Securing Safe Water for Sustainable Development

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Why is water so important?

- 71% of the earth’s surface is water – mostly saline; this means that we live on the “Water Planet”
- Water is the basis of life and has two characteristics that make it so important -
  - No plant or animal can survive without it. All organisms are made up mostly of water; a tree is about 60% water by weight, and most animals are about 50 – 65% water
  - There are no substitutes for most of its uses. Each of us need only about 10 - 12 glasses of water per day to survive, but huge amounts of water are needed to supply us with food, shelter and other needs; e.g., about 4000 litres of water are needed to produce 1 kg rice.

**BUT HOW MUCH WATER DO WE HAVE FOR SUCH USES?**
How Much Fresh Water Available for Use?

- About **97.41%** water is in the oceans and is too saline for drinking, irrigation, or industry.
- Remaining **2.59%** that is fresh water most of which is locked up in ice caps or glaciers or is in groundwater too deep to be used.
- Only about **0.014%** of the earth’s total volume of water is easily available to us as:
  - soil moisture
  - usable groundwater
  - water vapor
  - lakes and rivers
If the world’s total water were only 100 litres, our usable fresh water would be only about 0.003 litre i.e., about one-half tea spoon.
Theme of World Water Day 2015: Water and Sustainable Development

Key Messages of WWD 2015:

- Water is **at the core** of sustainable development.
- Water resources, and the range of services they provide, underpin **poverty reduction, economic growth** and **environmental sustainability**.
- From **food and energy security** to **human and environmental health**, water contributes to improvements in **social well-being** and **inclusive growth**, affecting the livelihoods of billions.
7 Related Thematic Issues of WWD 2015

• Water is Health
• Water is Nature
• Water is Urbanization
• Water is Industry
• Water is Energy
• Water is Food
• Water is Equality
water is health
Clean hands can save your life.
Water is **Health**

- The human body can last weeks without food, but only days without water.
- Every day, every person needs access to water for drinking, cooking and personal hygiene.
- The WHO recommends 7.5 liters per capita per day to meet basic requirements;
- A higher quantity of about 20 liters per capita per day will take care of basic hygiene needs and basic food hygiene.

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Water is Health

- 748 million people do not have access to an improved source of drinking water and
- 2.5 billion do not use an improved sanitation facility.
- The return on investment of attaining universal access to improved sanitation has been estimated at 5.5 to 1
- Universal access of improved drinking-water sources the ration is estimated to be 2 to 1
- To cover every person worldwide with safe water and sanitation is estimated to cost US$ 107 billion a year over a five-year period
In Bangladesh

- Infant mortality rate is 46
- Under-five mortality rate is 60
- 59.1% of households were found with a specific place for hand washing where water and soap or other cleansing agent are present
water is nature

Ecosystems lie at the heart of the global water cycle.
Water is **Nature**

- Ecosystems (forests, wetlands and grassland) is the heart of the global water cycle.
- All freshwater ultimately depends on the continued healthy functioning of ecosystems.
- Pollution from untreated residential and industrial wastewater and agricultural run-off also weakens the capacity of ecosystem to provide water-related services.
- Ecosystem valuation demonstrates that benefits far exceed costs of water-related investments in ecosystem conservation.
water is urbanization
Every week, one million people move into cities.
Today, one in two people on the planet live in a city.

Nearly 40% of the world's urban expansion is growing slums in poor or developing countries.

Projections show that another 2.5 billion people will move to urban centers by 2050.

Thousands of kilometres of pipes make up each city’s water infrastructure (DWASA has about 3000 Km of water pipeline).

In many fast-growing cities wastewater infrastructure is non-existent, inadequate or outdated.

In Bangladesh the urban population growth rate is 2.5%, which is significantly higher than the national growth rate of 1.4%; Dhaka, with 13 million people and an annual growth rate of 4% accounts for about 40 percent of the national urban population. Approximately 30% of the urban population living in slums/low income communities.
water is **industry**

More water is used to manufacture a car than to fill a swimming pool.
Water is **Industry**

- Every manufactured product requires water
- Some industries are more water-intense than others
  - 10 litres of water are used to make one sheet of paper
  - 91 litres are used to make 500 grams of plastic
- **Global water demand for manufacturing is expected to increase by 400% from 2000 to 2050**; The main increases will be in emerging economies and developing countries
- Technology and smart planning reduce the use of water, and can improve the quality of wastewater.
- **Industrial water pollution is a serious concern**
- **In Bangladesh more than** 2000 knitwear factories including 200 composite factories with huge numbers of separate dyeing and finishing industries to support these factories
water is energy

Water and energy are inseparable friends.
Water is Energy

• Water is required to generate energy and energy is required to deliver water.
• Today over 80% of power generation is by thermal electricity
  – Water is heated to create steam to drive electrical generators
  – Billions of gallons of water are also needed for cooling
• Worldwide hydropower accounts for 16% of global electricity production;
  – An expected 3700 major dams may more than double the total electricity capacity of hydropower within the next two decades.

