THE CHALLENGE OF WATER

Prime Minister Narendra Modi has outlined his vision of ensuring access to piped drinking water to every Indian household by 2024. A new Jal Shakti ministry has been created to undertake this ambitious task. In his Mann Ki Baat, the Prime Minister has appealed to all Indians to create awareness on water conservation and share knowledge of traditional water conservation. The Jal Shakti Scheme for enhancing conservation in water starved areas has been launched in 255 districts.

Water will determine India's ability to achieve high economic growth, ensure environmental sustainability and improve quality of life for citizens. India is home to 17% of the world's population but has only 4% of the world's fresh water resources. At present, 75% of Indian households do not have access to drinking water and close to 90% of rural households have no access to piped water.

India today is also the world's largest groundwater extractor, pumping out nearly 25% of the global groundwater usage annually. Five of the world's 20 largest cities under water stress are in India, with Delhi being second in the list. Over 20 million wells pumped water, with free power supply provided by state governments.

Rice and sugarcane, both water guzzling crops, have expanded in water scarce states consuming vast amount of irrigation water per hectare. Punjab is using three times more water to produce a kg of rice compared to Bihar, and more than twice compared to West Bengal. Almost 80% of water for irrigating paddy fields in Punjab is groundwater. India today exports more than 10 trillion litre of virtual water through export of basmati rice.

What does India need to do to meet its biggest challenge – the challenge of water?

First, we need to restore, conserve and augment all our existing local water bodies. Every panchayat has water bodies – rivers, ponds, lakes, tanks and wells. Telangana's Mission Kakatiya is an example where state water bodies restored 46,000 water tanks. The Vayalagam Tankfed Agricultural Development Programme by Dhan Foundation has played a key role in restoring and facilitating proper maintenance of tanks in south Indian states. These examples need to be replicated across states.

Second, we need to utilize advanced technology. Remote sensing and geographic information system can enable real time data on water and catalyze communities to conserve water resources. Every single water asset including borewell can be geo-tagged and groundwater levels monitored on an online platform. Andhra Pradesh has used technology to manage its resources leading to rise in groundwater levels. States also need to segregate agricultural power feeders so that electricity consumption, particularly for water extraction, can be measured and monitored. Gujarat has 100$ feeder segregation leading to major reduction in electricity consumption and effective water management.

Third, community management of water and formation of water users' association can lead to success at grassroots level. At Hiware Bazar village in Maharashtra, the community initiated watershed management, banned digging of deep borewells and began water budgeting. It has moved away from water intensive crops like cotton and sugarcane. Its example inspired the state government to introduce water budgeting in over 5,000 water stressed villages.

Fourth, India needs to radically improve its farm water efficiency, presently amongst the lowest in the world. Our farmers use 3-5 times more water than Chinese, Israeli and American farmers for producing the same crop. Our farmers need to adopt cropping patterns based on agro-climatic zoning. In the drought-prone region of Bundelkhand mentha, which requires 18-22

rounds of irrigation, is cultivated. We need to educate our farmers and modify subsidies and MSPs to disincentivise farmers from growing water intensive crops. Procuring and providing MSP for millets (jowar, bajra, and ragi) and pulses (urad, arhar, chana and moong) will enable better nutrition through midday meals and ICDS schemes and facilitate a shift towards low water consuming high protein crops.

Fifth, a major cause for India's groundwater crisis is the legal framework that ties up water rights with land rights and allows landowners to extract unlimited groundwater. The example to follow is Maharashtra, which has controlled extraction of groundwater through legislation. The Maharashtra Groundwater Development and Management Rules mandate registration and prohibition of wells. Permission for digging new wells necessitates building a groundwater recharge structure alongside.

Sixth, there is an imperative for a rational and pragmatic policy for pricing water. There is great willingness to pay for regular supply of water, but huge political and administrative unwillingness to charge for water. This must change. Pricing of water will ensure adequate investment in water infrastructure.

Seventh, Singapore is a great example for Indian cities of reducing dependence on water from neighbouring Malaysia and ensuring universal, affordable, efficient and high quality water through reuse of waste water, building rainwater catchments, dual piping, desalination as well as water legislation, dynamic water pricing, public education, and R&D.

