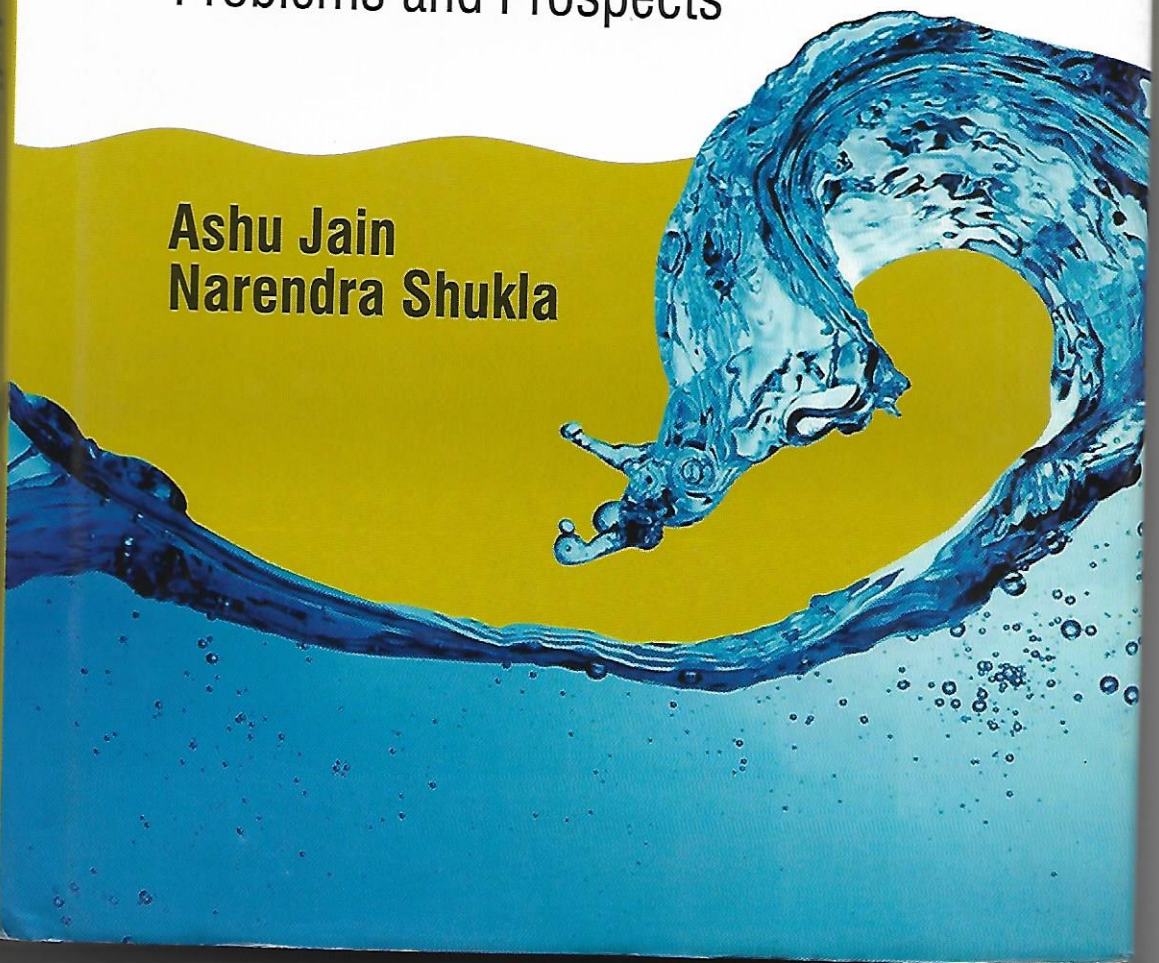


# **Water Resource Management in India**

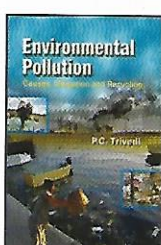
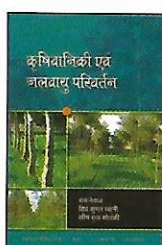
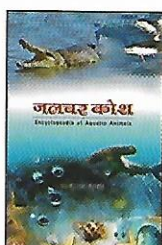
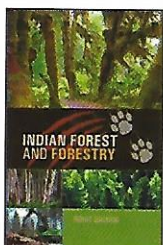
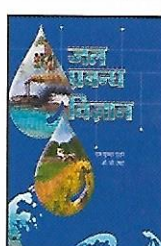
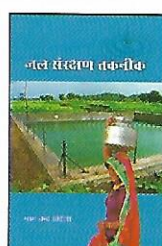
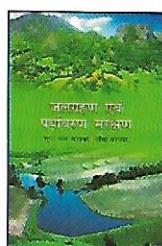
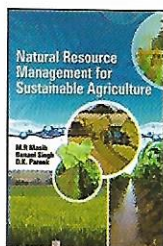
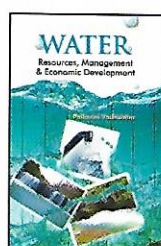
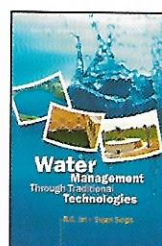
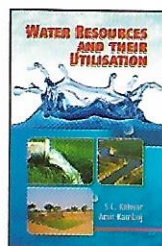
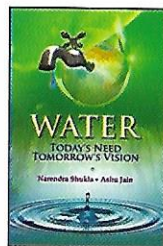
Problems and Prospects

**Ashu Jain  
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or Tibet – and some cross our borders and go into other countries (Pakistan, Bangladesh). We have expectations of flows from the 'upper' countries and obligations to the 'lower' countries.