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water is food

To produce 2 steaks you need 15,000 liters of water.
Water is Food

- One litre of water is needed to irrigate one calorie food
- Inefficient water use can mean 100 litres are used to produce one calorie
- Irrigation takes up to 90% of water withdrawn in some developing countries
- Globally, agriculture is the largest user of water, accounting for 70% of total withdrawal.
- By 2050, agriculture will need to produce 60% more food globally, and 100% more in developing countries.

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Water is Food

- Shift in diet is the greatest to impact on water consumption over the past 30 years, and is likely to continue beyond 2050. **Producing 1 kilo rice, for example, requires about 3,500 litres of water, while 1 kilo of beef some 15,000 litres**

- The current growth rates of agricultural demands on the world’s freshwater resources are **unsustainable**.

- **Inefficient use of water** for crop production depletes aquifers, **reduces river flows**, degrades wildlife habitats, and has caused salinization of 20% of the global irrigated land area.
water is equality

Every day women spend million of hours carrying water.
Water is Equality

- In developing nations the **responsibility for collecting water** every day falls **disproportionately** on **women and girls**.
- On average women in these regions **spend 25 percent of their day** collecting water for their families.
- Climate change negatively impacts fresh water sources. Combined with increased demands for water, this will create huge challenges for water resources management.
- Ill-advised human activity can both create and accelerate the impact of water-related disasters. These water threats have been increasing with climate change and human activities.
- **Globally** it is estimated that women and children **spend 140 million hours** each day collecting water.
- In general **women in Bangladesh spend 10 hours working per day**. **Cooking and washing utensils requires an average of four hours per day. Collecting water and fuel takes about an hour,** and cleaning house and clothes **another hour.**
Sustainable Development is about **Equity**

- “Sustainable development” is about equity - “intergenerational” and “intra-generational”

- Intergenerational equity however, would not be achieved with present-day social inequity that results when the economic activities of some groups of people continue to jeopardize the well being of people belonging to other groups or living in other parts of the world

- For instance, the emissions of greenhouse gases, generated mainly by highly industrialized countries, lead to global warming and flooding of low-lying countries eventually leading to **displacement and impoverishment of millions** of low income population
Sustainable Development is about Equity

- Sustainable development must be **equitable and balanced**, meaning that in order for development to continue indefinitely, it should balance the interests of different groups of people, within the same generation and among generations, and

- do so simultaneously in three major interrelated areas – economic, social and environmental
Objectives of Sustainable Development

**Economic Objectives:**
- Growth
- Equity
- Efficiency

**Social Objectives:**
- Empowerment
- Participation
- Social cohesion
- Cultural identity
- Institutional development

**Environmental Objectives:**
- Ecosystem integrity
- Carrying Capacity
- Biodiversity
- Global issues

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Status of Our Freshwater Resources
Freshwater Resources of Bangladesh

- Freshwater resources over 1210 billion m$^3$
  (Groundwater <2% i.e., 21 billion m$^3$)
- Per capita resource over 9482 m$^3$
- Freshwater withdrawal only 1.2% (14.6 billion m$^3$)
- Groundwater withdrawal is 51% of renewable resources (10.7 billion m$^3$)
Rivers of Bangladesh

Earlier

- More than 700 rivers and tributaries
- About 98,000 ha of inland water bodies and more than 24,000 km streams or water channels

This is no longer the case

- Many rivers and water bodies have now dried out, others encroached, and filled up;

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Pollution of Freshwater in Bangladesh