Fortunately, there are several good things happening on ground. States have taken the initiative to implement schemes for water conservation and recharge. Jalyukt Shivar in Maharashtra, Mukhya Mantri Jal Swavalamban Abhiyan in Rajasthan, Mission Kakatiya in Telangana, Sujalam Sufalam in Gujarat are making a difference. Under Jalyukt Shivar, water harvesting structures made nearly 11,000 villages drought free. It also resulted in groundwater table rise by 1.5-2 m. Jabalpur, Indore and Gwalior corporations have granted rebate on property tax for rainwater harvesting facility. In Telangana nearly 17,000 minor irrigation tanks were restored, supplying collected rainwater to 19 lakh acres of agricultural land. Niti Aayog has developed the composite water management index, which ranks states on water management and explains states' progress on 28 indicators relating to water management.

We need a water secure India. Our ability to manage and govern our water resources efficiently will determine our ability to grow and prosper.

WANT TAP WATER FIT TO DRINK? PASS A LAW

Nine years ago, on July 28, 2010, the United Nations General Assembly explicitly recognized water and sanitation as 'essential human right' in its Resolution 64/292.

Yet just 50 countries provide drinkable tap water, as per a travel advisory by the United States' Center for Disease Control and Prevention (CDC), a government health agency. The UN has estimated that 2.1 billion people didn't have access to safe drinking water in 2017.

Developed nations, essentially Europe, Canada, the US, Australia, New Zealand, Japan and South Korea, make the bulk that provides drinking water on tap. High-income countries included Israel, Saudi Arabia and United Arab Emirates. Middle-income countries in the list were Chile, Costa Rica and Palau.

Industrialized countries have strict drinking water laws. In the US, public water supply is regulated by the Safe Drinking Water Act. Other laws and amendments were added later to

protect drinking water sources – rivers, lakes, reservoirs, springs and wells (except private wells that serve fewer than 25 individuals).

In the United Kingdom, the Drinking Water Inspectorate, established in 1990, oversees public water supply. The agency has powers to take action if standards are not met by authorities.

In European Union countries, drinking water is regulated by the European Drinking Water Directive, which sets minimum quality standards for water intended for human consumption.

On March 28, 2019, the EU parliament voted in favour of an update of the rules to increase consumer confidence and encourage drinking of tap water. The new legislation aims to further improve tap water quality.

In Singapore, drinking water is regulated by the Environmental Public Health Regulations 2008, based on WHO guidelines.

The Australian Drinking Water Guidelines provide guidance to regulators and suppliers on water safety.

WATER SUPPLY IN 3 KEY RIVER BASINS DIPS

In the last 26 years, there has been a marginal increase in India's average annual water resource from 1,869 billion cubic meters (BCM) in 1993 to 1,999 BCM in 2019, but there is a worrying decline in water availability in three key river basins of Indus, Ganga and Brahmaputra.

A new scientific study by the Central Water Commission (CWC) concludes that India is not a water-deficit country but several regions face scarcity due to 'severe neglect' of water resources and their storage and conservation.

The small increase in annual water resources is more due to use of advanced methodology in slightly bigger catchment areas. While the three major river basins show a decline, the other 17 saw an increase. Unlike other river basins that depend on rainfall for annual water resources, the three big systems – located in north India – are fed by Himalayan glaciers as well, raising the concern that their decline may be linked to climate change-induced conditions in the Himalayas.

Figures in the study, 'Reassessment of Water Availability in India Using Space Inputs', show that the Indus river basin (the part lying in India) reported the highest fall. The average water potential of this northernmost basin fell almost 40% from 73 BCM in 1993 to 45 BCM.

The river basins that reported increase in water availability include Narmada, Godavari, Krishna, Cauvery, Mahanadi, Pennar, Sabarmati, Mahi and Subarnarekha among others. This is reassuring news for southern states that often face severe water scarcities but highlight the need for better conservation and use.

The study released by the government on Wednesday was conducted by CWC in collaboration with ISRO's National Remote Sensing Centre (NRSC), Hyderabad. It used various input data sets like hydro-meteorological (rainfall) data for a 30-year period (1985-2015), soil texture and land use data from 2004-05 to 2014-15.

The study also shows how a rising population and mismanagement of water resources has reduced the annual per capita availability of water substantially from 5,178 cubic meters in 1951 to 1,651 cubic meter in 2011, pushing the country into a water-stressed situation despite increase in annual average water potential.

Though another study done by the National Commission for Integrated Water Resource Development also shows increase in average water availability (1,953 BCM in 1999), the latest research is considered the most reliable.

The CWC study in its conclusion warns that business as usual way of water utilization would push the country towards a critical phase.