

The impact of Climate Change on Water Security

Media brief



INDIAN NATIONAL ASSOCIATION

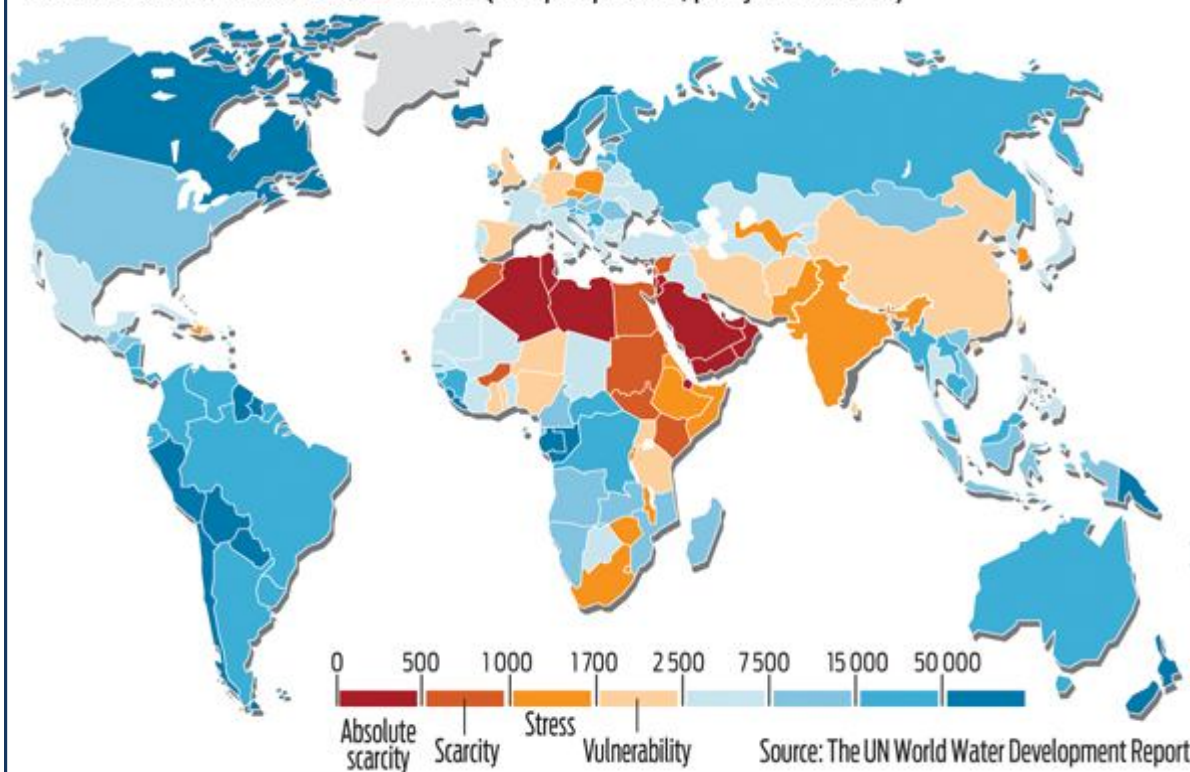
Water Security in India

Water Security is defined as the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters and preserving ecosystems in a climate of peace and political stability.

Although India has an abundance of water within its borders, with 13 major and 46 minor basins, it faces severe water security issues in many parts of the country. A key challenge is not so much physical water scarcity, but mismanagement and limited storage facilities.

Freshwater in the world

Access to renewable water sources (m³ per person, per year in 2013)



India's per capita water storage capacity is 200m³, well below the world average of 900m³ per capita. Estimates suggest as much as 65 per cent of India's rainwater flows out to sea uncaptured; presenting a huge opportunity for improving the situation by capturing those water flows.

Climate change could therefore adversely impact India's water security situation.

What are the Climate Change impacts expected

Water scarcity is exacerbated by climate change, especially in the dry areas which are home to most of all poor people in India. Moreover, increased flooding as a result of climate change and environmental degradation threatens agriculture in many parts of the country. Climate change is raising temperatures and changing precipitation patterns, directly increasing demand and reducing availability of water for both rainfed and irrigated agriculture across the country.

Climate change is making predictability of river flows extremely uncertain. This will rise exponentially as more dams are built. Diverting rivers will also create large dry regions with adverse impact on local livelihoods (fisheries and agriculture). Rapid rise of the Himalayas (from 500 to 8,000 metres) gives rise to an unmatched range of ecosystems, a biodiversity that is as enormous as it is fragile.

Although climate change could lead to gains in yields and cultivated area for some crops and in some regions, the overall impacts on agricultural production are projected to be highly negative, with increasing food prices intensifying the risk of hunger.

Climate change impacts that India will probably face are:

- More erratic and variable rainfall—arriving earlier or later and lasting for shorter, more intense periods of time;
- Longer drought periods under a changing climate.
- Increasing temperatures will hasten the rate of melt of the Himalayan glaciers, upon which major Indian rivers like the Ganges, Indus and Brahmaputra depend.
- Higher temperatures may reduce crop yields while encouraging the proliferation of weeds, plant diseases, and pests.
- Changes in precipitation patterns shift growing seasons and increase the likelihood of crop failure in the short run and production declines in the long run.

Water availability and agricultural production depends on the monsoon, as cropping patterns are built around it. Climate change induced variability in precipitation, prolonged drought and more intense weather events will significantly affect the long-term situation.

Increased evaporation rates are expected to reduce water supplies in many regions. More frequent and severe droughts arising from climate change will have serious management implications for water resource users. Water users may eventually adapt to more frequent and severe droughts, in part by shifting limited water supplies towards higher-value uses. Rising surface temperatures are expected to increase the proportion of winter precipitation received as rain, while rising sea levels could also directly reduce water quality and availability in coastal areas, and indirectly cause water tables in groundwater aquifers to rise.

The combined effect of climate change and over exploitation is violating the water cycle, degrading aquifers and eroding ground water resources. With climate change and the deteriorating environmental conditions impacting rivers, water sharing between India and Bangladesh will become critical in the coming years. Given the agrarian and power generation needs of the river systems and the vagaries of the monsoon, upstream-downstream animosities will arise.

Policy Coherence Analysis

'Policy Coherence Analysis' attempts to integrate the economic, social, environmental and governance dimensions of water program adaptation strategies to climate change, as shown in the following tabulation:

TARGETS	GOAL Water program adaptation to climate change
Develop Integrated Water Resources Management (IWRM) programs	
Increase watershed sustainability and resilience to climate change	
Protect and restore watersheds, source water areas and wetlands	
Protect coastal estuaries from rising sea levels	
Mainstream climate change into Core Programs	

Keys:

ECONOMIC

SOCIAL

ENVIRONMENTAL

Note: This visualization of the subjective estimates, rather than any attempt at numerical precision for the intensity of each pillar of sustainability, is indicated in the diagram above.

CONCLUSION

Climate change—with its impacts on the hydrologic cycle—poses fresh challenges to water security issues.

India shall require a new and integrated framework to deal with water security issues. The existing national water policy is a stand-alone document which does not tie in with the country's food, energy, and health policies. Nor does it take into account the impact of climate change