

# INDIA



**Geography:** Second largest country in India (by area) with a peninsular south. Shares borders with Pakistan, China, Nepal, Bhutan, Bangladesh and Myanmar.

**Status:** Developing (25% of population live in below poverty)

**Population:** 1.2 Billion

**Per capita income:** \$3408

**Water resources:** Owing to a large land mass and the great Himalayan ranges India has vast surface water resources. It has about 13 major rivers which includes the Ganges and Brahmaputra two of the

## Summary:

1. India has moved from water abundant to water stressed and now heading towards water scarce situation.
2. Its diverse climate and dense population presents a plethora of water management challenges.
3. Water is a spiritual, political and economic issue.
4. Political will to address mismanagement remains weak.
5. Has abundant surface and ground water but most of it is polluted ( industrial/ human waste)
6. Agriculture is the largest consumer of water (85%).
7. None of the Indian cities have 24x7 water supply.
8. Urban water issues are different from the rural.
9. Right to water and sharing remain the key cause of conflicts between states and group
10. Has a critical and dynamic civil society, which is pushing for participative decision making with respect to water.

largest river systems in the world. India is also abundant in ground water resources which cater to most of the agricultural water demand.

**Water Availability (LPCD-liters per capita per day):** In India's context most of the statistics would be indicated separately for rural and urban areas as there is a remarkable difference in their contexts and the manner in which they are administered and served. The urban average for water availability is 155 lpcd and it ranges from 9 to 543 lpcd across the country.

About 70% of the rural population and 92% urban population is covered by under the water supply system. The coverage often implies the existence of a household connection to the grid and not 24x7 water supply.

## Water Sector Overview

### Policy Landscape

India has a complex and multi-layered system which governs its water resources. After it gained independence in 1947, water policies have been based on trial and error process and retrospective. India has a federal system of governance with a bicameral system wherein the individual states have their own governments and come under the central government. In such a system sharing of water resources and ascertaining rights of usage can be a contentious issue.

In the recent times however the most important pieces of legislation is the National Water Policy of 2002 which deems water as a precious national asset. The policy acknowledges that water is scarce and the resource must be planned, developed, conserved and managed on an environmentally sound basis keeping in view the socio-economic aspects and needs of the state.

It must be notes that the Central government does not have jurisdiction over ground water. The measures that it can take in this area are limited.

The States of India also have their own State Water Policy, which outlines the use and the governance of the water resources of the state.

### Water Resources Administration

In India the Ministry of Water Resources (MoWR) is responsible for all matters concerning country's water resources which includes policy formulation, development and regulation.

In addition to this a Central Water Commission (CWC) functions as an office attached to Ministry of Water Resources. The CWC a premier technical organization in the field of water resources and is charged with conservation regulation and utilization of water resources for irrigation, navigation, drinking water supply and water power development. The CWC works in consultation with the State governments.

### Water Stats

Domestic – 10%

Industrial – 2%

Agriculture – 88%

## Water Crisis

### 1. Water Stress nature

India has a large variance in climate from region to region because of its huge land mass and varied physical features from dense rainforests to dry desert to the snow capped Himalayas. It has 15 agro-climatic zones which essentially are mini ecosystems in themselves. Across these zone water availability and its use varies.

The desert region of Rajasthan suffers from shortage of physical availability of water. Northern India is served by large perennial rivers which are fed from the glaciers. Therefore the shortages experienced in northern states is due to poor management of water. Much of western and southern India is dependent on monsoons and therefore experience fluctuations in water availability due to varying rainfall pattern.

To sum up, India's diverse climate and dense population matched with highly fragmented water resource governance creates a situation where every sort of water stress can be found in some or the other state of the country.

### 2. Nature of Scarcity

Scarcity in India has a lot to do with mismanagement and overexploitation of its water resources. India has enough water to support its population agriculture and Industry yet all the three are often competing for resources. A case in point is the overexploitation of ground water resources in the states of Punjab, Haryana and UP where water level has dropped to 700 feet below ground level. Generally surface water is used for irrigation when available but in these states in spite of plentiful surface water ground water was extensively used for irrigation. And this went unchecked for decades.

