

Prerequisite for Water Resource Management in India: A Critical Review

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Abstract: Water being most precious resource is not managed by the consumers and suppliers of water in an efficient method. Water and economic life cannot be separated. It is required for production of food as well as the production of raw material for our shelter, and for so many daily use items we are dependent on including clothes. This year agriculture is feeling the pain of less than normal rains. It is a major cause of concern as water resource is depleting and getting polluted. This paper deals with the present water situation in India, prevalent water stress in the country and privatization of water debate.

Keywords: privatization of water; water crisis in India; water resource management; water stress

Introduction

Water is inevitable resource for food, hydro-electricity and industrial production. Directly and indirectly it is integrated to our daily requirements such as baths, cooking and washing, availability of food grains, green vegetables, fruits, milk, and all the packaged edible or non-edible items, we find in a general store. The vehicle that transports us daily to our workplace could not have been created without water either. Water supports creation and usage of air conditioners and refrigerators too.

In this sophisticated world the population easily emasculate the importance of water and never consider of conserving it. Every summer water crisis looms large in India, and year 2014 was also no different. In the recent past, the years 2002, 2004 and 2009 were drought ones for this reason. The four-month southwest monsoon season provides almost 70 per cent of the rain this country gets in a year. The rain is not only crucial for growth of kharif crops, planted during the season; it also provides the necessary moisture to the soil for the following, rabi, season (B.S., 2014). Rather this June 2014, the 37% rainfall deficit for the country has led to delaying of sowing of paddy, soyabean, urad, moong and groundnut (Sally, 2014). The reservoirs are also fast depleting for the country, and the cabinet of ministers had a meeting concerning the monsoon crises.

Water Resource Management is essential since water is integrated to development, like no other resource. Integrated Water Resource Management by Martin (Martin, 2013) is shown in Illustration 1. This paper introduces the water situation in India, investigates the water crisis along with water privatization scenario.

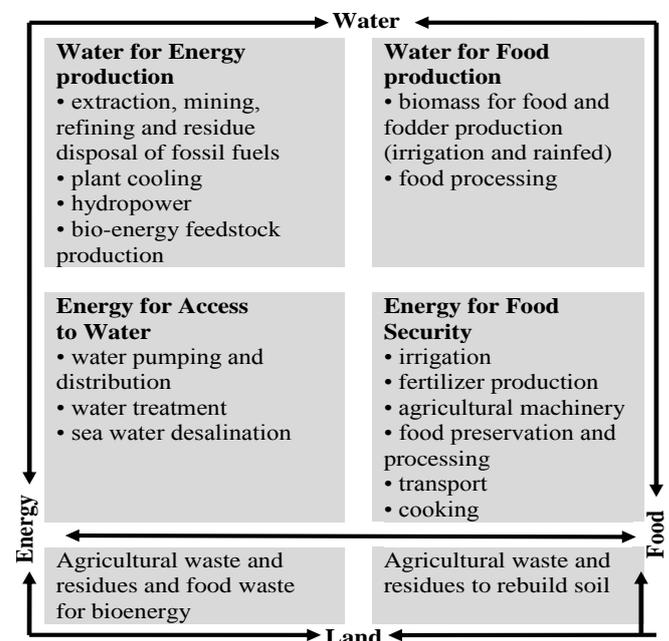


Illustration 1: Integrated Water Resource Management (Martin, 2013)

Water Accessibility in India

India has approximately 4% of the globe's water resources, supporting 18% of the world's population. India's finite and fragile water resources are stressed and depleting, while sectorial demands (including drinking water, industry, agriculture, and others) are growing rapidly in line with urbanization, population increases, rising incomes and industrial growth. At least 85 percent of India's villages and half of its cities rely on wells for water. Farming accounts for about 90 percent of water withdrawals in India, with irrigated acreage almost tripling since 1950 (Chaudhary, 2013). Table 1 shows the condition of groundwater [s]pites in India under the category of over-exploited, critical and semi-critical. (Chaudhary, 2013)

