

WELCOME

INTEGRATED
WATER RESOURCES
DEVELOPMENT
AND
MANAGEMENT IN INDIA

By

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INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT IN INDIA

- ❖ Introduction
- ❖ National Water Policy
- ❖ Water Availability
- ❖ River Basins of India
- ❖ Per Capita Water Availability
- ❖ Projected Water Demand

INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT IN INDIA(contd)

- ❖ Inter-State and Legal Framework
- ❖ Issues in Inter-State Water Resources Development
- ❖ Basin Developments Initiatives in India
- ❖ Integrated Water Resources Development and Management

INTRODUCTION

India

Location

East Longitude $68^{\circ} 0'$ and $97^{\circ} 30'$

North Latitude $8^{\circ} 0'$ and $37^{\circ} 0'$

Area

3.29 Million km^2

Union of States

- 28 States
- 7 Union Territories

INTRODUCTION (contd)

Population

More than 1 Billion

$\frac{3}{4}$ Live on Agriculture

25% GDP from Agriculture

Water Resources

4% of the World's Water Resources

Source

Monsoon Rainfall

INTRODUCTION (contd)

Rivers

Inter-State

Constitution Empowers States for Water
Resources Development

Optimum Utilization

River Basin Organization

NATIONAL WATER POLICY

- First Adopted in 1987
- Revised and Updated in 2002
- Water Resources Development for Hydrological Unit – Basin or Sub-basin
- Quantity, Quality and Environment Aspect
- Agreements, Awards

NATIONAL WATER POLICY (contd)

- Provides for River Basin Organization
- Project Planning
 - Integrated and Multidisciplinary Approach
 - Drainage System to Form Integral Part
 - Participation of Beneficiaries and Stakeholders

NATIONAL WATER POLICY (contd)

- Participatory Approach to Water Resources Management
 - Legal and Institutional Changes
 - Appropriate Role for Women
 - Water Users Association
- Policy at Implementation Stage

WATER AVAILABILITY

- ❖ Annual Average Rainfall 1170 mm
 - Maximum 10,000 mm
 - Minimum 100 mm
- ❖ Total Precipitation 4000 BCM
- ❖ Water Available 1869 BCM
- ❖ Water for Beneficial use 1122 BCM
 - Surface Water 690 BCM
 - Groundwater 432 BCM

RIVER BASINS OF INDIA

Total River Basins - 20

Major River Basins - 12

(each > 20,000 km²)

Composite River Basins - 8

Most River Basins are Inter-State

Total Annual Availability - 1869 BCM

PER CAPITA WATER AVAILABILITY

- Growth of Population Three Times
- Per Capita Availability in 2001 1820m³
- Variation from One River Basin to Other
- International Norms
 - Water Stressed 1700m³/person/year
 - Water Scarce 1000m³/person/year

PROJECTED WATER DEMAND

Standing Sub-committee of Ministry of Water Resources

- Demand

2025	1093 BCM
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2050	1447 BCM
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- Availability

1122 BCM

PROJECTED WATER DEMAND (contd)

How to Bridge the Gap

- Develop Untapped Water Resources
- Reuse of Water
- Recycling of Water
- Increase Water Use Efficiency
- Inter-basin Transfer from Surplus to Deficit Basin

INTER-STATE ISSUES AND LEGAL FRAMEWORK

➤ Main Features

- River Basins are Inter-State
- Water Resources Planned and Developed by States
- Regulation by Union Government

➤ Constitutional Provision

- Union List (List I)
- State List (List II)
- Common List (List III)

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

➤ **Entry 17 in List II (State List)**

“Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of entry 56 of List I.”

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

➤ **Entry 56 of List I (Union List)**

“Regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest.”

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

Article 262 of the Constitution

“(1) Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley.”

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

“(2) Notwithstanding anything in this Constitution, Parliament may by law provide that neither the Supreme Court nor any other Court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in clause (1).”

