeted annual additional coverage of safely managed water

Finally, population size ( $P$ ) can be written as

$$P_1 = P_0 \times (1+n_1), P_2 = P_1 \times (1+n_2), \dots, P_T = P_{T-1} \times (1+n_T) \quad (9)$$

And population growth rate ( $n$ ) is

$$n_1 = n_0(1-\delta), n_2 = n_1(1-\delta), \dots, n_T = n_{T-1}(1-\delta) \quad (10)$$

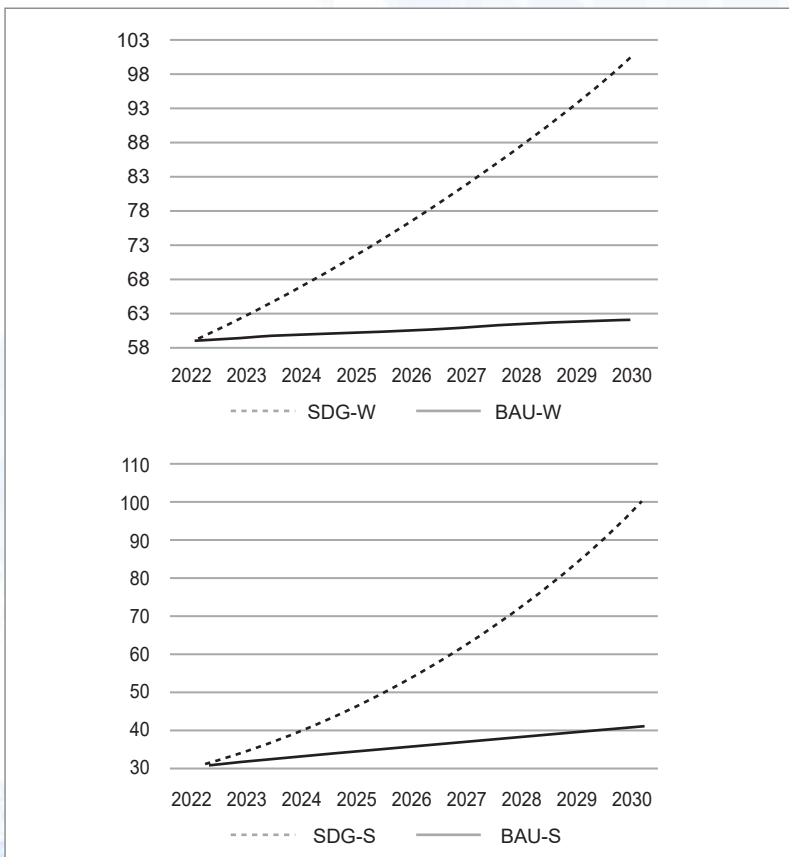
where  $\delta$  stands for the constant rate of decay of population growth rate.

The trend of progress in safely managed water reveals that if the current growth rate continues, the coverage will be merely 62.19% in the end line of SDG in 2030 from 59.1% in 2022. It's likely to be associated with the existing low level of public investment in ensuring access to safely managed water & sanitation. The coverage of safely managed sanitation will be 40.49% in 2030 from 31% in 2022, which would be far below the target. Therefore, it's necessary to move far beyond the business as usual (BAU) scenario and take a fast track to achieve the NPTs within the timeline. In doing so, public finance has to be increased. However, the



ability of the government to spend additional resources depends on the level of development of the country. Bangladesh is currently a lower-middle-income country and is expected to become an upper-middle-income by the year 2031. Thus, its capacity to increase resource utilization in this sector will increase gradually. Therefore, a targeted increase in public investment should take an 'exponential' path to achieve the full coverage of safely managed water & sanitation.

Figure 8: Growth Path of Safely Managed Water & Sanitation as per NPT 17 (Up) & NPT 18 (Down)



Source: Author's Simulation

The results of the simulation exercise demonstrate that public investment in Bangladesh on WASH needs to increase gradually, from US\$0.63 billion in 2023 to US\$3.33 billion in 2030 at current prices & exchange rates. The total amount of required spending would be US\$14.81 billion in eight years (Table 6).

