

Urban Water & Sanitation Management and Sustainable Development Goals (SDGs) analyzing in the present scenario of Khulna city.

The SDG 6 calls for ensuring the availability and sustainable management of water and sanitation for all. The targets for achieving this goal include the following:

1. By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
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.
3. By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
4. By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
5. By 2030, implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate.
6. By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
7. By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programs, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
8. Support and strengthen the participation of local communities in improving water and sanitation management.

As one of the 193 member states involved in adopting the UN Resolution No. A/RES/70/1 through a deliberative process, Bangladesh is committed to work hard for reaching the SDGs to “end poverty, protect the planet, and ensure prosperity for all”. In particular, the SDG 6 which is dedicated to sustainable management of water and sanitation provides an opportunity for policy makers to mobilize collective efforts to improve water management for the benefit of people and protection of environment. Aligning with that here we will discuss on –

- 1) Water supply,
- 2) Sanitation,
- 3) Drainage and Waste management issues of Bangladesh, highlighting Khulna division.

1) Water supply

Over 95% of Bangladesh population is reported to be served by improved water supply (although major improvement is still required with regard to arsenic exposure and faecal pollution).

However, in achieving SDG ambitions, and in line with economic development (towards middle income status), GoB is expected to aim at further service development. In water supply this may typically be constituted by a shift towards piped systems: the comfort of showers, flushed toilets, washing machines and other modern life amenities involves household water consumption levels that are neither easily nor economically provided from on-site systems. Gradually coverage by piped water supply systems will increase.

In Bangladesh, ground water accounts for over 90% of the **drinking water** supply sources. Ground water in most cases does not need treatment while surface water cannot be used for drinking purposes without treatment because of pollution from agricultural, industrial, domestic and municipal sources. Piped water supply covers only 40% of the population while the rest 60% get water using 152,077 hand pumped tubewells in 102 paurashavas (*Source: WASAs*).

2) Sanitation

It is evident that the major cities of Bangladesh lack proper sanitation facilities for metropolitan areas. Also the current sanitation practice totally ignores the environmental consequences which

are already demonstrated by significant pollution of the surface water bodies and rivers. The problem with inadequate sanitation and sewerage in the major cities will increase with the growth of the city areas and its population. Predictions from various studies shows that the population in the major cities will increase from 30 million in 2011 to 42 million in 2030 and 57 million in 2050. With demand for better living conditions the demand for improved sewerage system and sanitation will increase. This will be major challenge which needs to be tackled head-on.

National Policy for Safe Water Supply and Sanitation initiated in 1998 explicitly emphasizes and highly encourages the participation of private sector and NGO in sanitation and states that behavioral development and changes in users shall be brought about through social mobilization and hygiene education in alliance with the Ministries of Health, Education, Social Welfare, Information, Women & Children Affairs, DPHE, NGOs, CBOs, local government bodies and other related agencies.

DPHE also provides low cost sanitary materials to poor households for the construction of sanitary latrines with the vision of ensuring 100% sanitation coverage in the country.

Drainage –

In Khulna City Corporation (KCC) area, the existing drainage network is not adequate to meet the present need of the city. Most of Wards have less than the desired drainage length. According to KCC Drainage Master Plan (2011), three Wards have maximum drainage coverage while one Ward has no man-made drains. In most of the other Wards the drainage coverage is very low. It has been identified in the KCC Drainage Master Plan that the capacity and gravity of most existing drainage channels is not sufficient to carry out the excessive rainwater. In natural khals the flow of water is hampered due to inadequate drainage section, absence of inlets and outlets and lack of proper maintenance of drainage structures. Water logging occurs at many places. There are katcha drains in KCC area that have no outlets.

Of the seven major cities, Dhaka, Chittagong, Sylhet, Khulna, Barisal, Rajshahi and Rangpur, only Dhaka has a limited separate sewerage system and a conventional Sewage Treatment Plant (STP) of capacity 120,000 m³/d. This STP can serve 20% of the Dhaka population. There is absolutely no formal sewage collection system in other major cities.

Wastewater disposal

Wastewater disposal is a major problem in most cities in Bangladesh. Only Dhaka city has a sewerage system but the coverage is partial.

Sludge is released randomly ('here and there') or dumped into open drains or water-bodies which contaminate surface water. 24.5% of sludge in Khulna, collected sludge is dumped in a designated sites. (Opel, Bashir and Ahmed, 2012).

Faecal Sludge Management (FSM)

Sanitation in Bangladesh is on-site based (latrines and septic tanks). Even when sewerage may gain momentum in the coming years, the on-site sanitation will be part of the sanitation sector for the next 30 years or more. FSM facilities are urgently required, and will be needed for the foreseeable future. Internationally, many FSM concepts have been, and are being, developed. In Bangladesh several FSM options are presently explored and implemented by both NGO's and public authorities. The major issues for faecal sludge management are:

- Lack of coordination
- Absence of financial stability
- Absence of environmental legislation and enforcement.

Some notions on perspectives on future wastewater re-use in Bangladesh (Delta-plan):

- 1) In the coastal zone, freshwater resources are scarce. In this context wastewater re-use may be applicable;
- 2) As in most places, re-use for drinking water application will not be preferable (Public Health, social acceptance);

- 3) In surface water “Re-use” is indirectly practiced in upstream wastewater treatment, and downstream intake/abstraction. With conventional WWTP effluent (perhaps after further polishing or disinfection) re-use in aquaculture or other agricultural application can be considered;
- 4) Industries can be encouraged to apply internal recirculation (re-use) of water. By increasing cost for both supply (private abstraction) and wastewater discharge, an incentive can be created for water recycling.