- The rivers Buriganga, Balu and Sitalakhya are typical examples of serious surface water pollution.
- The worst pollution is found in Buriganga river in Dhaka mostly due to industrial wastes and domestic sewage.
- Rivers near other industrial towns like Khulna and Chittagong have also become polluted.
- Untreated wastes from industries including textile dying and printing are causing serious pollution of surface waters.
- Excessive sediment load of rivers also constitutes a water quality problem.
- Due to withdrawal of water from the Ganges, seawater intrudes a long way inside the coastline which causes river water pollution by salinity.
Unabated pollution threatens surface water sources

- Unabated pollution of the rivers
  - from untreated industrial and domestic sewage, and
  - indiscriminate disposal of solid and hazardous wastes
  - residual chemicals, e.g., pesticides
- The rivers Buriganga, Turag, Balu and Sitalakhya are examples of serious surface water contamination
- River beds lined up with plastics and others toxic contaminants threaten GW recharge

- Encroachment and filling up of rivers and water bodies in and around Dhaka City

- Similar situations are being emerged along rivers and canals throughout the country
Critical Challenges Facing Rivers and Wetlands

- Unabated pollution destroying rivers, canals and wetlands
- Encroachment and filling up of the rivers, Khals, and wetlands
- Adverse impact on health and livelihoods of millions of downstream people
Related Critical Challenges

- Poor urban governance, fragmented responsibilities, lack of coordination and planning of infrastructure have made Dhaka as one of the most polluted and unlivable cities in the world.
- Climate change impacts (e.g., rural-urban migration due to floods, cyclones and river erosion) on urban life, livelihood and infrastructure.
Major sources of pollution to the Balu - Sitalakhya system include

- Domestic and industrial pollution loads from **Tejgaon industrial cluster and adjoining areas**, (60000 kg/day)
- Domestic and industrial pollution loads from **DND and Narayanganj area** discharging directly into Sitalakhya primarily through DND drainage khal, (43000 kg/day)
- **Tongi industrial and domestic discharges** through Tongi khal,
- **Industrial effluent from Tarabo industrial cluster** and **Thermal wastes from power plants** discharging directly into Sitalakhya.

The **largest contributor of organic pollution** measured in terms of BOD loading from both industrial and domestic sources is the **Tejgaon industrial cluster and its adjoining areas within central Dhaka city.**

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Major sources of pollution to the Turag - Buriganga – Bangshi - Dhaleshwari system include

- Industrial effluent discharges from Hazaribag, DEPZ, Gazipur and Savar, and domestic sewage discharge from a large part of Dhaka city through storm drain outlets are responsible the pollution of Turag-Buriganga-Bangshi-Dhaleshwari river system in the Dhaka watershed area.

- River Buriganga is severely affected receiving the largest pollution load (56000 kg BOD per day) from Hazaribag industrial cluster and most of the Dhaka city domestic sewage.

- Tremendous pollution load (31000 kg/day) is discharged into Bangshi river from DEPZ and Savar/Asulia industries that eventually flows into Dhaleshwari.
Economic Loss due to Environmental Degradation

Cost of Inaction

- Unlivable conditions

- Economic losses of inaction would be over 4% of GDP, and these losses are likely to grow at least as fast as economic growth

- Economic loss due to Dhaka surface water pollution is significantly high
Cost of Inaction

- FY 2012-13

- GDP = USD 133.0 billion (1037987 Crore taka)
- Loss (National) = USD 5.7 billion (44633 Crore)
- Loss due to Dhaka water pollution = USD 0.92 billion (7364 Crore)
Groundwater Resources stressed:

- Over extraction and consequent lowering
- Quality issues: Arsenic, iron and manganese problems
- Increased salinity in coastal aquifers
WSS: Global Status
Global WSS: Achievements & Concerns

• Between 1990 and 2011, over 2 billion people gained access to improved drinking water sources; about 1.9 billion people have gained access to improved sanitation

• However, 768 million (11%) people are still without access to improved drinking water sources; more than 600 million are projected to be without access in 2015

• 2.5 billion (36%) still do not have access to improved sanitation services; over 1.0 billion still practice OD
The world is unlikely to meet the MDG sanitation target by 2015

- Even though 1.9 billion people have gained access to improved sanitation, the world is still far from meeting the part of the MDG target for sanitation, and is unlikely to do so by 2015

- Only 64 per cent of the world now have improved sanitation access, a figure projected to increase only to 67 per cent by 2015, well below the 75 per cent aim in the MDGs
Rural areas need greater attention both to water and sanitation

• In rural areas of least developed countries, 97 out of every 100 people do not have piped water and 14 per cent of the population drinks surface water—for example, from rivers, ponds, or lakes.