Table 7: Budget required for achieving WASH-related SDGs (NPT 17 & 18)

		2023	2024	2025	2026	2027	2028	2029	2030
WASH	Total (billion US\$)	0.63	0.92	1.23	1.57	1.95	2.36	2.82	3.33
	Per Capita (US\$)	3.69	5.34	7.12	9.06	11.17	13.47	15.97	18.71
Water (NPT17)	Total (billion US\$)	0.37	0.57	0.79	1.01	1.26	1.52	1.80	2.09
	Per Capita (US\$)	2.16	3.29	4.48	5.72	7.03	8.40	9.85	11.37
Sanitation (NPT18)	Total (billion US\$)	0.26	0.34	0.44	0.56	0.69	0.85	1.02	1.23
	Per Capita (US\$)	1.50	1.98	2.53	3.15	3.87	4.68	5.62	6.69

Source: Author's Calculation

The simulation results of the SDG cost estimation by the General Economic Division (GED) titled "SDGs Financing Strategy: Bangladesh Perspective" reveal that the additional required investment is comparatively low for this period, only US\$6.28 billion. It's mainly because the simulation was conducted in 2017 without considering the cost escalation, slow progress in safely managed water & sanitation services in recent years, and lack of consistent data on SDG 6. It also does not demonstrate the base cost that the government was spending for safe water & sanitation.

## 7. Investment Requirement for Safely Managed Sanitation

Achieving SDG 6 within the stipulated timeline requires specific & targeted intervention schemes on top of general public spending through the national level and by LGIs. The above discussion indicates that the existing services are inadequate to ensure adequate safe water & sanitation, which is reflected by the fact that only less than one-third of the population of Bangladesh has access to safe sanitation and about 41% of the population is deprived of safe drinking water. Even though the rural areas have slightly higher coverage than their urban counterparts, the number of rural populations deprived of safe water & sanitation is significantly greater than that of urban populations. The national plan documents (8FYP and PP2041) also reflect a part of the reality and pledge to increase the existing public investment, initiate targeted intervention, and create scope for the private sector to provide the services. However, the medium-term public investment does not fully conform to and is in line with the commitments of the plan documents.

The 8FYP and PP2041 provide three streams of guidance to devise a strategy for public investment targeting the following populations:

- a. Extremely (hardcore) poor households
- b. Households living in hard-to-reach, geographically vulnerable & hilly areas
- c. People living in urban & rural slums

Nevertheless, keeping in mind the current dismal coverage, ensuring safe sanitation should be the most important priority under SDG 6 in Bangladesh, followed by safe water & hygiene facilities. Therefore, it's important to determine the principles of public investment given the lack of private investment in this area.

The first benchmark can be to cover the bottom 40% population at the outset and then gradually reduce the benchmark through incremental public investment on the declining balance of the bottom population. In doing so, low-income populations who are deprived of safe sanitation would be covered gradually by public investment through implementing the principle of social justice as low-income people should be the first intended beneficiaries of subsidy on safe sanitation. The subsidy should be translated into 2 components:

- Capital cost– technology & installation
- Recurrent cost– operation & maintenance, and fecal sludge/ wastewater management

The second benchmark can be to cover the poor population which will be a subset of the bottom 40% and then gradually reduce the benchmark population which would be covered through subsidy on the declining balance of the poor population. In doing so, the poor population who are deprived of safe sanitation would be covered gradually on a cluster basis. Priority should be attached to households living in remote, vulnerable geography and hard-to-reach areas.

The second benchmark population should be provided with both capital & recurrent costs, while a part of the first benchmark population who are non-poor should be provided with half of the capital cost and no recurrent cost considering their ability to pay. The LGIs should be in charge of identifying the bottom 40% and the non-poor population. The recurrent costs can be transferred directly to sanitation beneficiaries by designing a special social security program.

