



# WORLD TRADE CENTER

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SAN DIEGO

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## INDIA WATER REPORT

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# TABLE OF CONTENTS

Introduction	4
Demand Supply Situation	5
Investment Opportunities	6
Agencies Involved	8
Most Potential Opportunities	9
List of Indian Infrastructure Companies	10

## INTRODUCTION

India is the second most populous country in the world. Geographically, it forms the core of the Asian subcontinent and has varied terrain ranging from deserts in the west to housing the wettest place on earth – Cherapunji in the east. It is the seventh-largest country in the world, with a total land area of 1,269,219 sq mi. India measures 1,997 mi from north to south and 1,860 mi from east to west. It has a land frontier of 9,445 mi and a coastline of 4,671 mi.

India is bounded to the southwest by the Arabian Sea, to the southeast by the Bay of Bengal and the Indian Ocean to the south. The territorial waters of India extend into the sea to a distance of 13.8 mi measured from the appropriate baselines. The country is fed by a network of rivers, mostly emerging from the Himalayan mountain ranges marking the northern border. Seven major rivers along with their numerous tributaries make up the river system of India. Most of the rivers pour their waters into the Bay of Bengal; however, some of the rivers whose courses take them through the western part of the country and towards the east of the state of Himachal Pradesh empty into the Arabian Sea. Parts of Ladakh, northern parts of the Aravalli range and the arid parts of the Thar Desert have inland drainage. All major rivers of India originate from one of the three main watersheds:

1. The Himalaya and the Karakoram ranges (North and east India)
2. Vindhya and Satpura ranges and Chotanagpur plateau in central India (Central and south India)
3. Sahyadri or Western Ghats in western India (Western India)

The river systems of the north and eastern India are perennial and have flowing water throughout the year. They originate in the glaciers of the Himalayan ranges and do not depend on the annual monsoons for water. The river systems of the west and central region depend on the monsoons for their water and water availability in these varies from year to year and season to season. Apart from these natural sources of fresh water, India is also abundantly fed by annual rainfall phenomena – Monsoons. The monsoons occur in the country from April every year to end of October and bring water to the whole country. Other sources of water are the ground water reserves, lakes and precipitation in the form of snow, dew etc. Despite adequate resources of water, India faces a demand supply mismatch and an impending water crisis.

## DEMAND – SUPPLY SITUATION

India is home to 17 percent of the world population while it has only 2.1 percent of the geographic reach. As per the Ministry of Water resources, the total availability of water from all river basins is 1869.35 cu km per year. Of this, the total usable water is 1170 cu km. The total demand for water is 470 m<sup>3</sup> per person per year. The total water availability is 1170 m<sup>3</sup> per person per year but actual supply of clean usable water is a fraction of the figure. The table below illustrates the demand supply mismatch and the projections of demand going forward.

Ground Water levels in India	690 cu km
Per Capita Water Availability	1170m <sup>3</sup> /person/yr
Natural Runoff(surface+Ground)	1869 cu km
Total Utilisable Water Resource	1122 cu km
Total Demand	470 m <sup>3</sup> /person/year

FACTORS AFFECTING DEMAND	Population	Growth (GDP)	% Urban Population
2000 figures	1007	463	28
2025 projection	1389	1763	37
2050 projection	1583	6735	51

DEMAND ESTIMATES	Total	Irrigation	Domestic	Industrial
2000	680	605	34	42
2025	833	675	66	101
2050	900	637	92	161

Values given in BCM Billion Cu m

Water Withdrawl	%age
Irrigation	90
Industrial	5
Domestic	5

## INVESTMENT OPPORTUNITIES

The government of India is working towards resolving the situation. Its has allocated 27.6 billion US dollars towards the water and sanitation projects in the 11 five year plan. 55% of the investments foreseen under the 11th Plan are to be financed by the central government, 28% by state governments, 8% by "institutional financing" such as HUDCO, 8% by external agencies and 1.5% by the private sector. Local governments are not expected to contribute to the investments. Most of the funding is for projects – small and big, targeted towards developing new infrastructure and upgrading existing ones to bring it up to world standards and be able to meet the needs of the growing population as well as the economy. The government is also encouraging public private partnership and innovative forms of project completion like B.O.T – Build, Operate and Transfer; community involvement, international participation etc. Following a list of current and proposed projects in various regions of the country.