• Of 1.1 billion people who still practice open defecation, the vast majority (949 million) live in rural areas.

JMP 2012
Access to Water and Sanitation
Access to water supply in Bangladesh (JMP 2014)

- **Rural**
  - Piped onto premises: 74% in 1990, 1% in 2012
  - Other improved: 22% in 1990, 16% in 2012
  - Other unimproved: 63% in 1990, 54% in 2012
  - Surface water: 4% in 1990, 0% in 2012

- **Urban**
  - Piped onto premises: 24% in 1990, 32% in 2012
  - Other improved: 83% in 1990, 5% in 2012
  - Other unimproved: 74% in 1990, 71% in 2012
  - Surface water: 77% in 1990, 80% in 2012

- **National**
  - Piped onto premises: 24% in 1990, 32% in 2012
  - Other improved: 83% in 1990, 5% in 2012
  - Other unimproved: 74% in 1990, 71% in 2012
  - Surface water: 75% in 1990, 80% in 2012
Access to sanitation in Bangladesh (JMP 2014)
Gaps and Challenges in WSS Bangladesh
Disparity in defining coverage standard

- Per public water point (rural)
  - 100 persons is the basic standard
  - 50 persons is the National policy standard
  - 5-10 persons per private water point
  - Distance for water collection: 0 to 90 meters

- Coverage in arsenic affected area: 36% (basic standard); 18% (Policy standard)

- Consumption varies from 20 lpcd (rural, urban slums) to > 400 lpcd (high income urban areas)

- Intercity and intra-city service disparity:
  - Dhaka service coverage 88%, piped 83%
  - Khulna 85%, piped 45%
  - Slum (much less coverage) versus non-slum areas
Water Supply Challenges to be Addressed for Sustainability: Now and Beyond 2015

• **Inequalities** in service coverage need to be addressed for sustainable development:

• National coverage 85%; piped service 10%
  - Urban 86%; piped 32%
  - Rural 83%; piped 1%
  - High water table area 98%
  - Low water table area 64%
  - Arsenic affected area 36%
  - Hard to reach areas 24%

(21% of the country and includes Coastal, Char, Barind, Hill areas; 1144 Unions in 257 Upazilas in 50 Districts)
### Hard to Reach Areas of Bangladesh

<table>
<thead>
<tr>
<th>Hard To Reach Areas</th>
<th>No. of Unions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Areas</td>
<td>213</td>
</tr>
<tr>
<td>Hilly Areas</td>
<td>227</td>
</tr>
<tr>
<td>Char Areas</td>
<td>353</td>
</tr>
<tr>
<td>Haor, Baor etc</td>
<td>164</td>
</tr>
<tr>
<td>Beel Area</td>
<td>64</td>
</tr>
<tr>
<td>Barind Area</td>
<td>123</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,144</strong></td>
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<table>
<thead>
<tr>
<th>Ranking of HtR Areas</th>
<th>No. of Unions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely HtR Area</td>
<td>582</td>
</tr>
<tr>
<td>Very HtR Area</td>
<td>532</td>
</tr>
<tr>
<td>Moderately HtR Area</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,144</strong></td>
</tr>
</tbody>
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About 29 million people live in 21% HtR areas of Bangladesh

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MDG Target and Sanitation Improvement

- At the present rate Bangladesh will miss MDG target (Improved Sanitation only) by 9% in 2015
- If Shared Latrines are considered (in same proportion of improved and unimproved in 2011) then coverage will exceed MDG by 10%
- Open Defecation is expected to be eliminated?
- About 25% Unimproved Latrines (including 10% shared) will need up-gradation
- Firm decision will have to be taken about 29% shared latrine
Sanitation Coverage in Hard-to-Reach Areas

- Coastal areas and offshore islands: Hygienic about 20% (2010)
- Water logged, Haor areas: hygienic about 29%
- Char areas: hygienic about 12%
- Hill areas: 17% hygienic, 62% unhygienic
- Open defecation in these areas is higher than national average

- Causes: frequent natural disasters including cyclone, storm surge, flood, river erosion, lack of awareness, lack of initiatives, poor communication, poverty, inappropriate technologies
Sanitation Situation
Urban (national) vs. Slum (study area)

Urban (national) figures are from JMP 2013 report
Urban Sanitation Challenges Affects Freshwater Resources

- While sanitation coverage in urban areas averages more than 90% (basic) and 55% (improved), only up to 30% of slum population have hygienic sanitation.

