

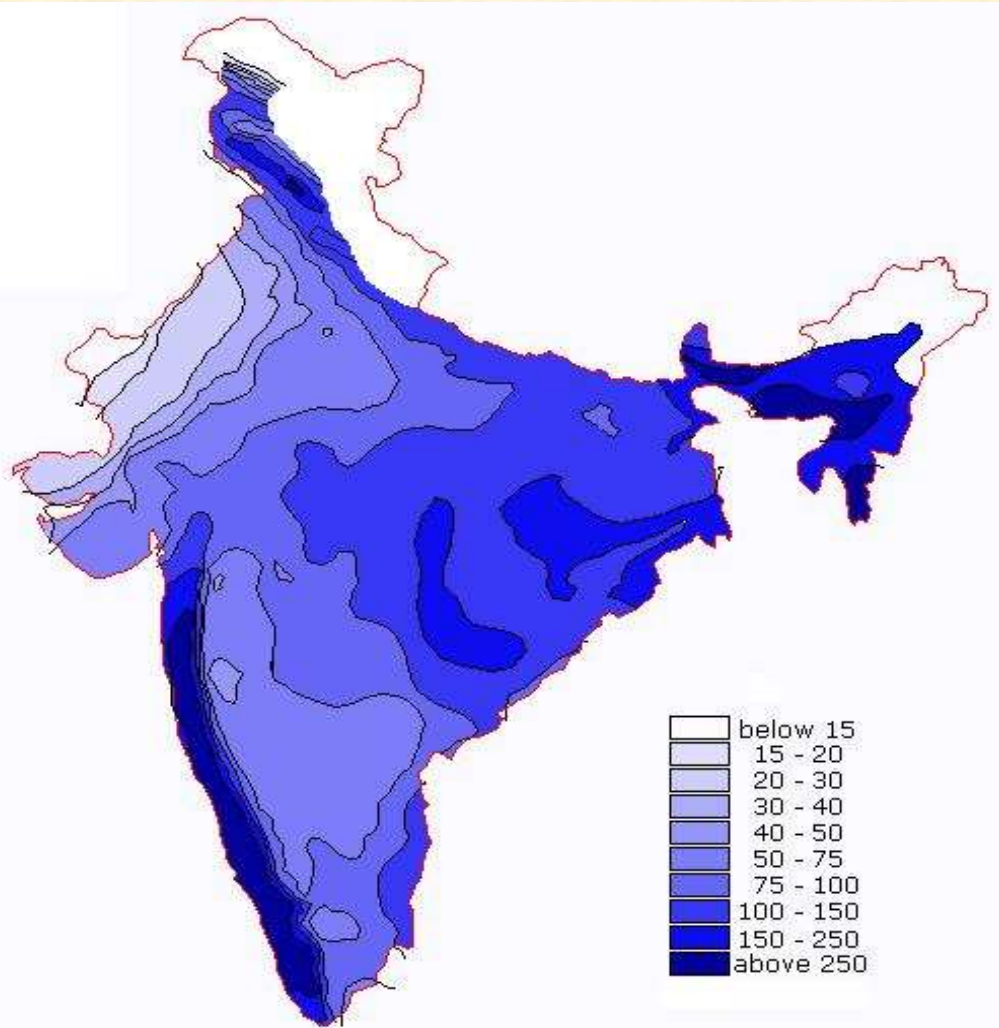
Integrated Water Resources Management

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Central Water Commission
New Delhi

