



WATER STRESS

AN INDICATOR LEADING TO DANGER FOR INDIAN AGRICULTURE

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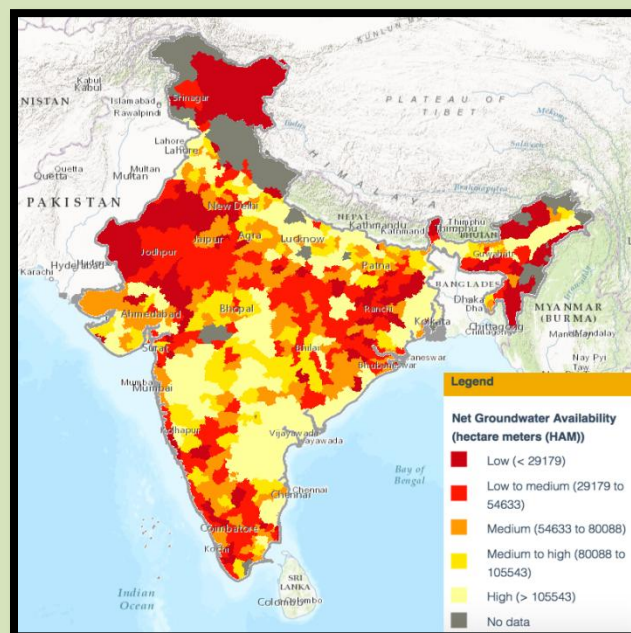
When the demand for water exceeds the available amount during a certain period called Water Stress, or we can say that when the water is available but it is not safe or good for drinking purpose. According to the United Nations World Water Development Report of 2022, global concern is growing over the rapid withdrawal of fresh water from streams, lakes, aquifers, and human-made reservoirs, as well as the impending water stress and scarcity experienced around the

world. Moreover, this situation has also been aggravated by changing climatic trends, frequent natural disasters and sudden quakes of pandemics. India, accounting for around 17% of the world population, has been endowed with just 4% of the world's fresh water resources, which clearly highlights the need for its judicious use and efficient water risk management. If water availability is **<1700 m³/capita/year**, then the country is said to be experiencing water stress.

CURRENT STATUS IN INDIA

India extracts most groundwater in the world, more than the 2nd and 3rd largest extractors (China and the United States) together.

8%	Used for Drinking
12%	Industrial Use
80%	Irrigation



CAUSES:

Population Growth: The total amount of usable water has been estimated to be between 700 to 1,200 billion cubic meters (bcm). With a population of 1.2 billion according to the 2011 census, India has only 1,000 cubic meters of water per person, even using the higher estimate. A country is considered water-stressed if it has less than 1,700 cubic meters per person per year. For comparison, India had between 3,000 and 4,000 cubic meters per person in 1951, whereas the United States has nearly 8,000 cubic meters per person today.

Poor Water Quality: Water in most rivers in India is largely not fit for drinking, and in many stretches not even fit for bathing.

Despite the Ganga Action Plan, which was launched in 1984 to clean up the Ganges River in 25 years, much of the river remains polluted with a high coliform count at many places. The facilities created are also not properly maintained because adequate fees are not charged for the service.

Over-extraction by Farmers: Groundwater is an open-access resource and anyone can pump water from under his or her own land. Given how highly fragmented land ownership is in India, with millions of farmers and an average farm size of less than two hectares, the tragedy of the commons is inevitable.

SOLUTIONS:

Rainwater Harvesting: Promote rainwater harvesting at the individual, community, and city levels. This involves capturing rainwater and storing it for later use, reducing the demand on traditional water sources.

Efficient Irrigation Practices: Encourage the use of drip irrigation and other water-efficient agricultural practices. This can significantly reduce water wastage in agriculture, which is the largest consumer of water in India.

Water Recycling and Reuse: Invest in wastewater treatment facilities to recycle and reuse treated water for non-potable purposes, such as agriculture and industrial processes. This reduces the demand for fresh water.

Water Pricing: Implement a fair and effective pricing system for water to promote conservation. Subsidies for farmers may need to be reevaluated to ensure efficient water use.

Desalination: In coastal regions, consider desalination plants to provide a reliable source of fresh water. However, this is an energy-intensive process and should be approached with caution.

Water Conservation Education: Raise awareness about water conservation at all levels of society, from school children to adults. Promote practices like fixing leaks, turning off taps, and using water-efficient appliances.

Watershed Management: Implement watershed management plans to restore and protect natural water sources. Reforestation, soil conservation, and the preservation of wetlands can help retain water.

Regulation and Enforcement: Strengthen water resource management agencies and ensure that regulations are enforced. Unauthorized tapping of water sources should be prevented.

Crop Selection and Rotation: Promote the cultivation of drought-resistant crops and crop rotation to reduce water demand and the risk of crop failure.

Climate-Resilient Agriculture: Encourage the adoption of climate-resilient agricultural practices, which can help mitigate the impact of changing weather patterns on water availability.

Public-Private Partnerships: Collaborate with private companies and NGOs to invest in water infrastructure and management. Public-private partnerships can bring in expertise and resources to address the water crisis.

Smart Technology: Implement smart technology for water management, such as IoT-based sensors to monitor water quality and usage in real-time.

Government Policies: Formulate and implement comprehensive water policies

that address the unique water challenges faced by different regions of India.

Reducing Pollution: Implement measures to reduce industrial and agricultural pollution, which can contaminate water sources and reduce their availability.

Rural Development: Invest in rural development, as access to water resources

often becomes a challenge in remote areas. This includes building infrastructure for water storage and distribution.

International Cooperation: Collaborate with neighboring countries on transboundary water resources to ensure sustainable and equitable usage.

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