- Conventional sewerage absent in all urban areas except Dhaka where only 20% population has access to sewerage though not hygienic; the majority of the so-called septic tank systems are also not hygienic.

- Peripheral rivers, canals and water bodies of Dhaka are critically polluted by the poor sanitation systems parallel to industrial pollution; similar situation is being developed in other cities and towns.

- Worst sufferers of pollution are of course the downstream people.
Other important differences

• Technological disparity
  - Piped water
  - Hand tubewells
  - Household level arsenic filter
  - Large community level arsenic removal plant

• Use of freshwater withdrawals
  - Agriculture: ~80%
  - Industry: ~10%
  - Drinking water supply: ~10%
    - Groundwater: 99%
    - Surface water: 1%
Environmental Degradation and Climate Change

• Widen gaps that already exist due non-climatic factors
  - Demand and supply
  - Water availability
  - Pollution scenario
  - Infrastructure damage
  - Informal settlements
  - Investment
BANGLADESH: VULNERABLE TO CLIMATE CHANGE

Specific Dimensions of Climate Change

- Intensive and erratic precipitation events,
- Increases in surface temperatures
- Increase evaporation rates,
- Sea level rise
- Salinity intrusion in the costal area of Bangladesh
- More frequent extreme events like cyclones

Effect on Water Resources

Future Water Availability, both in terms of water quantity and quality will be increasingly difficult
Effects of Climate Change: Possible Impacts on Water Systems

- **Increase in Atmospheric Temperature**
  - Reduction in water availability in basins, fed by glaciers that are shrinking

- **Increase in Surface Water Temperature**
  - Reduction in DO content and self purification capacity
  - Increase in algal blooms

- **Sea Level Rise and Low Upstream flow**
  - Salinization of coastal waters

- **Change in Precipitation Patterns**
  - Changes in water availability due to changes in precipitation and other related phenomena, e.g., groundwater recharge, evapotranspiration
Effects of Climate Change: Possible Impacts on Water Systems

- **Increased Evapotranspiration**
  - Water availability reduction
  - Salinization of water resources
  - Lower groundwater levels

- **More Frequent and Intense Extreme Events**
  - Affect *water quality* and *water-san infrastructure*
  - Drought affect *water availability* and *water quality*
Regional challenges compounded by climate change

Coastal Challenges

- Coastal areas are subject to increased salinity intrusion due to both sea level rise and low upstream flow, which are well established impacts of climate change.
- The areas are also subject to cyclonic storm and inundation (causing damage to Watsan infrastructure) at increased frequency, caused by climate change.

Char Lands/ Haor Areas:

- The dynamics of seasonal flooding of char areas and water level fluctuations of haor areas are linked to variable stream flow and precipitation that affects water availability and thus influences WSS.
Barind and Low Water Table Areas:

- The growing scarcity of water availability in Barind, and low water table areas is also to be blamed as the adverse impacts of climate change.

Rural to Urban Migration:

- Accelerated growth of informal settlement primarily due to rural to urban migration as a result of river erosion, which is considered to be linked to climate change.

- Precipitation variability would lead to short spell of intense rainfall (usually after long dry spell) resulting in flooding, drainage congestion, and soil erosion thereby influencing water quality and treatment cost.
Water and Sustainable Development
Beyond 2015
A global water goal: Ensure Water Security for Sustainable Development

- UNESCO-IHP proposes a stand-alone sustainable development goal dedicated to water to “Ensure Water Security for Sustainable Development”.
- Water has a crucial role in all dimensions of sustainable development and is linked to various key global problems, and all human and economic activities.
- Interlinkages between water resources management and other environmental, social and economic issues are ever more evident due to the population growth, rapid urbanization, land-use changes, degradation of water quality and growing impact of climate change.
Universal Access to WSS

• Although the world met the MDG drinking water target, 748 million people still lack access to an improved drinking water source. Coverage of improved sanitation increased from 49% in 1990 to 64% in 2012.

• Efforts in improving access to sanitation and safe drinking water should continue after 2015 in order to obtain a universal access to safe drinking water and sanitation by 2030.