Key Issues and Challenges in Water Resources Management in India

Very High Temporal and Spatial variability of rainfall

Spatial Variation of Rainfall in INDIA

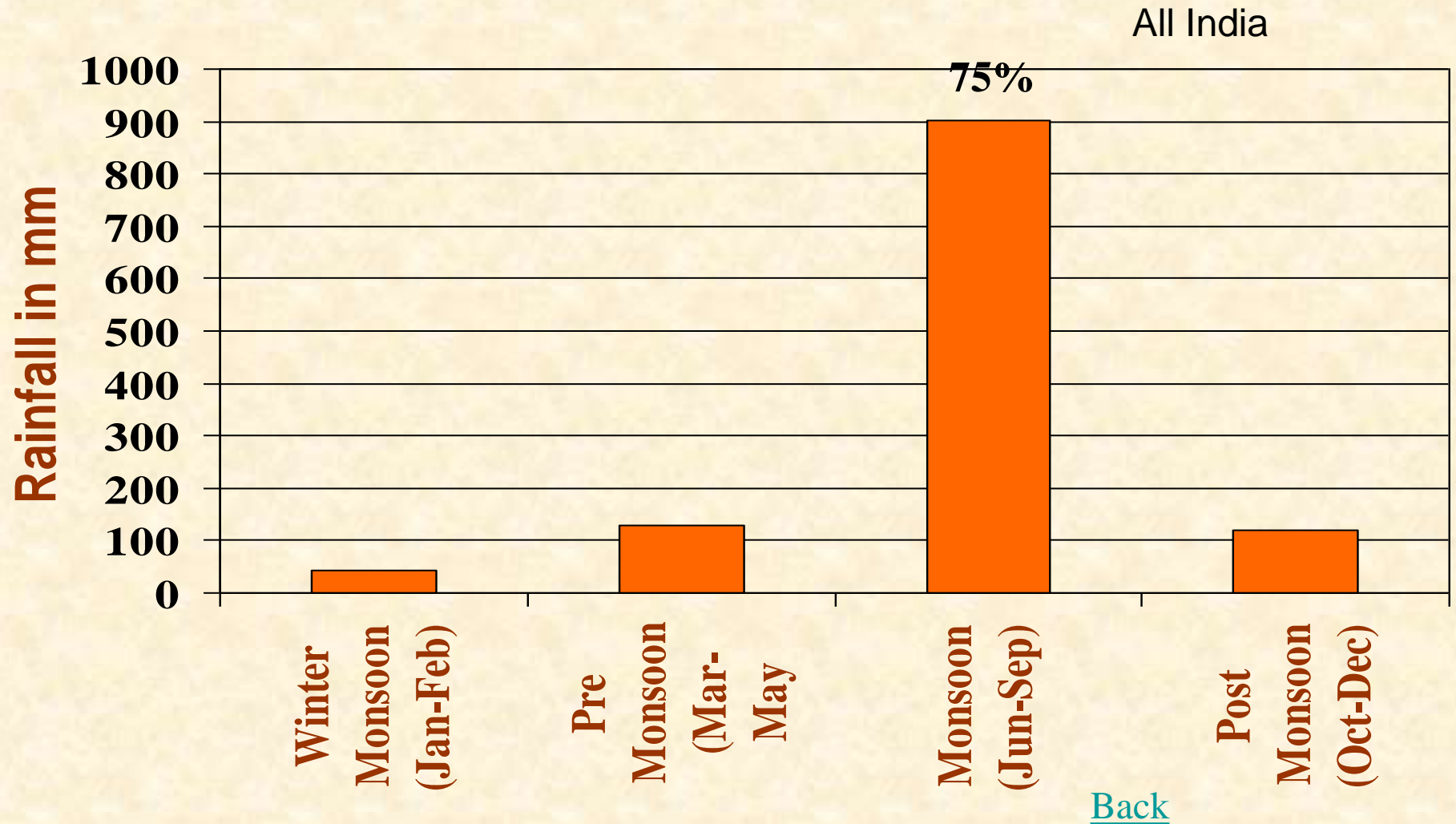


	mm	
Average	1,170	
Max.	11,000	Mawsynram Meghalaya
Min.	100	Western Rajasthan

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Precipitation during June to September 3000 BCM (75%)