Table 1: Condition of Groundwater Sites in India (Chaudhary, 2013)

Ministry of Water Resources assessed 5,723 groundwater aquifer sites	
839 sites	Found to be over-exploited
226 sites	Found to be critical
550 sites	Found to be semi-critical
Groundwater exploitation across India has led to a drop in water levels and seawater intrusion in some areas	

Water crisis in India

Water availability per person dropped by 15% to 1,545 cubic liters in a decade, according to Census 2011. Groundwater depletion, water logging and

increasing salinity levels are affecting large areas. The government's goal is to avert a water crisis in a country where agriculture accounts for 20 percent of the \$1.9 trillion economy (Chaudhary, 2013). Ground water is over-exploited and large parts of the country are facing a water stress.

A per capita availability of less than 1700 cubic metres (m³) is termed as a water-stressed condition while per capita availability below 1000m³ is termed as a water scarcity condition, which is where India is heading. Table 2 indicates water availability in rural and urban areas of India (Source WHO-UNICEF, 2002) and table 3 point out at average annual per capita water availability in India (UNICEF, FAO and SaciWATERs , 2013).

Table 2: Water Availability in Rural and Urban Areas of India (Source WHO-UNICEF, 2002)

Regional disparities in water availability in rural and urban areas		
	Water taken from protected sources	Unserviced population
Rural population	69 - 74%	26-31%
Urban population	91- 93 %	7-9%

Table 3: Average Annual per Capita Water Availability in India (UNICEF, FAO and SaciWATERs , 2013)

Year	Population (Million)	Per capita average annual water availability (m ³ /year)*
1947	400 (at independence)	6008**
2001	1029 (2001 census)	1816
2011	1210 (2011 census)	1545
2025	1394 (Projected)	1340
2050	1640 (Projected)	1140

*cubic meters ** Source WHO- UNICEF, 2002

In India 37 million people are made ill by water-borne diseases each year, some fatally, is courting corporate aid to finance and build water pipelines. Increase piped supplies to 55 percent of rural households by 2017 from 35 percent now is governments priority, according to Ministry of Drinking Water and Sanitation joint secretary Satyabrata Sahu. The nation of 1.24 billion people is trying to cut dependence on groundwater sources (Chaudhary, 2013).

Water quality problems include Fluoride (66 million people across 17 states are estimated to be at risk), excess arsenic in ground water (nearly 13.8 million people in 75 blocks are reported at risk), varying iron levels, presence of nitrates and heavy metals, bacteriological contamination and salinity. Water conservation in urban areas forms a major thrust area since the Tenth Plan, and several measures are proposed, including tariffs at appropriate levels to discourage excessive use, mandatory water efficient systems for flushing, reducing leakages and unaccounted for water, reuse and recycling of sewage, rainwater harvesting, etc. (WHO-UNICEF, 2002).

It is estimated that about 50 billion litres of municipal water is required every day based on the population figures of urban India which is about 360 million. The urban population may exceed over 800 million by the year 2050 and the resultant municipal water requirement will be of the magnitude of over 110 billion litres per day (CPCB, 2010).

India's Environmental Performance Index ranking for 'water & human health' being 104 and performance score being 24.7 (Yale university, 2012) presents a poor picture for a precious resource. While the 122nd rank among 132 countries for 'water resource & ecosystem effects' is alarming and gives a signal for local governments to increase conservation measures. The water table depth has been increasing, from 48 ft in 1985 to 80 ft in 2003 to even beyond 130 feet in 2013 (MDP, 2006).

Water is fast becoming a scarce resource in India. Water has entered centre stage in South Delhi, and states of Madhya Pradesh, Mizoram etc. and not to say of the drought prone areas, so much so that it has become an election issue. Lack of government

regulations are leading to pollution and death of water bodies in various parts of India including the capital. Over pumping of water in Agra, has led to unpotable ground water quality. Citizen protests in water scarce summer months are on the rise. Due to neglect lakes, which were once a water body for faunal wealth to flourish and a source of water

supply have shrunk. Table 4 and 5 accomplishes shrinking of lakes in cities and urban source of drinking water (Kapoor, 2012). Yamuna which fed the capital Delhi, has been declared a dead river. Similarly other cities which were built near water sources are now sourcing water from far away.