The following formula has been applied to determine the number of beneficiaries & estimated costs:

$$B_T = B_0 (1+g_b)^t \quad (11)$$

From Equation (1), we obtain

$$(1+g_b)^t = \left(\frac{B_T}{B_0}\right)^{\frac{1}{t}} \quad (12)$$

Rearranging Equation (2), we obtain the growth rate ( $g_w$ ) as follows:

$$g_b = \left(\frac{B_T}{B_0}\right)^{\frac{1}{t}} - 1 \quad (13)$$

Finally, benchmark population size (B) can be written as

$$B_1 = b_1 P_1, B_2 = b_2 P_2, \dots, B_T = b_T P_T \quad (14)$$

$$b_1 = b_0 \times (1 + g_b), b_2 = b_0 \times (1 + g_b)^2, \dots, b_T = b_0 \times (1 + g_b)^T \quad (15)$$

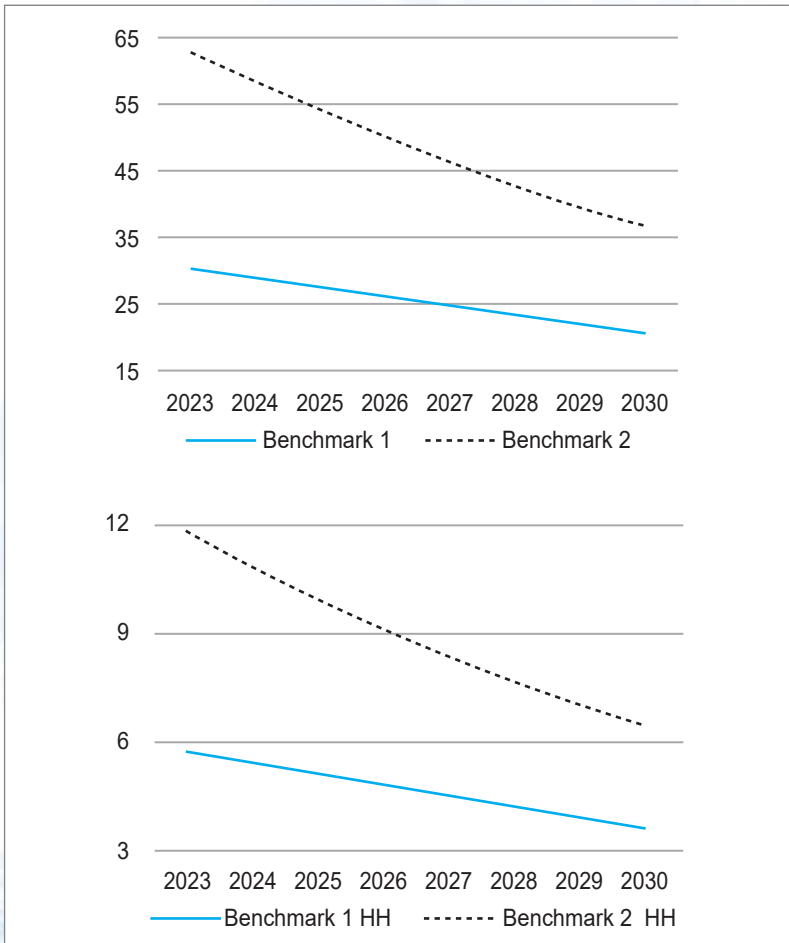
where

$P$  = total population

$b$  = ratio of benchmark population

$g_b$  = constant rate of growth/decay of ratio of benchmark population

Figure 9: Benchmark Populations (up) and Households (down) Million



Source: Author's Simulation

The coverage of the benchmark populations by the NPT 18 subsidy has been furnished in the following Table:

#### Benchmark households not covered by NPT 18

	2023	2024	2025	2026	2027	2028	2029	2030	Annual Coverage
Benchmark 1 household*	5.26	4.51	3.76	3.01	2.26	1.50	0.75	0	≈ 0.452 million
Benchmark 2 household**	11.00	9.21	7.51	5.88	4.32	2.83	1.39	0	≈ 0.804 million

#### Distribution of benchmark households (million)

	2023	2024	2025	2026	2027	2028	2029	2030	Annual Coverage
Slum households	0.325	0.322	0.319	0.315	0.312	0.309	0.306	0.303	≈ 0.019 million safe sanitation
Slum not covered	0.287	0.246	0.205	0.164	0.123	0.082	0.041	0	
Others in benchmark 1 not covered	4.98	4.27	3.56	2.84	2.13	1.42	0.71	0	≈ 0.414 million safe sanitation
Others in benchmark 2 not covered	10.71	8.97	7.31	5.72	4.20	2.74	1.35	0.00	≈ 0.766 million safe sanitation

Note: One latrine for 2 households at slums and latrines not shared at other households according to the 8FYP.