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

➤ Parliament Legislation

- Complex and Sensitive
- Acts of Parliament

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

- River Boards Act, 1956
 - Under Entry 56
 - Establish River Boards for regulation and development of inter-State Rivers
 - State to request Union Government
 - Advisory in Nature
 - No Board was Constituted
- Constituted Bodies by Act of Parliament or Resolution

INTER-STATE ISSUES AND LEGAL FRAMEWORK (contd)

- Inter-State River Water Disputes Act, 1956
 - ISRWD Act 1956 under Article 262
 - Adjudication of disputes
 - Set up Water Disputes Tribunal
 - Precludes jurisdiction of All Courts

ISSUES IN INTER-STATE WATER RESOURCES DEVELOPMENT

- Not only Sharing of Water
- Interpretation of Tribunal Awards
- Agreements for Sharing
- Construction of Projects
- Operation and Regulation
- Control Mechanism

ISSUES IN INTER-STATE WATER RESOURCES DEVELOPMENT

➤ Negotiated Settlement

- With Central Government's involvement
- States themselves

ISSUES IN INTER-STATE WATER RESOURCES DEVELOPMENT

➤ Settlement through Adjudication

- Set up Tribunal as per ISRWD Act, 1956

- Tribunals established

Krishna

Godavari

Narmada

Ravi & Beas

Cauvery

- Long period to finalize Award

BASIN DEVELOPMENT INITIATIVES IN INDIA

- Damodar Valley Corporation
 - By Act of Parliament in July, 1948
 - Implement Master Plan for Damodar Basin
 - Management and Operation of Projects

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

➤ Tungabhadra Board

- By Resolution in October, 1953
- To complete Tungabhadra Dam and Regulation of Stored Water

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- **Krishna-Godavari Commission**
 - **By Resolution in 1961**
 - **To Review Availability of Water in Krishna and Godavari**
 - **Feasibility of Diversion of Water**

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- **Bhakra-Beas Management Board**
 - **By Resolution in 1966**
 - **To Regulate Supply of Sutlej, Ravi and Beas**
 - **To Distribute Hydro-Power**

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- Ganga Flood Control Board
 - By Resolution in 1972
 - Ganga Flood Control Commission
 - Prepare Comprehensive Plan of Flood Control
 - Monitor Flood Control Schemes

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- Betwa River Board
 - By Act of Parliament in 1976
 - Survey and Investigations for Rajghat Dam
 - Operation and Management

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- **Bansagar Control Board**
 - **By Resolution in 1976**
 - **Efficient and Economical
Construction of Bansagar Dam**

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- Brahmaputra Board
 - By Act of Parliament in December, 1980
 - Prepare Master Plan for Control of Flood in Brahmaputra Valley
 - Overall Development of Water Resources

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- Narmada Control Authority
 - By Resolution in 1980
 - **Oversee Implementation of NWDT Award**
 - Apportionment of Storages
 - **Sharing of Power from Sardar Sarovar Project**

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- Sardar Sarovar Construction Advisory Committee
 - By Resolution in 1980
 - Efficient, Economic and Early Execution of Sardar Sarovar Project

BASIN DEVELOPMENT INITIATIVES IN INDIA (contd)

- Upper Yamuna River Board
 - By Resolution in 1994
 - Allocate Available Flows in Yamuna
 - Development of Water Resources

INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT

- River Basin Planning, Development and Management
- Comprehensive and Integrated Approach

INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT (contd)

➤ Vision for Integrated Development

“Optimal sustainable development and maintenance of quality and efficient use of country’s water resources to match the growing demand on the precious natural resource with active involvement of all stakeholders in order to achieve accelerated, equitable economic development of the country.”

INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT (contd)

➤ River Basin Organizations in India

- Under Consideration
- Reconstitute the Existing Ones
- Representation of State Government and Local Government
- Wide Representation and General Acceptance
- General Council and Standing Committee

thank you