Ensuring Water Security

At a Glance

Freshwater is a vital resource for human life, and its scarcity can limit the potential of development as well as result in severe health issues and social conflicts. Studies indicate that the proportion of global urban population facing water scarcity is likely to increase from 1/3 to 1/2 from 2016 to 2050. Rapid urbanisation and abuse of available water resources (overdrawing, pollution, encroachment) has increased the vulnerability of water ecosystems. Global warming is also rapidly reducing freshwater availability. Water crises have been consistently ranked in the top five global risks since 2012. Water resource management is a top priority to ensure water security for future generations. In recent years, India has taken comprehensive steps to address water issues through national missions and initiatives for river sensitive urban development. U20 can build upon experiences of cities across the world and design a road map to ensure long-term water security.

Key Facts and Figures

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> 2 Billion	people worldwide live in countries facing water-stress. This number is expected to increase in some regions as result of climate change and population growth
≥2 Billion	people worldwide use drinking water sources that are contaminated with faeces. Resultant microbial contamination of drinking water poses the greatest risk to human health and safety
~700 Million	people worldwide could be displaced due to intense water scarcity by 2030
~1 in 4	children worldwide could be living in areas of extremely high water stress by 2040
50-80%	increase is expected by 2050, in the demand of urban water by domestic and industrial sectors due to population growth, urbanization, and socioeconomic development
1/3rd to 1/2	of global urban population is expected to face severe water scarcity by 2050
284	large cities worldwide could face water scarcity by 2050

Baseline water stress measures the ratio of total water withdrawals to available renewable water supplies. Water withdrawals include domestic, industrial, irrigation and livestock uses. Available renewable water supplies include surface and groundwater supplies.
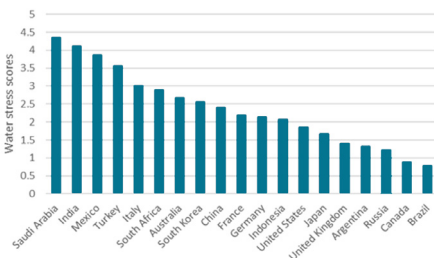
■ Water Stress Assesment

Extremely-high risk: Saudi Arabia and India
High risk: Mexico, Turkey, and Italy
Medium risk: South Africa, Australia, South Korea, China, France, Germany, and Indonesia
Low-medium risk: United States, Japan, United Kingdom, Argentina, and Russia
Low risk: Canada and Brazil

Source: UNESCO; World Water Development Report (WWDR) 2020
Source: World Resources Institute's Aqueduct Water Risk Atlas

Ensuring Water Security: points to ponder

■ Dwindling Water Availability

Water resources are shrinking worldwide due to factors such as over-exploitation of ground-water, poor water management, and changing climate patterns. Examples are The Millennium Drought in Australia (1197 - 2009); Day Zero in South Africa (2018)

The city of **Los Angeles** has initiated the '**One Water LA 2040**' Plan which considers all of the city's water resources including wastewater and stormwater as "**One water".** The two main goals are-
1. To develop a vision and an implementation strategy for sustainable and cost-effective water management.
2. To identify ways for city departments and regional agencies for integrating their water management strategies.

■ Inequitable Access to Urban Water Supply Service

While global drinking water coverage is improving, many people in urban and peri-urban areas still lack access to water services

In the Netherlands, public water supply is managed by 10 drinking water-providing companies owned by provincial governments and regulated by the Drinking Water Act of 2011. It ensures efficient and durable supply, future demand meet, risk analysis, and emergency water provision. Performance benchmarking is carried out between companies to keep them competitive and enhances their performance.

■ Inefficient & Inadequate Water Supply Systems

Inadequate and outdated infrastructure is a significant challenge, causing losses in countries like Russia (25%) and leading to water leakages and supply interruptions in Japan (over 20,000 cases per year).

■ Water Pollution & Inadequate Wastewater Treatment

Urban water sources are exposed to untreated waste and agricultural runoff. Globally, 359 billion cubic meters of wastewater are produced each year, with 48% remaining untreated. The UN WWDR 2017 estimates that high-income countries treat 70%, upper middle income countries 38%, lower middle income 28%, and low income only 8% of their wastewater.

Smart technology

In urban water management, IoT is used for water leakage detection, efficient management, consumption transparency, quality & safety monitoring. Seosan city in South Korea has a relatively low non-revenue water rate, but its village, Cha-ri, had a high rate of around 32%. To solve this problem and to develop better strategies to combat chronic drought situation, Government invested in smart metering. Installation of smart meters helped to identify leaking points at vulnerable sections, detected inflow meter failures, etc.

Treated Wastewater as a Resource

Japan has been reusing treated wastewater for decades, starting with the Tokyo Metropolitan area replenishing its dry streams and aquatic ecosystems. In 2014, Japan established a law to promote water reuse. United Kingdoms is also one of the leading examples which strives to maximize benefits from wastewater treatment and recycling.

Nature-based Solutions for Increased Climate Resilience

China's urban growth has led to problems such as flooding and contamination of water, which the government is addressing with the "Sponge City Programme." Wuhan exemplifies this cost-effective nature-based approach.

Key Drivers for Action

- Mainstreaming the integration of sustainable urban water management practices to achieve water security.

- Investing in promising technological solutions that can help solve many urban water problems. These can be advanced water leakages/losses detection, real-time water flow & water quality monitoring, advanced wastewater treatment for fit-for-purpose recycle/reuse & resources recovery. Exemplified smart metering and use of IoT has led to better water management.

- Implementing effective water management strategies and early warning systems can reduce the impact of water related hazards.

- Promoting green-blue infrastructure and improving urban planning can help absorb excess water during floods and store water during droughts.

- Government initiatives and streamlined green financing mechanisms can significantly help the water sector to improve its service delivery. Cities like Pune Municipal Corporation are successful examples of this.

- Reforming institutional and regulatory frameworks is crucial for protecting and revitalizing water ecosystems. This helps in establishing clear policies, guidelines and standards for water management, promoting sustainable practices, and preserving aquatic habitats,

- Ensuring equitable and safe access to water requires accountability in service delivery, including fair distribution. Service providers should be held responsible for meeting the needs of all consumers in a sustainable manner.

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