Source: *Author's Simulation*

To cover the poor households, a dedicated project will need to be developed with an allocation of about US\$103 million per annum for transferring safe sanitation technology. However, to cover the second benchmark population, about US\$175 million per annum should be allocated to the national budget for technology transfer. In addition, US\$24.7 million will be required per annum for transferring recurrent costs to poor households through a special social security program.

## 8. Policy Recommendations

Ensuring safely managed water is a major concern in the context of achieving SDG 6.1 within the stipulated timeline. People living in hard-to-reach areas, hills, slums, *char* & *haor*, and salinity-prone coastal areas find it difficult to access safe water. In addressing this problem, fixed safe water points need to be established to cover slums and floating populations. For example, the safe water points installed in *chars* of Gaibandha become unusable during seasonal floods & rainfall as many of them are not installed at adequate elevation. Some of the points are also damaged during floods, which increases the difficulty for *char* households to collect safe water. Therefore, water points need to be established in elevated platforms in *chars* & slum areas subject to inundation during floods and rainfall. Moreover, since households are usually located sparsely in *chars*, an adequate number of water points need to be established to enable them to collect water within 30 minutes. In addition, solar-powered water pumps can be installed in *chars* to supply piped water at fixed points, which can be used for both drinking & irrigation. Village groups can be established for operation & maintenance in which the recurrent costs can be covered through user fees.

Safely managed sanitation is a major challenge in *char* areas as the majority of the households live in poverty. Therefore, they should receive priority in transferring sanitation technology. Fecal sludge & wastewater management would not be possible by LGIs & private sector. Therefore, NGOs that work in *chars* can provide training to the households on the management aspects. They can also install plants in *chars* for producing compost which can be used in soil conditioning in *char* areas.

Installing an adequate number of public toilets to cover the floating population in both cities and rural areas (e.g., upazila & union parishad headquarters, marketplace & transport stations) is important to provide access to safely managed sanitation service to the floating population. The LGIs need to install the facilities while local NGOs can take responsibility for their operation & maintenance as well as fecal sludge & wastewater management. For example, *Dushtha Shasthya Kendra* (DSK), a national NGO in Bangladesh has been maintaining some public toilets in selected bus terminals in Dhaka megacity through appointing cleaners & managers, and covering cleaning materials. WaterAid, in collaboration with Dhaka North City Corporation,



DSK, and the Gabtali inter-district bus terminal public toilet management committee, has introduced public toilet access cards. These cards were distributed among a group of poor individuals near the Gabtali inter-district bus terminal public toilet, one of the first public toilets in Dhaka city. The initiative aims to provide free access to water & toilet facilities in any of the 29 public toilets established by WaterAid in partnership with the Dhaka City Corporation.<sup>11</sup> This type of innovative initiative should be internalized by the government and LGIs to promote safe WASH facilities in cities and urban centers in Bangladesh.

It's difficult to provide safe water & sanitation services in hilly areas, especially in the CHT. Households are located very sparsely in difficult terrain where transport and living are challenging, especially for the households that live in remote places of the hills. As mentioned in the 8FYP, they are dependent heavily on unprotected surface water sources, such as springs & streams, for drinking and other activities including sanitation & hygiene. They need to be supported with Rainwater Harvesting Systems and water treatment technologies. In addition, support should be provided for installing safe sanitation and orientation for fecal sludge management.

'Project for Safe Water Supply throughout the Country' is a large project to supply safe water in rural areas. A similar water supply project is required in urban areas because a large number of people are deprived of safely managed water in big cities & municipal areas, a significant portion of whom belong to low-income households. Many municipalities are unable to cover all population living in the municipal areas because of the capacity of the water pumps and the lack of treatment technology to use surface water. Therefore, a comprehensive urban water supply mapping is required to trace deprivation in accessing safe water and ensure public finance accordingly. About one-fifth of the entire Bangladesh is water-stressed areas, which include hilly, tea gardens, arsenic-prone & coastal areas.