Scarcity is also felt because much of the water in India is simply too polluted and unfit for human consumption. Pollution in India's rivers stand at alarming levels today and is fast spiraling out of control.

### 3. Water Crisis Intensity

The magnitude of crisis is at the highest level countrywide. In the past 60 years per capita availability of water has plummeted 70%, this makes India 'Water stressed' a step before 'water scarce'. India's per capita water storage is 213 m<sup>3</sup> in comparison to 1960m<sup>3</sup> in the US and 4700 m<sup>3</sup> in Australia. Water demand is expected to grow by 30% of what it is today in 2050. With the current state of affairs the danger is India may not find extra water required.

Irrigation accounts for 85% of country's water consumption and this is the sector where there is a wide scope to address inefficiencies and mismanagement. There is a constant competition over water between the sectors. At the same time urban and rural areas also compete for the same water resources. This has made distribution inequitable in many states.

Quality of drinking water is among the worst in the world. This is due to the extreme levels of pollution of all its rivers. Only 31% of its population has access to proper sanitation which implies that vast amount of human waste untreated. Most of this waste is ending up in the country's rivers or contaminating the ground water. For ex: The fecal coliform level (found in raw sewage) in the Ganges near Varanasi is 3000 times higher than the accepted levels. This means the water is even unfit for bathing.

35 Indian cities have a population of more than 1 million. These cities are supplied water only for a few hours per day ( 4.3 hours, ADB estimate). No city in India has a continuous water supply. The typical response to water scarcity is to transfer more water from the next available source. This pattern has wrecked havoc on the water resources.

#### 4. How is the water crisis manifesting on the ground?

Water is among the most contentious issues in India with agitations, protests and rallies demanding water are becoming common place. The following recent incidents indicate the intensity of crisis on the ground:

- a) **Lathicharge on water protesters:** The residents of a huge area under the Howrah Municipal Corporation that has been reeling under water crisis, couldn't take it anymore. On Thursday, they went and blocked the Vidyasagar Setu toll plaza. (September 2011)  
[http://articles.timesofindia.indiatimes.com/2011-09-02/kolkata/30105205\\_1\\_toll-plaza-howrah-bridge-hmc](http://articles.timesofindia.indiatimes.com/2011-09-02/kolkata/30105205_1_toll-plaza-howrah-bridge-hmc)
- b) **Cought on camera: Cops fire at protesting farmers in Pune:**  
Thousands of farmers had jammed the Mumbai-Pune expressway to protest against an underground water pipeline project that will divert water from a dam that supplied them water to a township near Pune.<http://www.ndtv.com/article/india/caught-on-camera-cops-fire-at-protesting-farmers-in-pune-125971>
- c) **Acute water shortage looming over Chennai, warn experts:** As more and more multistoried apartment blocks have come up, we have noted a 25 % increase in the use of ground water sources in the last two years. Central Chennai is the most critical as water consumption is increasing and the area doesn't have any water bodies or sources to preserve groundwater  
[http://articles.timesofindia.indiatimes.com/2011-04-19/chennai/29446766\\_1\\_water-sources-groundwater-water-shortage](http://articles.timesofindia.indiatimes.com/2011-04-19/chennai/29446766_1_water-sources-groundwater-water-shortage)
- d) **Water shortage in Bangalore:** Borewells across the city are drying up. Power disruptions have started affecting water supply. Residents across the city are experiencing acute water shortage. We get water only once in a week and that too only for an hour. The borewells in my

locality have already dried up. [http://www.dnaindia.com/bangalore/report\\_water-shortage-in-bangalore\\_1233175](http://www.dnaindia.com/bangalore/report_water-shortage-in-bangalore_1233175)