Table 4: Shrinking Lakes in Cities (Kapoor, 2012)

Shrinking lakes in Indian cities	
Delhi	Out of 580 water bodies only 183 are being maintained
Ahmadabad	Out 204 lakes in 1960s only few have survived the concretisation of the capital city
Bangalore	Had lost half of its 2,779 lakes in less than 20 years because of sewage flowing into them
Hyderabad	934 water bodies covered 2.5% of geographical area, which now occupy less than 1.5% of the city area.
Mumbai	Powai lake has shrunk due to encroachments and Mithi river has shrunk into a drain
Chennai	Chembarambakam lake , 40 km from Chennai, is dead because of pollutants from the city
Srinagar	Dal lake shrunk because of growing silt and sewage from the city

(Source Data -Center for Science and Environment)

Table 5: Urban Source of Drinking Water (Kapoor, 2012)

Quenching the Urban Thirst		
City	Source	Distance
Delhi	Tehri dam	300 km
Chennai	Veeranam lake	235 km
Mumbai	Bhatsa, Tansa, Tulsi and Vihar lake	100-110 km
Hyderabad	Osman Sagar & Hinayat Sagar Lakes	18-15 km
Bangalore	Cauvery river	100 km
Indore	Narmada river	70 km
Bhopal	Kolar dam	44 km

(Source Data -Center for Science and Environment)

Severity of the water stress in India can be highlighted with two vastly different examples. In April of 2013 the state of Maharashtra lamented its greatest draught in 40 years, despair grew as more than 7000 villages were scarcity hit, close to half a million cattle became dependent on cattle camps, distress cattle sale took briskly. Water in many reservoirs came below 15% and in some close to dead storage levels. But far more than the searing draught of 1972, this is a man made one. Urban luxury apartments and industrialization are the major cause of the water diversion and guzzling¹. The other example relates to persistent draught in the wet state of Meghalaya, Sohra and Mawsynram, towns within 70 kilometers of Meghalayan capital Shillong, which take turns in recording the heaviest rainfall on the planet. The water crises in Meghalaya had become an election issue for the elections (Talukdar, 2013).

Privatisation of Water

As a solution to water woes privatization in India has received brickbats. Privatization of water is related to: 1) the ownership of the water source and 2) decision-making on whom to give it to and

whom not to give it to, i.e. how to distribute it. If these two are not part of the arrangement then it is not privatization (Josh, 2014).

South Asia Network on Dams, Rivers & People thinks the move to have a Water Resources Regulatory Authority that will among other things serve to decide the tariffs needs to be opposed as well. PPPs are being encouraged, he said, adding the only state in India which has a water regulatory authority is Maharashtra, where it has been a failure. S. A. Naqvi of the Citizens' Front for Water Democracy said despite evidence of privatisation not being a success globally, India is keen on moving ahead with privatisation in almost all sectors from energy to water. "Privatisation is a failed model, yet India is pushing forwards towards it. The Government, it seems, is distancing itself from its responsibility" (Ramchandran, 2013a).

Justice Rajinder Sachar, criticised the Delhi Government's move to undertake three public-private partnership projects in the city. He presented his views at a conference saying that social republic like India cannot have water in private ownership and deny the citizens their right

to quality water at affordable prices. He said the Government is obliged to adhere to the Supreme Court guidelines that have specified several times that air, water, sea and forests cannot be under private ownership (Sainath, 2013a).

Noted Pune-based watershed development expert Vijay Paranjpye, feels privatisation of water should be resorted to only if the government is completely incapable of efficiently managing the public utility and if privatisation is able to reduce the costs incurred by the public (Jose, 2014).

