

India's Water Magazine

June 2023 ₹ 300 | US \$ 15

WaterAge

Your knowledge and information partner

WATER SUSTAINABILITY

INSIDE

Water Sustainability in Urbanized Cities:
How Big is the Challenge and What
Could be the Pathways?

Water Resilience: Strategies ✓
for a Sustainable Future

Maximizing Efficiency:
Effective Use of Pumping Stations

SPECIAL FEATURE

World Environment Day 2023

Initiative of



SHUDH JAL FOUNDATION
— JAL AAJ AUR KAL —

Find us on:



www.waterage.in



Clean Water Sources

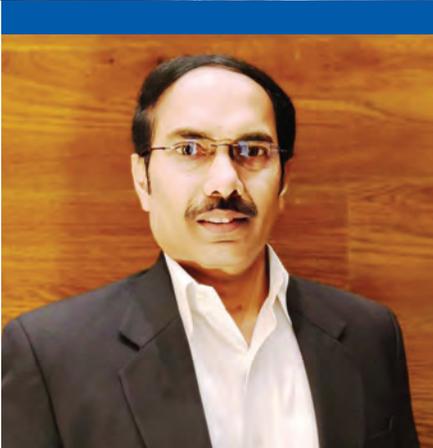
Water Resilience: Strategies for a Sustainable Future

Water! Not just a buzzword; it serves as an urgent wake-up call, demanding immediate action for the sake of our own survival.

Globally, 2.2 billion people lack access to safely managed drinking water, and more than 4.2 billion people lack safely managed sanitation. The importance of water resilience and responsible water use has become increasingly crucial. Climate change is further aggravating the situation, with increasing droughts in some regions where other places getting inundated by heavy flooding creating natural disasters. Alarmingly, 80 per cent of wastewater in the world flows back into water bodies without being treated or reused, and 70 per cent of the world's natural wetland has been lost. Water pollution is another critical issue. Municipal and industrial waste, agricultural runoff, and inadequate disposal of chemicals and other harmful waste products are contaminating water sources, making them unsafe for human consumption and harming ecosystems. Water pollution poses greater risk to human health when contaminated water is consumed or used for daily activities, leading to 1.4 million premature deaths in a year.

Water Scarcity

Water scarcity is a significant concern in many parts of the world. Some regions experience chronic water shortages due to factors such as population growth, climate change, and inefficient water



Tariq Siddiqui

Chief Strategist, TS Advisory Services

About the author:

With a distinguished background in media, he has dedicated a significant portion of his career to the water sector. As the Chief Strategist at TS Advisory Services, he has played a pivotal role in developing, evaluating, and defining marketing and communication strategies across various industries. His extensive knowledge and strategic acumen have proven instrumental in driving growth and success in the ever-evolving landscape of the water sector.

www.tsas.org.in www.linkedin.com/in/tariq-siddiqui-a9288915/

management practices. Lack of access to clean drinking water and sanitation facilities can have severe health and social consequences.

According to a report by the World Wide Fund for Nature (WWF), around a hundred cities worldwide, including 30 in India, are at risk of experiencing “severe water scarcity” by the year 2050. The report states that these cities would face a significant water risk due to urbanization trends and substantial population growth. Among the cities facing this challenge are prominent global hubs such as Beijing,

affected especially during the summer months.

Water & Climate Change

In the face of climate change, water emerges as the key conduit through which its impacts will be deeply felt. As climate change and rising sea levels persist, the frequency and intensity of natural disasters are projected to escalate in the coming decades which will have unprecedented consequences on nations’ economies, environment and ecological systems and people’s livelihoods. With this dire scenario aggravating year after year,

Water resilience is not just the ability to bounce back from any disaster but also the ability to weather and recover from shocks and adapt to deal with future stress.



Jakarta, Johannesburg, Istanbul, Hong Kong, Mecca, and Rio de Janeiro.

India’s NITI Aayog stated that the states of Maharashtra, Gujarat, Karnataka, Jharkhand, Andhra Pradesh, Rajasthan, Uttar Pradesh, Punjab, and Delhi have been facing serious water scarcity since 2018. More than 330 million people in urban India are affected due extreme scarcity of fresh water and majority of them living in large and metropolitan cities like Bengaluru, Chennai, Delhi, and Hyderabad. They are already facing the ‘Day Zero’ scenario wherein most of their water supplies are

prioritizing resilient water management has become an exceptionally urgent and pivotal aspect of climate adaptation.

Asia and the Pacific is the most disaster-prone region in the world embracing nearly 45 per cent of the world’s natural disasters and more than 75 per cent of those affected by natural disasters globally live in the region, according to United Nations Population Fund. Estimated 1.4 billion people were affected by disasters in the region, while 500,000 people lost their lives nearly 60 per cent of total global disaster deaths.

