

### **Case study- Rajshahi city, Bangladesh** *Rajshahi city: Enhancing Access to Water*

Rajshahi is the second most populated metropolitan city, located in the northwest of Bangladesh, covering an area of 121 sq. km. The district's southern region is along the Padma riverside and in the eastern part flows the Jamuna River. The city is home to more than 0.8 million households and falls into the western dry zone of Bangladesh.

Being the second most populated city, it is evident that it is in the phase of rapid urbanisation, which is putting stress on various basic municipal resources. Water supply, which is required for drinking and other daily life purposes, is affected by the speeding process of urbanisation in the city. Rajshahi city is significantly dependent on the central water supply system to access safe and potable water. However, a recent study shows iron contamination in approximately 95 per cent of tap water supply dispensed by the Rajshahi Water Supply & Sewerage Authority (RWASA). This contamination status in the water supply does not fulfil the World Health Organisation (WHO) water quality standards where iron up to 0.3 mg/l (ppm) concentration in water is permissible. Such water supply and sanitation conditions pose risks to citizens' lives and create alarming conditions during pandemics like COVID-19.

#### **Technology: The future of building cost effective decentralized water supply system**

Cities worldwide are promoting the integration of innovative solutions for building a climate-resilient and sustainable resource management system. The first milestone is maintaining and providing essential services for sustaining healthy living.

A worldwide study by the United Nations found that approximately 2.2 billion people do not have access to safe drinking water, and every two in five people do not have the provision of water for basic hand washing practices. It is predicted that the continuation of such trends without accelerating and investing in the Sustainable Development Goal (SDG) 6 will lead to a scenario where almost 1.6 billion of the population will be deprived of access to potable water. SDG 6 ensures the availability and sustainable management of water and sanitation for all, which becomes a challenge in situations like COVID-19. Such a situation affects the community, especially the low-income and climate-vulnerable population. In Bangladesh, climate change is escalating the frequency of natural disasters that disturb the water and sanitation system. A World Bank study found that during these conditions, approximately one-third of households in high-risk localities shift towards consuming water from contaminated sources. This contamination leads to an increased frequency of waterborne disease in the settlements, which in the long term can cause an adverse impact on human health.

To combat these deviations from achieving a sustainable ecosystem and human well-being, Rajshahi city has invested in two sustainable technology-oriented solutions- the installation of Solar Powered Water Vending Machines (Water ATMs) and Sensor Based Hand-Washing Stations. This is a collective action implemented by the Rajshahi City Corporation (RCC) under the guidance of Resilient Cities Action Package 2021 (ReCAP21) with financial support from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Bonn which designed on the foundation of the Build Back Better concept. Around 1.5 lakh people, including low-income and vulnerable groups, are the target beneficiaries of this intervention.

#### **Water Vending Machine (Water ATM)**

The project aims to provide safe drinking water and support the local community by installing a Water Vending Machine fueled by solar energy at four locations in the city with an individual capacity of 30,000 litres.

#### *Innovation in the intervention*

- To maintain the sustainability quotient in the intervention, the Water Vending Machine gets its power supply from Solar Photovoltaic (SPV), which is not just a clean and green energy source but helps in combating Green House Gas (GHG) emissions.
- The technology of Reverse Osmosis (RO) is used to treat the water to reverse its contamination and make it fit for consumption.

#### *Positive outputs of the intervention*

- During the initial month of operation of the water ATMs, almost 430 subscribers were served with total water dispensers of 68,600 litres at the rate of 0.80 Bangladeshi taka/ litre.
- Enhanced technical capacity of the municipal officials with increasing municipal revenues.
- Declined liabilities and positive impact on the credibility of the local authorities
- Elimination of waterborne diseases and combating COVID-19
- Benefiting citizens by saving time and effort to access safe drinking water

### **Sensor based Hand Washing Station**

To achieve the total principle of Water, Sanitation and Hygiene, the intervention has optimized the innovation by installing a Sensor-based Hand Washing Station at 12 locations with an individual capacity of 30,000 litres.

#### *Innovation in the intervention*

- The stations receive their power supply from Solar Photovoltaic (SPV), which supports the concept of utilizing clean and green energy to contribute to the UN goal of reducing the carbon footprint by 45 per cent by 2030.
- The application of sensor-based technology for setting up automated hand washing stations will eliminate the point of contact in the prevalence of a pandemic situation with an absolute focus on hygiene.

#### *Positive outputs of the intervention*

- Zero contact experience, which is a preventive measure taken to control the contamination and spread of contagious infections or diseases and the spread of COVID-19.
- 24/7 access to the safe water source.
- Decline in water pilferage.

### **Conclusion**

An integrated system of water resources management is established that provides a 24/7 safe water supply which majorly serves the water requirements of the low-income and climate-vulnerable population of the Rajshahi city of Bangladesh. This intervention is also assisting in controlling the spread of COVID-19 and other communicable diseases, which helps develop improved health status. Further, it strengthens the authorities and civic bodies to establish an ecosystem that provides

standard services that cater to the community's needs. This addresses the need to amplify access to safe drinking water and personal hygiene to promote human well-being. Along with building adaptive capacity on the principle of Water Sanitation and Hygiene (WASH), and disaster resilience for human well-being, it has elements to support the necessity of environmental management. The building technology of the intervention uses clean and green energy that not only decreases the impact of GHG emissions but makes a city proceed towards developing a sustainable ecosystem.