On a visit to India, Bolivian water activist and former Ambassador to the United Nations, Pablo Solon urged India to learn from the Bolivian experience and refrain from private-public partnership model for the water sector. According to him in Bolivia water is considered the 'blood of mother earth' and privatisation of water angered the common man. The private companies had one motive to make money. They made no investment, they used the state's infrastructure and yet expected to make only profit. In Cochabamba the first thing that the private players did was to increase the tariff by 300% (Ramchandran, 2013b). While in Osmanabad district in Marathwada, India draught is helping private players to earn profits, a 24 hour trade that thrives on scarcity (Sainath, 2013b). The water markets of Marathwada are booming. In this region in the town of Jalna alone, tanker owners transact between Rs. 6 million and Rs. 7.5 million in water sales each (Sainath, 2013c).

National Water Policy 2012 lacks a commitment towards Right to Water. Instead, the overall

direction of the policy is to reduce the involvement of the State and leave out space for market to

operate. Further, it does not recognize growing inequity in available water as the main driving

force of the current water crisis, not the absolute water scarcity per se. In this light, the right to

water issue becomes important. India is now a signatory to the 2010 United Nations (UN)

declaration of water as a right. Rights promote the idea of equal opportunities for all (Prakash,

Sharma & Chourey, 2013).

Pathways and possibilities for averting a water crisis

- Preservation of water bodies
- Prevention of pollution of water bodies and underground water
- Increase of water storage capacity and prevention of evaporation from these tanks, ponds etc
- Decrease in concretization of play grounds, footpaths for water to percolate

- Increase in efficiency in irrigation
- Efficient use of fresh water by increasing watershed development and rooftop and ground rainwater harvesting

- Bringing about behavioral change for conservation of water through projects like ONE

DROP Project India and Projects initiated by the Water Man of India Rajinder Singh etc

- Check on the withdrawal of excess ground water
- Efficient recycling of water
- Urgent stress on ecosystem-based management. It is based on UN Convention on

biological diversity (CBD) as a "strategy for the integrated management of land, water

and living resources that promotes conservation and sustainable use in an equitable way

(Connor & Millet, 2015)

- Using Indicators to mark the progress on the water front
- Recognising that water is a shared resource and valuing the multiple uses of water

Conclusion

Though water occupies central and irreplaceable roles in all dimensions of sustainable development – social, economic and environmental – have become progressively recognized, management of water resources and the provision of water-related services remains far too low on the scales of public perception and of governmental priorities. Therefore water often becomes a limiting factor, rather than an enabler, to social welfare, economic development and healthy ecosystems (Connor, Talafre et. al, 2015).

In India, apart from the crisis of water availability and falling water quality and increasing depth of underground water. Water is also an immensely political issue due to the nature of the resource. This resource interacts with a highly inequitable society marked with class, caste and gender differentiation. Techno managerial reforms in the water sector have been unable to tackle the fundamental issues of inequity in water supply. Improvement in management of water resources will have a major impact on India's social and productive progress. Better management of water resources will also help to ensure sustainable food security. The UN's Food and Agriculture Organization estimates that total water demand will equal water availability by 2025.

With industries and cities needing more and more water, steps need to be taken now to boost productivity of both irrigated and rain fed agriculture.(Grande, 2013). Efficient and less wasteful water demand management is a necessity.

Many issues have to be addressed and incorporated in the form of recommendations towards better water management.

Ensuring balance among competing water demands, addressing water rights issues, fair and effective water governance, water-based partnerships, promoting sustainable use, water harvesting and management etc (Priya & Cronin, 2013) are some of the imperative issues which require urgent commitment. According to a UNESCO report (2003) water resource problems cannot be ignored since recent estimates suggest that climate change will account for about 20 percent of the increase in global

water scarcity.

In summary, water crisis in India should not be ignored, it is an imperative issue, since large parts of the country suffer from severe water shortage and water stress is looming over many cities. Water conservation should be taken up with seriousness at the local and national level. India has been framing policies and action plans for conserving water but the shortfall in the success of the plans in terms of implementation, conservation and water availability must be dealt with strict and painstaking implementation to avert a national crisis and water wars.

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