The private sector has been identified as a potential actor in the provision of safely managed sanitation in the national plan documents. However, it has not yet emerged as a viable actor because of a lack of sufficient incentive (user fee) and willingness to pay. Also, engaging the private sector in basic utilities like water supply & sanitation is politically sensitive especially in the

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<sup>11</sup><https://www.tbsnews.net/bangladesh/health/wateraid-introduces-public-toilet-access-cards-46213>, accessed on 17 May 2024.

urban areas as LGIs are predominant providers. However, a large number of the municipalities have turned out to be capacity-deficient in providing sanitation and fecal sludge management services as the population of urban areas has increased significantly. Therefore, public-private and public-NGO partnerships can play a supplementary role in enhancing the capacity of the municipalities in this regard.

NGOs can play a significant role in both safe water supply & sanitation promotion in both urban & rural areas. They can work in urban slums, rural, remote & coastal areas by installing Shallow & Deep Tube-wells, and fecal sludge and wastewater treatment plants as developing cases individually and in partnership with LGIs. They can play an important role in monitoring and oversight of the WASH budget at local & national levels, and promote civil engagement with the LGIs. They also can undertake sensitization programs on safely managed water & sanitation at the community level.

Hypertension, pregnancy-related complications, cholera & other water-borne diseases are increasing due to an increase in water pollution & salinity. Budget allocation is required to combat water pollution & climate change. In addition, a person is displaced 12-14 times in a lifetime in river erosion areas. The erosion-affected households do not get any minimum safe WASH facilities in the areas where they are displaced. Women & girls from displaced households are affected the most. Remote *char* areas usually do not have access to safe WASH facilities because of a lack of public & social investments. Those who are displaced due to river erosion and move to other areas do not get the support of safety net and publicly financed WASH facilities as they are not voters of the new areas. In addition, most women & adolescent girls are compelled to drink flood water and use unclean clothes for menstrual hygiene management during floods. Therefore, water points & public toilets should be installed on a high plinth considering the flood water level.

Not all solutions to safe water & sanitation problems in Bangladesh will be the same. The solution to the problems of water-stressed areas would also be different. For example, both drought-prone north-western, and salinity- and cyclone-prone southern areas have problems of safe water & sanitation. But the solutions in these two regions will be different. It's difficult for poor rural people to purchase water, while the unavailability of safe water in southern areas is another concern for poor households even if they are

ready to spend money. Access to safe water is a human right. On the other hand, safe water is a resource, which must be duly paid per unit of use. Therefore, the investment for enhancing access to safe water should be considered from a human rights perspective by maintaining a balance between the right to access & cost recovery. However, the principles of equity, equality & social justice should be followed to make investment decisions to ensure the availability, access & utilization of safe WASH facilities, especially by the poor, vulnerable & remotely located people. Public investment should also be backed up by the proper calculation of economic and social rates of return.

There is a need for innovation in constructing WASH infrastructure. There are also opportunities to work on how appropriate the technologies are being used for surface water and other sources that are relevant for Bangladesh. Many a time infrastructure is developed but not everyone can use it properly. There are issues related to training for the proper use and maintenance of community-level safe water points & public toilets. Thus, besides installing WASH infrastructure for vulnerable regions and communities, it's important to develop community ownership so that users can collectively ensure proper maintenance of the infrastructure.

The biggest impact of climate change is on water. Water is a scarce resource, which has to be protected & conserved. It can be done in two ways. Firstly, by reducing water wastage, and secondly, by reducing water pollution from industrial production. Public-private partnership (PPP) can be promoted in establishing large Effluent Treatment Plants (ETP) in major industrial clusters. The budget should be allocated to regularly monitor industrial pollution and to protect water sources from pollutants.

Finally, the development partners can enhance partnership and support to achieve SDG 6 within the stipulated timeline. They can support new ventures by social enterprises and NGOs along with the government, especially in enhancing the capacity of LGIs in both cities & rural areas, and climate hotspots including safe water supply in salinity-prone coastal areas through financial support, technical assistance, and technology transfer.