30 Indian cities are at the risk of experiencing “severe water scarcity” by 2050.

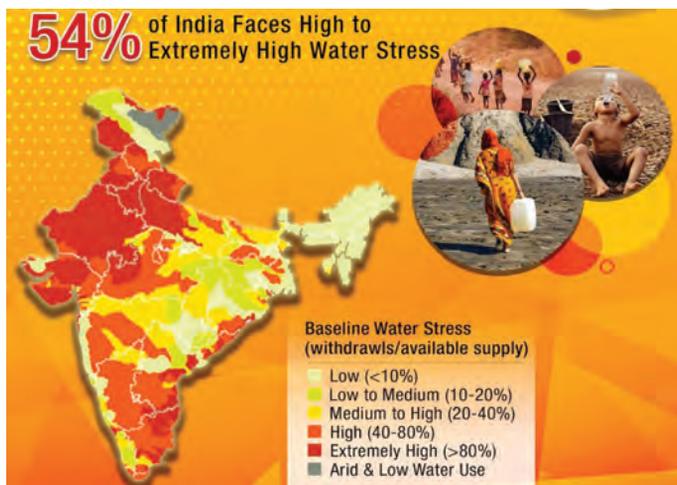


Extreme weather events such as hurricanes, cyclones, and heavy rainfall are also intensified in many regions due to climate change. The frequency of such events have increased causing irreparable destructions like flooding, damaging infrastructure, contaminating water sources, and posing risks to human lives. Melting glaciers and ice caps contribute to rising sea-level threatening coastal areas and increasing the risk of saltwater intrusion into freshwater sources. This pose challenges for communities dependent on coastal ecosystems and small island nations vulnerable to the impacts of increasing sea levels.

Mitigation efforts to reduce greenhouse gas emissions are also essential to curb the impacts of climate change on water resources. This involves transitioning to clean and renewable energy sources, reducing carbon emissions, and promoting sustainable practices in industrial and other business sectors.

Water Resilience

Adaptation of resilience measures is crucial to address the water-related challenges. It refers to the ability of water systems, communities, and ecosystems to withstand and recover from challenges, shocks, and stresses related to water availability, quality, and management. It



involves implementing strategies to ensure sustainable water supplies, adapt to changing conditions, and safeguard against water-related risks, such as droughts, floods, pollution, and climate change impacts.

Water resilience not only ensures water security for human needs but also supports the health of ecosystems, biodiversity, and the overall sustainability of the environment. Making regions water resilient is a multi-stakeholder initiative that include improving local resilience, reducing disaster and climate risks through resilient practices, robust infrastructure, technology intervention, sharing knowledge and experiences, establishing mutually strengthening learning networks, adding technical expertise, connecting government and other stakeholders, and building partnerships.

Some of the key elements that help in the water resilience include:

Physical Resilience

Physical resilience is the ability of water supply and distribution infrastructure to withstand and recover from various physical stresses, such as natural disasters, extreme weather events, aging machineries, and human-made disruptions. It is a critical aspect of water management, especially in the face of increasing climate variability and challenges posed by urbanization.

Developing diverse and decentralized water sources, climate and disaster prone infrastructure including rainwater harvesting system, groundwater recharge, and reclaimed water for reuse, and integrated and comprehensive planning to reduce dependence on a single water supply system and enhance reliability that helps maintain service continuity during disruptions.

Financial Resilience

Financial resilience of water supply system is crucial for maintaining reliable water services, safeguarding public health, supporting economic growth, and protecting ecosystems. By strengthening the financial resilience, we can ensure sustainable delivery of essential water services, invest in technology and infrastructure improvements, and adapt to emerging challenges. Ensuring sufficient funding for water infrastructure development, maintenance, and operation is essential. This may involve a combination of public funding, user fees, tariffs, grants, loans, and public-private partnerships to secure the necessary financial resources. It also involves financial governance frameworks, including financial reporting, auditing, promotes accountability, builds trust, and ensures effective and efficient use of financial resources to create water resiliency.

Social and Institutional Resilience

Social and institutional resilience of water system is the capacity of communities, institutions, and government structures to adapt, respond, and recover from water-related challenges while ensuring equitable access and sustainable management of water resources.

Developing and implementing comprehensive disaster preparedness and



Melting Glaciers are Alarming

response plans specific to water-related risks helps communities and institutions respond swiftly and effectively in the face of emergencies. Ensuring equitable access to water for all, particularly the marginalized and vulnerable people is essential for social resilience.

Real time monitoring and evaluation system enables the effectiveness of resilience-building measures, identifies gaps, and implement adaptive management strategies. Regular monitoring helps track progress, improve decision-making, and enhance the resilience of water systems.

Environmental Resilience

Environmental resilience of water systems is the capacity of ecosystems, habitats, and natural processes to withstand and recover from disturbances, ensuring the sustainability and health of water resources



Water Pollution

and the surrounding environment. By promoting conservation and sustainable management practices, we can enhance the ability of water systems to adapt and thrive in the face of environmental challenges.

Preserving the health and integrity of aquatic ecosystems, such as rivers, lakes, wetlands, and coastal areas is essential for maintaining the resilience of water systems. Adopting integrated watershed management approaches helps protect upstream areas, reduce soil erosion, and manage land use, thereby contributing to improved water quality downstream.

Environmental resilience also involves controlling pollution from the sources like municipal and industrial discharge, agricultural runoff and other disposals to safeguard water quality and the health of water ecosystems. Regular monitoring of pollution parameters provides valuable information for timely responses and adaptive management to maintain environmental resilience.

Way Forward

Building water resilience requires proactive planning, risk assessment, and preparedness to address potential water-related challenges. Investments in research, monitoring, and technology adoption are critical for understanding water systems, identifying vulnerabilities, and making informed decisions for enhancing water resilience.

Active participation and engagement of communities, local government and all other stakeholders are essential for increasing water resilience. Local knowledge, practices, and involvement in decision-making processes help in developing context-specific and sustainable water management approaches. By prioritizing water resilience, communities, municipalities and government can better navigate water challenges, adapt to changing conditions, and ensure a sustainable and secure water future for present and future generations.