This book systematically presents various issues related to Water Resource Management in India 22 scholars, University / College professors of Social Sciences, management and academicians have contributed by way of 15 papers in the making of this book. We are immensely grateful to them for their contribution.

The views expressed in the contribution which appear in the book are those of the individual author and are not to be taken representing the view of the editors.

Our heartily thanks to our esteemed *Prof. Radhika Dass Reid*, Professor & Head, Deptt. of Economics, Ex. Dean, Faculty of Social Sciences, Rani Durgavati University Jabalpur (M.P.), Ex. President Madhya Pradesh Economic Association, *Prof. Manohar Pandit Reid*, Professor & Head, Deptt. of Economics, Ex. Dean, Faculty of Social Sciences, Founder Director, UIM, Rani Durgavati University, Former Director, Management Studies, Maharishi Mahesh Yogi Vedic University and Advisor VITS Jabalpur (M.P.), Consultant, UNNPF Research, President, Akhil Bhartiya Arthik Parishad India, *Dr. R.S. Tiwari Reid*, Professor of Economics and Director SETCOM, Administrative Academy and Director, Bansal MBA College Bhopal, Ex. President, Madhya Pradesh Economic Association, *Prof. A.D.N. Bajpai* Professor, Deptt. of Economics, Rani Durgavati University Jabalpur and Ex. Vice-Chancellor, Awadhesh Pratap Singh University Rewa (M.P.), Ex. President, Madhya Pradesh Economic Association, Vice-Chancellor, Himanchal Pradesh University Shimla (H.P.), *Prof. S.K. Choubey* Professor, Deptt. of Economics, Chairman, Board of Studies in Economics, Rani Durgavati University Jabalpur (M.P.), Ex. President Madhya Pradesh Economic Association, *Dr. N.G. Pendse* Professor & Head, Deptt. of Economics, Rani Durgavati University Jabalpur (M.P.), *Dr. Vinod Mishra* Professor, Deptt. of Commerce, G.S. College of Commerce & Economics, Jabalpur (M.P.) for their keen interest, inspiring close supervision, constructive criticism and constant encouragement. Last but not least we thank *Vipin Jain* Pointer Publishers, Jaipur, Rajasthan for undertaking the publication of this volume.

24 August, 2011

Ashu Jain  
Narendra Shukla

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## 4

## WATER RESOURCES IN INDIA

SONALI BHANDARI (JAIN)

Nearly three fourths of the earth's surface is covered with water. Water is found in puddles, ponds, rivers, lakes and oceans. It is present under the ground and in glaciers in the form of ice. It is also present in air is the form of water vapour. Water is inexhaustible renewable, natural resource. However we still hear of shortage of water at many places.

### WATER RESOURCES

Water resources are sources of water that are useful or potentially useful to humans. Uses of water include agricultural, industrial, household, recreational and environmental activities. Virtually all of these human uses require fresh water.

97% of the water on the Earth is salt water, and only 3% is fresh water of which slightly over two thirds is frozen in glaciers and polar ice caps. (1) The remaining unfrozen freshwater is mainly found as groundwater, with only a small fraction present above ground or in the air. (2)

Fresh water is a renewable resource, yet the world's supply of clean, fresh water is steadily decreasing. Water demand already exceeds supply in many parts of the world and as the world population continues to rise, so too does the water demand. Awareness of the



global importance of preserving water for ecosystem services has only recently emerged as, during the 20th century, more than half the world's wetlands have been lost along with their valuable environmental services. Biodiversity-rich freshwater ecosystems are currently declining faster than marine or land ecosystems. (3)

### SOURCES OF FRESH WATER

**Rainwater :** Rains is our main source of water. Rainwater is free from germs and soluble solid impurities. It contains dust, some dissolved gases present in the air, such as carbon dioxide. In places where the air is polluted it may also contain harmful substances such as acids.

**Groundwater :** Some Rain falls runs off the surface forming stream and rivers and some passes through the soil into the nonporous rocks beneath. This is groundwater.

Groundwater can be obtained by digging wells or sinking tube wells to reach the water table. Deep groundwater is usually safe for drinking. Overuse of groundwater is causing the water table in cities and towns to go down rapidly. This is a great cause for worry.