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## Annexes

Table 1: Budget Allocation & Spending on Annual Development Programme under DPHE

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estimate s	Remarks
			2023-24	2024-25	2025-26	
Preparation of Water Development Plan at Moheshkhali Matarbari Area of Cox's Bazar District.	0	11,600	0	0	0	Coastal climate-vulnerable area
Urban Infrastructure Improvement Preparatory Facility (DPHE Component).	39,591	247,700	0	0	0	
Technical Assistance Project for Ground Water Exploration in Cox's Bazar (TAPP).	0	0	3,800	0	0	Coastal climate-vulnerable area
Water preservation and safe water supply project through re-excavation/ maintenance of ponds/dighi/ditches owned by zilla parishads.	749,256	150,000	0	0	0	
Water Supply and Environmental Sanitation System Improvement Project for Three Pourashava's of Jamalapur Districts.	184,235	83,300	0	0	0	
Water supply and sanitation in 23 municipalities of Bangladesh.	144,547	1,670,000	1,444,400	2,500,000	0	
Arsenic Risk Reduction Project for Water Supply.	4,869,698	2,200,000	2,000,000	0	0	

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Water Supply & Environmental Sanitation including Faecal Sludge Management Project in 32 Pourashavas.	799,886	762,700	1,030,000	1,842,900	0	
Emergency Assistance Project for Water Supply and Sanitation at Ukhia and Teknaf upazila in Cox's Bazar District.	1,565,426	1,288,400	2,900,000	0	0	Coastal climate-vulnerable area
Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP).	4,680	1,218,000	1,445,000	0	0	
Safe water supply project by installing environment-friendly solar water desalination unit.	128,133	102,200	0	0	0	Coastal climate-vulnerable area
Safe water supply and sanitation project for rural areas in South Sunamganj upazila of Sunamganj district.	150,000	25,000	35,000	0	0	Haor area
Safe water supply and sanitation project for rural areas in Jagannathpur upazila of Sunamganj district.	150,000	25,000	35,000	0	0	Haor area
Expansion and Development Project of Water Supply & Sanitation System in Chowmuhani Pourashava of Noakhali District.	125,591	73,400	0	0	0	Coastal climate-vulnerable area
Project on Strengthening Water Quality Testing System.	244,350	495,000	582,200	0	0	

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Bangladesh Municipal Water Supply and Sanitation Project (30 Pourashavas).	52,778	4,120,000	5,150,000	4,000,000	400,000	
The project for safe water supply and sanitation management for different villages of Khagrachari district.	17,708	234,800	2,500	0	0	Hill area
Project for Safe Water Supply throughout the Country.	6,998,825	17,000,000	15,000,000	24,136,200	25,387,800	
Project for Regeneration of Production Tubewells in Countrywide Pourashavas.	74,729	81,000	21,900	0	0	
Improvement of Water Supply and Environmental Sanitation System in Kulaura and Golapganj Pourasava.	4,484	14,300	433,300	0	0	
Project on Improvement of sustainable water supply, sanitation & hygiene system in <i>haor</i> areas.	104,084	2,384,600	1,821,500	0	0	<i>Haor</i> area
Safe water supply & sanitation project in Rupsha, Digholia & Terokhada upazila of Khulna district.	79,985	71,200	1,000	0	0	Coastal climate-vulnerable area
Rural Water, Sanitation and Hygiene for Human Capital Development Project.	0	2,320,000	4,020,000	5,800,000	5,317,600	



Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Expansion and improvement Project for safe water supply & sanitation system in Banderban Pourasava and 3 upazila sadar with adjacent areas of Bandarban district.	14,374	132,600	60,000	0	0	
Community Based Water Supply Project at Low Water Table Area under Naogaon District.	40,265	119,300	0	0	0	Drought-prone area
Safe Water Supply and Sanitation Project at Kaliakair Upazila in Gazipur District.	0	242,000	118,600	0	0	
Extension and Development of Water Supply System in Tangail Pourashava.	0	95,000	252,500	0	0	
Char Development and Settlement Project-IV (CDSP-IV) -Additional Financing (DPHE Component).	0	162,600	139,100	0	0	Char area
Enhancement Project of Safe Water Supply and Sanitation System in rural areas in Gopalganj District.	0	1,655,500	335,900	0	0	
Expansion and improvement Project for Safe Water Supply & Environmental Sanitation System in Thankurgaon Paurashava.	0	299,700	165,900	0	0	