### PROJECTS

	State	Key Players	Country	Cost(\$ Million)
Chembarabakkam Water Treatment Plant	Tamil Nadu/Chennai	Tamil Nadu Urban Finance and Development Corporation, Degremont, Anand	France	\$32.12
UMPP Reverse Osmosis sea water Plant	Gujarat	Coastal Gujarat Power Limited, Aquatech Asia		\$15.47
Minjur Desalination Plant	Tamil Nadu/Kattupalli	IVRCL, Befesa	Spain	\$115.5
Adityapur Industrial Water Supply Scheme	Jharkhand	IL&FS, Govt of Jharkhand		5
Gujarat Solid Waste and Composting	Gujarat	World Bank, Gujarat Urban Development Corporation	-	\$
Bihar Panchayat Strengthening Project	Bihar	IBRD, Gol, Govt Of Bihar	-	
Emergency Tsunami reconstruction Project	Tamil Nadu	IBRD/IDA Gol Govt Of TN		\$682.6
Andhra Pradesh Water Sector Improvement	Andhra Pradesh	IBRD/IDA Gol Govt Of AP	-	0
Dam Rehabilitation and Improvement	Central Government	IBRD/IDA Gol, Min of WR	-	\$988.9
Gujarat Urban Development Program	Gujarat	IBRD/IDA Gujarat Urban Development Authority	-	7
Orissa Water Sector Improvement-Mahanadi Basin	Orissa	IBRD/IDA Gol, Dept of Water resources, Orissa	-	\$437.5
TNUDP - 3	Tamil Nadu	IBRD/IDA Gol	-	0
Andhra Pradesh Municipal Development Project	Andhra Pradesh	IBRD/IDA Gol	-	\$435.0
				0
				\$350.0
				0

India National Cyclone Risk Mitigation	Central Government	IBRD/IDA Department of Economic Affairs	-	\$319.00
Integrated Coastal Zone Management	Central Government	IBRD/IDA GoI	-	\$285.67
Private Infrastructure Finance Project	Central Government	IBRD/IDA IL&FS	-	\$1,600.00
Punjab Rural Water Supply and Sanitation	Punjab	IBRD/IDA GoI Govt of Punjab	-	\$261.40
Andhra Pradesh Rural Water Supply & Sanitation	Andhra Pradesh	IBRD/IDA Govt of AP	-	\$180.00
Karnataka RWSS - 2 additional financing	Karnataka	IBRD/IDA GoI Govt of Karnataka	-	\$180.00
Uttanchal Rural Water Supply & Sanitation	Uttanchal	IBRD/IDA Govt of Uttanchal	-	\$224.00
Capacity building for Industrial Pollution Management	Central Government	IBRD/IDA Ministry of Environment	-	\$75.39
Karnataka Urban Water Sector Improvement	Karnataka	IBRD/IDA Karnataka Urban Infrastructure Developmental Finance Corp	-	\$51.53
Rajasthan Water Sector Restructuring Project	Rajasthan	IBRD/IDA Govt of Rajasthan	-	\$19.00
Urban Poverty Reduction	Madhya Pradesh	ADB Govt of MP	-	\$200.00
Rajasthan Urban Infrastructure Development	Rajasthan	ADB Govt of Rajasthan	-	\$483.00
Uttanchal Urban Development	Uttanchal	ADB, Govt of Uttanchal	-	\$350.00
North Eastern Region Urban Development	Central Government	ADB, GoI, Government of England	England	\$231
Bihar Urban Infrastructure Development program	Bihar	ADB, Govt of Bihar	-	\$150
Haldia Water Treatment Plant	West Bengal	IDFC, Govt of WB	-	\$24
Vrishabhavati Valley Project	Karnataka	Govt of Karnataka	-	\$112
Ghatagar Dams Project	Maharashtra	Nissho Iwai Corp, Patel Engineering, Fuji Corp	Japan	\$62
- Proposed -	Maharashtra	-	-	\$128
- Proposed -	Maharashtra	-	-	\$128
- Proposed -	Orissa	Tata Steel	-	\$128
Nagarjuna Sagar Project	Andhra Pradesh	Govt of AP	-	\$1,361
- Proposed -	Lakshadweep	Govt of India	-	\$12
- Proposed -	Jammu&Kashmir	Govt of India	-	\$87
New Delhi Sewer Project	New Delhi	Govt of India	-	\$287
Ganges River Clean-up	-	Govt of India	Japan	\$106
Sardar Sarovar Dam Project	Gujarat	Govt of Gujarat	-	\$8,500
- Proposed -	Tirupur	Govt of Tirupur, Ministry of Urban Development	-	\$171
- Proposed -	Bihar	Punj Lloyd, Govt of Bihar	-	\$52
- Proposed -	Maharashtra	BMC, Govt of Maharashtra	-	\$802