• **Target 1:** Achieve, by 2030, universal access to safe drinking water and sanitation for all.
Water Use Efficiency

- Excessive water withdrawal from surface waters and underground aquifers causes water stress for humans and ecosystems, resulting in high environmental costs, including loss of biodiversity, and affects natural water systems such as rivers and aquifers.

- Improving water use efficiency to respond to the water scarcity challenge and reduce water withdrawals to ensure water resources sustainability is therefore an imperative.

- **Target 2:** By 2030, reduce the water use in agricultural irrigation by 20%, industrial water use by 20%, and domestic water use by 15% and increase water productivity by 50% in all sectors, by adopting the water demand management approach, less water demanding crops, water saving technologies and increasing safe reuse of wastewater.
Focus on IWRM

• IWRM aims to manage water resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

• Water right refers to the right of a user to use water from a certain water source, and thereby it can provide an insight to the degree of sustainability in which water resources are managed in urban and rural areas. Hence, the public registration of water rights can be a useful tool in order to address the problem of unregulated and unsustainable use of scarce water resources and to emphasize the interdependency of different uses of finite water resources.

• Target 3: By 2030, increase by 50% the number of countries that have adopted and implemented policies and programs for the public registration of water rights based on the IWRM approach.
Reduce Freshwater Pollution

• Improving water quality and wastewater management is a pre-requisite for access to clean water and sanitation, as well as for addressing health, poverty, food security and environmental challenges, and is therefore vital for sustainable development.

• Despite recognition of the importance of wastewater treatment, every day 2 million tons of human waste are disposed of in water bodies globally. More than 80% of sewage and 70% of industrial waste in developing countries is discharged untreated, polluting rivers, lakes and coastal areas.

• **Target 4:** By 2030, reduce water pollution from main sources by 30% at the country level, by increasing wastewater collection and treatment in cities to at least 80%, increasing industrial wastewater treatment to at least 95%, reducing pollution from diffuse sources by 30% and taking measures to reduce pollutants at the source.
Improving Resilience

- **Water-related hazards** account for 90% of all natural hazards, and are expected to rise in frequency and intensity due to climate change.
- During the period **2000 to 2006**, a total of **2,163 water-related disasters** were reported globally killing more than 290,000 people, affecting more than 1.5 billion, and inflicting more than **US $422 billion** of damage.
- **In 2010**, natural disasters killed over 296,800 people worldwide, affecting nearly 208 million others and costing nearly **US $110 billion**.

- **Target 5:** By 2030, reduce by half the loss of human life and property from water-related disasters, by improving the resilience of nations.
Addressing the challenges to sustainable development will require improvements in:

- the way we manage available fresh water resources in river basins;
- how efficiently and effectively we use and manage freshwater resources in agriculture, industry, and household use;
- how we dispose of it after use (wastewater management and related pollution);
- how we finance the investments required to improve water productivity; adapt to climate change impacts;
- how we reduce the risks of disasters such as flooding and drought;
- how we engage vulnerable populations in integrated management of the resource through the promotion of sustainable livelihoods;
- how we update water policies to improve efficiencies.
What would we like to see in Bangladesh from here on and beyond 2015
Priorities for Water and Sustainable Development

• Lessen Inequalities and minimize gaps for sustainability
  • Improved technologies
  • Equitable services provisions

• Protect and manage freshwater sources
  • Pollution abatement strategies
  • Separating domestic sewage from storm water (urban)
  • Fecal sludge management (urban and rural)
  • Regenerate dried and/or encroached rivers and canals

• Overcome challenges due to climate change
  • Climate resilient options
  • Adaptation to climate change
Priorities for Water and Sustainable Development

• **Equitable Use of Freshwater Resources**
  - Equitable allocation between competing sectors
  - Equitable share of transboundary waters

• **Efficient Water Use**
  - Irrigation efficiency
  - Water saving in domestic, industrial uses

• **Effective Water Management**
  - Policy enforcement
  - Strengthening institutions for better management and coordination
Priorities for Sustainable Water and Sanitation Development

• **Secure climate funds** for WSS development in HtR areas; climate resilient technologies development

• **Adequate funds for research** and development; technologies innovation

• **Increased, equitable investment** in WSS sector
Improving water use efficiency is imperative as are coordinated, coherent and concerted policies:

- Policy-makers, planners and practitioners can take steps to overcome the barriers that exist.

- Innovative and pragmatic national policies can lead to more efficient and cost effective provision of water and sustainable development.
Thank You