**Frozen water :** Himalaya, which are often called "The Roof of the World" contains greatest area of glaciers. Ten of Asia's largest rivers flow from there. In Nepal the temperature has risen with 0.6 degree over the last decade. (5)

### WATER STRESS

Due to shortage of water we are facing the biggest problem of water stress. According to World Business Council for Sustainable Development, it applies to situations where there is not enough water for all uses, whether agricultural, industrial or domestic. It has been proposed that when annual per capita renewable freshwater availability is less than 1700 cubic meters.

Why we are facing water crises :

- Population Growth
- Expansion of Business Activities
- Rapid Urbanization
- Climate Change
- Pollution

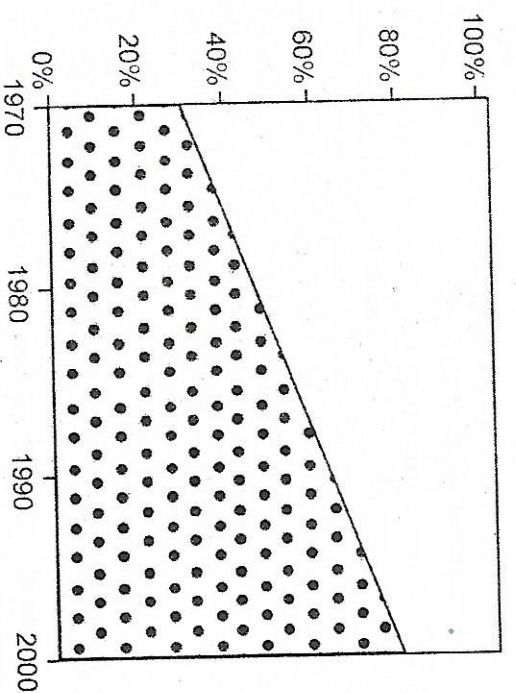


Fig. 1 : Best estimate of the share of people in developing countries with access to drinking water 1970-2000

**Water & Conflict :** Former Egyptian Foreign Minister and Former Secretary-General of the United Nation Boutros Ghali who Forecast (6) -

"The next war in the Middle East will be fought over water not politics". U.N. Kofi Annan who in 2001 said - "Fierce competition for fresh water may well become a source of conflict and war in the future" (7). Food & water are the two basic human need. Water is limited now we should concentrate on water harvesting.

### CONSERVATION OF WATER

Conservation of water means its wise careful use. It means not wasting water and also maintaining its quality. Some ways in which water can be conserved are as follows.

- Avoid wastage of water and recycle wherever possible.
- Plant trees and other vegetation. This increases the absorption of water by the soil and increases the water table.
- Reduce water pollution by treating sewage and factory waste before disposing them.
- Control flooding and store water for use when rains fail by building dams. However big dams have their own problems. They destroy wildlife and displace people from their homes.



Also accumulation of silt in the storage reservoir reduces their effectiveness with time.

- By rainwater harvesting, which consists of storing rainwater for later use. The amount of water seeping into the ground has reduced because of cutting down of trees and by the construction of roads and buildings. These have reduced the area over which water can seep into the soil. The rainwater that falls on such structures flows off into drains which empty them into rivers or lakes. Rainwater harvesting can be done in the following two ways.

1. **Rooftop Rainwater Harvesting :** The water falling on the roof of a building is allowed to flow either into a storage tank and used for activities such as watering plants. Alternatively, it is allowed to flow into a deep pit in the ground so that it adds to groundwater.
2. The rainwater flowing into roadside drains is allowed to flow into deep pits so that it adds to the groundwater.

## CONCLUSION

Water ( $H_2O$ ) is a finite natural resource that must be conserved. It is limited and scarce in many places. Water Crisis is one of the major issues that the world is facing and it is the responsibility perhaps the duty of each one of us to contribute towards water management. Intelligent utilization of water resources is the need of the hour. Water is necessary for life and everything to exist, so for that we should aware people in saving water.

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## WATER MANAGEMENT AS A CHALLENGE

SWETA SHRIVASTAVA AND DR. ATUL DUBEY

The challenges facing water management have become increasingly global in scope since the 1970s. This reflects the rising awareness about the uncertainties posed by the worsening situation of the hydrosphere, and particularly freshwater, and the unsustainability of water management practices in many areas. It is also a reflection of the conflicts flaring up from the protracted social inequalities affecting the access to water for essential human uses and from the inefficiency, ineffectiveness, and inefficacy characterizing water management in many regions, not just in the poorer countries.

These include tackling desertification, controlling water pollution, developing conflict prevention measures in the light of ongoing and potential water conflicts, monitoring and preventing water-related threats and hazards (ranging from the impact of floods and other disastrous climatic events to the persistence, revival and emergence of water-related diseases), to overcoming the deficiencies and inequalities in the allocation and distribution of water for essential human use in developing countries.

Despite the important efforts made in recent decades, there is a growing awareness that the struggle for reducing ecological unsustainability and limiting the negative impact of water-related hazards and deficiencies in water management is being lost in many