IOC Treatment Plant	-	IOC, L&T	-	\$51
UPWSRP	Uttar Pradesh	IDA, GoI, Govt of UP	-	\$149
	Kerala, Madhya Pradesh, Tamil Nadi,			
DRIP	Orissa	World Bank	-	

In absolute terms India receives almost twice as much development assistance for water, sanitation and water resources management as any other country, according to data from the Organisation for Economic Co-operation and Development. India accounts for 13 per cent of commitments in global water aid for 2006-07, receiving an annual average of about US\$830 million, more than double the amount provided to China. India's biggest water and sanitation donor is Japan, followed by the World Bank. The Asian Development Bank and Germany are other important external partners in water supply and sanitation. India accepts bilateral aid from five countries (the United Kingdom, the United States, Russia, Germany and Japan). A further 22 bilateral donors channel aid through nongovernmental organisations, United Nations agencies or multilateral institutions such as the European Union, the Asian Development Bank etc. Apart from international agencies and financial institutions, India also has a robust domestic financial sector which also provides funds for projects. The government also utilises various schemes and grants and subsidies as a means of spurring investment in the sector.

#### AGENCIES INVOLVED

##### International

EBRD	European bank of Reconstruction and Development
ADB	Asian Development Bank
JICA	Japan International Cooperation Agency
WB	World Bank
IBRD	International Bank of Reconstruction & Development
IDA	International Development Agency
IFC	International Finance Corporation
MIGA	Multilateral Investment Guarantee Agency
JBIC	Japan Bank of International Cooperation
UNDP	United Nations Development Agency
USAIDS	United States Agency for International Development
FMO	Netherlands Development Finance Company
OECF	Overseas Economic Cooperation Fund
IMF	International Monetary Fund
KfW	Kreditanstalt für Wiederaufbau
AfD	Agency Française de Développement
EC	European Commission
ICEF	India-Canadian Environmental Facility



**Domestic**

FCI	Finance Commission of India
IDFC	Infrastructure Development Finance Corporation
IL&FS	Infrastructure Leasing & Financial Services Ltd
HDFC	Housing Development & Finance Corporation
CBI	Central Bank of India
SBI	State Bank of India
BoB	Bank of Baroda
IFCI	Infrastructure Finance Corporation of India
MOWR	Ministry of Water Resources
MOUD	Ministry of Urban Development
MoEF	Ministry of Environment and Forests
RBI	Reserve Bank of India
CII	Confederation of Indian Industry
FICCI	Federation of Indian Chambers of Commerce and Industry
ASSOCHAM	Association of Chambers of Commerce
ICC	Indian Chambers of Commerce

The areas with the most potential for investment within the water sector are:

1. Hydro-energy
2. Hydro-informatics
3. Infrastructure design
4. Management consulting
5. Purification and filtration
6. Reclamation, recycle and reuse
7. Water Distribution

## List of Infrastructure and Energy companies in India

Name	Address	Website	Region/ State
IVRCL	Mihir - 8-2-350/5/A/24/1B, Road Number 2, Banjara Hills, Hyderabad AP	<a href="http://www.ivrcl.com">www.ivrcl.com</a>	National
Patel Engineering Jain Irrigation Systems Ltd	Patel Estate, Jogeshwari W, Mumbai 400102, Maharashtra	<a href="http://www.patelengineer&lt;br/&gt;ing.in">www.patelengineer ing.in</a>	National
Larson and Toubro	L&T House, Ballard Estate, P.O Box 278, Mumbai 400001, Maharashtra	<a href="http://www.larsontoubro.&lt;br/&gt;com">www.larsontoubro. com</a>	National
Ramky GE	Ramky Group, Gulmohar Avenue, Rajbhavan Road, Somajiguda, Hyderabad 500082, AP	<a href="http://www.ramky.com">www.ramky.com</a> <a href="http://www.ge.com/in">www.ge.com/in</a>	National Global
Jindal Water Infrastructure Limited	Jindal ITF Centre, 28 Shivaji Marg, New Delhi 110015	<a href="http://www.jindalaquaso&lt;br/&gt;urce.com">www.jindalaquaso urce.com</a>	National South East Asia
Punj Lloyd	76 Institutional Area, Sector 32, Gurgaon 122001, Haryana	<a href="http://www.punjilloyd.com">www.punjilloyd.com</a>	Asia
ION India	Ion House, Dr. E. Moses Road, Mahalaxmi, Mumbai 400011, Maharashtra	<a href="http://www.ionindia.com">www.ionindia.com</a> <a href="http://www.membranesin&lt;br/&gt;dia.com">www.membranesin dia.com</a>	Global
Membranes India Chembond Chemicals	Chem Bond Center, EL 71, MDIC, Navi Mumbai 400710, Maharashtra	<a href="http://www.chembond-&lt;br/&gt;drew.com">www.chembond- drew.com</a>	National National
H2O India Lanxess India Henkel India	A-161, Sarita Vihar, Near Apollo Hospital, New Delhi 110076	<a href="http://www.H2Oindia.com">www.H2Oindia.com</a>	National
A&P Intergrated Water Systems	8-13-25/2, Svl Complex, Main Road, Old Gajuwaka, Visakhapatnam – 530026	<a href="mailto:anvizag@lycos.co&lt;br/&gt;m">anvizag@lycos.co m</a>	Regiona l
Acsion Chemicals and Systems Pvt Ltd	179-A, 3rd Floor, Kilokari Maharani Bagh, Ashram, Jeewan Nagar, New Delhi – 110014	<a href="mailto:acsion@vsnl.net">acsion@vsnl.net</a>	Regiona l
Genpure Technologies	13/10,2nd Floor,W.E.A. Saraswathi Marg,Karol Bagh New Delhi-110005		Delhi Regiona l
HCC Infra	Hincon House, LBS Marg, Vikhroli (W) Mumbai – 400083	<a href="mailto:corpcomm@hccin&lt;br/&gt;dia.com">corpcomm@hccin dia.com</a> <a href="mailto:energy.helpdesk@&lt;br/&gt;relianceada.com">energy.helpdesk@ relianceada.com</a>	
Reliance Infra Subhash Projects Sadbhav Engineering			
GMR Infrastructure	IBC Knowledge Park, Phase 2, "D" Block, 9th Floor, 4/1, Bannerghatta Road, Bangalore - 560 029,		

Karnataka

GVK Infrastructure  
Alstom Projects India  
Adani Enterprises  
Anant Raj Industries

Gammon house  
Veer Savarkar Marg,  
Prabhadevi,  
Mumbai - 400025

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