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Development of Safe Water Supply and Sanitation System in Bishwanath Upazila of Sylhet District.	0	20,100	355,700	0	0	Haor area
Safe water supply and sanitation project in rural areas of Pirgachha upazila of Rangpur district.	0	120,200	200,500	123,300	0	Char area
Expansion and development project of safe water supply and sanitation system in Shibchar municipality and Shibchar upazila of Madaripur district.	0	200,000	200,000	101,400	0	
Safe water supply and sanitation project in Bhandaria upazila of Pirojpur district.	0	200,000	162,100	0	0	Coastal climate-vulnerable area
Safe water supply and sanitation project in Paikgachha and Koira upazilas of Khulna district.	0	180,000	162,400	67,900	0	Coastal climate-vulnerable area
Inclusive and Integrated Sanitation & Hygiene Project in 10 priority Towns in Bangladesh (Integrated Waste Management (IWM) Project).	0	76,700	800,100	1,939,600	1,950,400	
Project for safe water supply and sanitation management for Gangachara Upazilla in Rangpur District.	0	50,000	131,900	63,700	0	Char area

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24	2024-25	2025-26	
Safe water supply and sanitation project in Asashuni, Kaliganj and Debhata upazilas of Satkhira district.	0	110,400	300,900	196,400	0	Coastal climate-vulnerable area
Safe water supply and sanitation project in rural areas of Mohanganj, Madan and Khaliaghuri upazilas of Netrokona district.	0	40,500	174,300	77,600	0	Coastal climate-vulnerable area
Expansion and development project of water supply and sanitation system in Manohardi municipality and upazila of Narsingdi district.	0	60,000	295,000	219,300	0	Coastal climate-vulnerable area
Safe water supply project through rainwater harvesting in Mathbaria upazila of Pirojpur district.	0	80,000	250,000	0	0	Coastal climate-vulnerable area
Water supply project in coastal area through rain water harvesting system.	0	1,500,000	6,080,000	4,423,400	0	
Rainwater harvesting project in Morelganj and Sharankhola upazilas of Bagerhat district.	0	60,200	183,300	0	0	
Extension and Development of safe water supply and sanitation system in Tungipara Poursava in Gopalganj District.	0	50,500	200,000	195,100	0	

Scheme/ Project	Actual 2021-22	Revised 2022-23	Medium- Term	Expend- iture	Estim- ates	Remarks
			2023-24			
Development project of water supply and sanitation system in Sadar upazila and Sreepur upazila of Magura district.	0	68,300	150,300	0	0	
Project for Improvement of Safe Water Supply in Rural Area of Meherpur District.	0	100,000	130,000	100,400	0	
Community Based Water Supply Project at Low Water Table Area at Patnitala & Dhamorhat Upazilla in Naogaon District.	0	86,100	367,000	0	0	Drought-prone area
Expansion and development project of safe water supply and sanitation system in Manirampur upazila of Joshore district.	0	0	140,500	0	0	
Bangladesh City Inclusive Sanitation Project in 25 Towns (GoB-AIIB).	0	0	432,000	0	0	
<b>Total: Annual Development Program</b>	<b>16,542,625</b>	<b>40,287,900</b>	<b>47,713,600</b>	<b>45,787,200</b>	<b>33,055,800</b>	

Table 2: Cost Requirement for Achieving SDG 6 as per GED Estimation (US\$ billion)

	2023	2024	2025	2026	2027	2028	2029	2030
SDG 6.1	0.29	0.29	0.30	0.31	0.31	0.32	0.33	0.34
SDG 6.2	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51
SDG 6	1.08	1.09	1.1	0.97	0.99	1	1.02	1.04

Source: GED (2017)

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