- e) **India's water crisis When the rains fail** : Many of India's problems are summed up in its mismanagement of water. Now a scanty monsoon has made matters much worse.  
<http://www.economist.com/node/14401149>

## 5. What is at the root of the problem?

- a) As discussed in the earlier sections the root cause of water crisis in India is poor regulation of water resources which stems from highly fragmented water governance structure.
- b) The water utility boards in several states are simply inefficient and incapable of meeting the existing water demands of their constituencies and at the same time plan for the future.
- c) Mismanagement and lack of political will to go after the problem and remedy the situation has created an environment of apathy.
- d) The governance and administration of water resources is so structured that there is no real incentive for the civil servants to take responsibility of the situation and go after it.

## 6. What is the political landscape surrounding the crisis?

Indian politics very often leverages public sentiment for political gain. It is quite common to find politicians going for populist measures like free electricity to farmers, promising large water projects (without feasibility studies) and declare schemes which may end up draining the treasury.

Water resources often get embroiled in such political games for instance, a political party in one state might get voted to power on the promise of winning greater share of a interstate river for its own people. A case in point: Kaveri river dispute between Karnataka and Tamil Nadu.

Political parties from a state with a large agricultural base try to lure the farmers to vote for them by promising a large irrigation project or free farm electricity.

As far as the political stand on pollution of rivers is concerned four successive governments have favored and supported river cleaning programs like the Ganga Action Plan.

There is a mixed and uncertain response by State governments to the water crisis within their states.

## 7. What is the cultural context of water?

The dichotomy of water in India is that while water for many Indians holds spiritual significance, they also do not think twice before polluting it. No amount of awareness and request for responsible use translates into action. It is a part of religious practices like taking a dip in many of its rivers is considered holy. In spite of high pollution levels it's not surprising to find people taking a dip in waters of Ganges, Yamuna, Narmada, Kaveri etc.

The understanding that water is pure and holy is more important to an Indian than the reality that it is precious and must be conserved. While they desire to see their rivers full of life with gushing water, they do not understand that their responsible behavior can help achieve that. With the ongoing crisis the idea of conservation is gradually sinking in.

**Who or what is the leading force for solutions?** Are their individuals (activists or engineers, organizations or communities) who are leading the way to solutions?

India has a long tradition of activism based on Gandhian principles. Several individual activists have led the cause for clean rivers over the years. For instance a former professor at the Indian Institute of Technology, GD Agarwal leads the cause for conservation of Ganga and its ecological flow in the Himalayas. Rajendra Singh, a Magasaysay awardee works in conservation of water in several states of western and central India. Anupam Mishra has extensively documented the traditional water harvesting systems of Rajasthan. Civil society has since long lead the cause of equity, conservation and sustainable use of water.

### **8. In terms of solutions, are resources and expertise coming from within the country or from the outside?**

The opinion on this issue remains divided among the water experts. While one group strongly opposes the participation of foreign firms in large water projects in India, others think (government) that it is beneficial.

Much of the managerial expertise required exist in India because working in Indian water sector needs a keen understanding of the cultural context. In technology however India has been borrowing from Germany, US France Canada etc. for utility planning (software) and waste water treatment.

### **9. Are their particular corporations (and corporate practices) to blame?**

## **Campaigns and Instances**

- Narmada Bachao Andolan : the most popular movement against a large dam in central India, this movement brought together millions of people in the region who would lose their houses and livelihoods if the dam is constructed [http://en.wikipedia.org/wiki/Narmada\\_Bachao\\_Andolan](http://en.wikipedia.org/wiki/Narmada_Bachao_Andolan)
- Clean Ganga Campaign : [http://www.wwfindia.org/news\\_facts/pres/?3700/Ganga-and-I](http://www.wwfindia.org/news_facts/pres/?3700/Ganga-and-I)
- Save Gange Movement : <http://www.savegangamovement.org>
- <http://www.tarunbharatsangh.org/>

## **10. Source of Information:**

See Meta file.