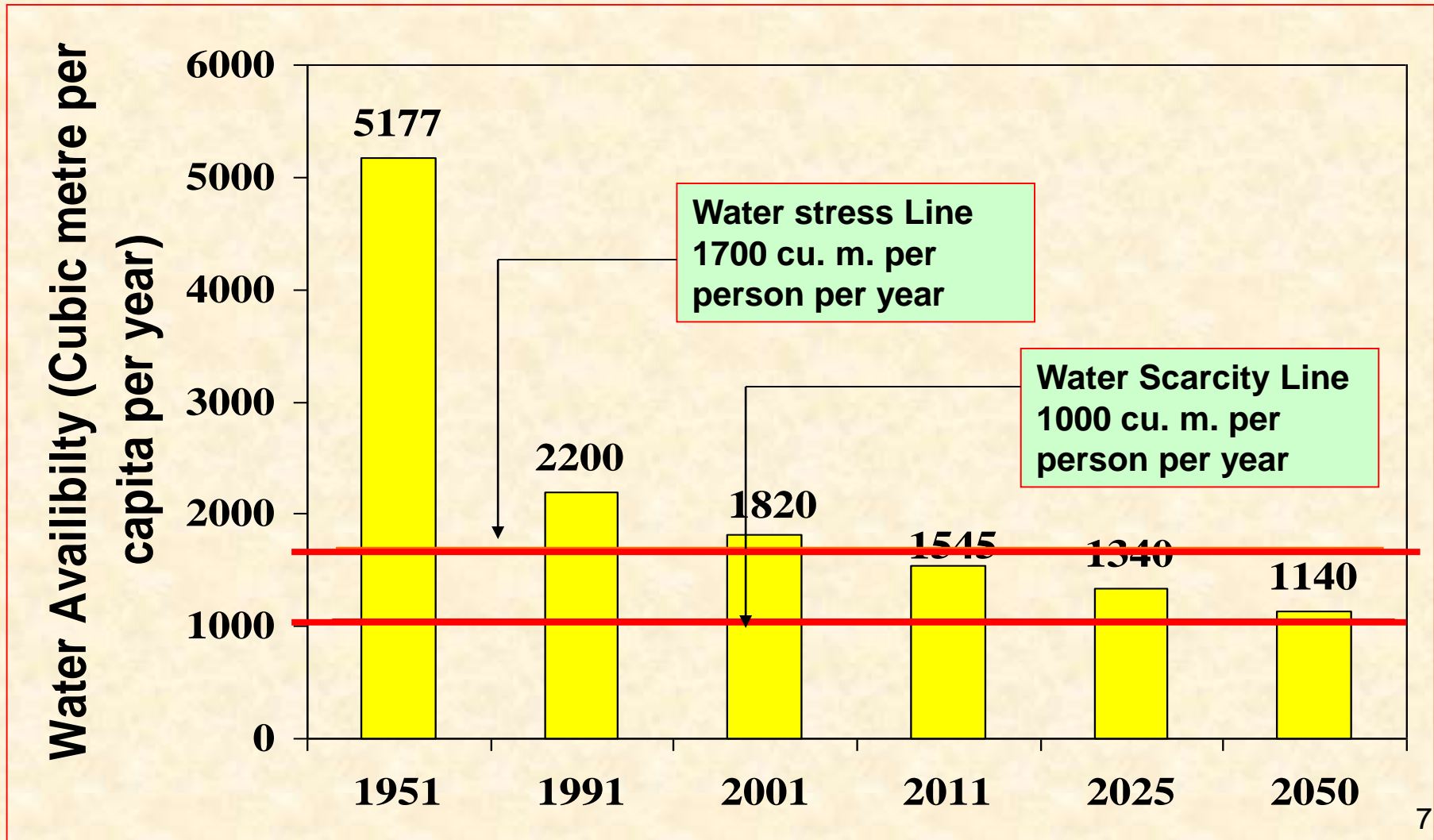
Temporal Variation of Rainfall



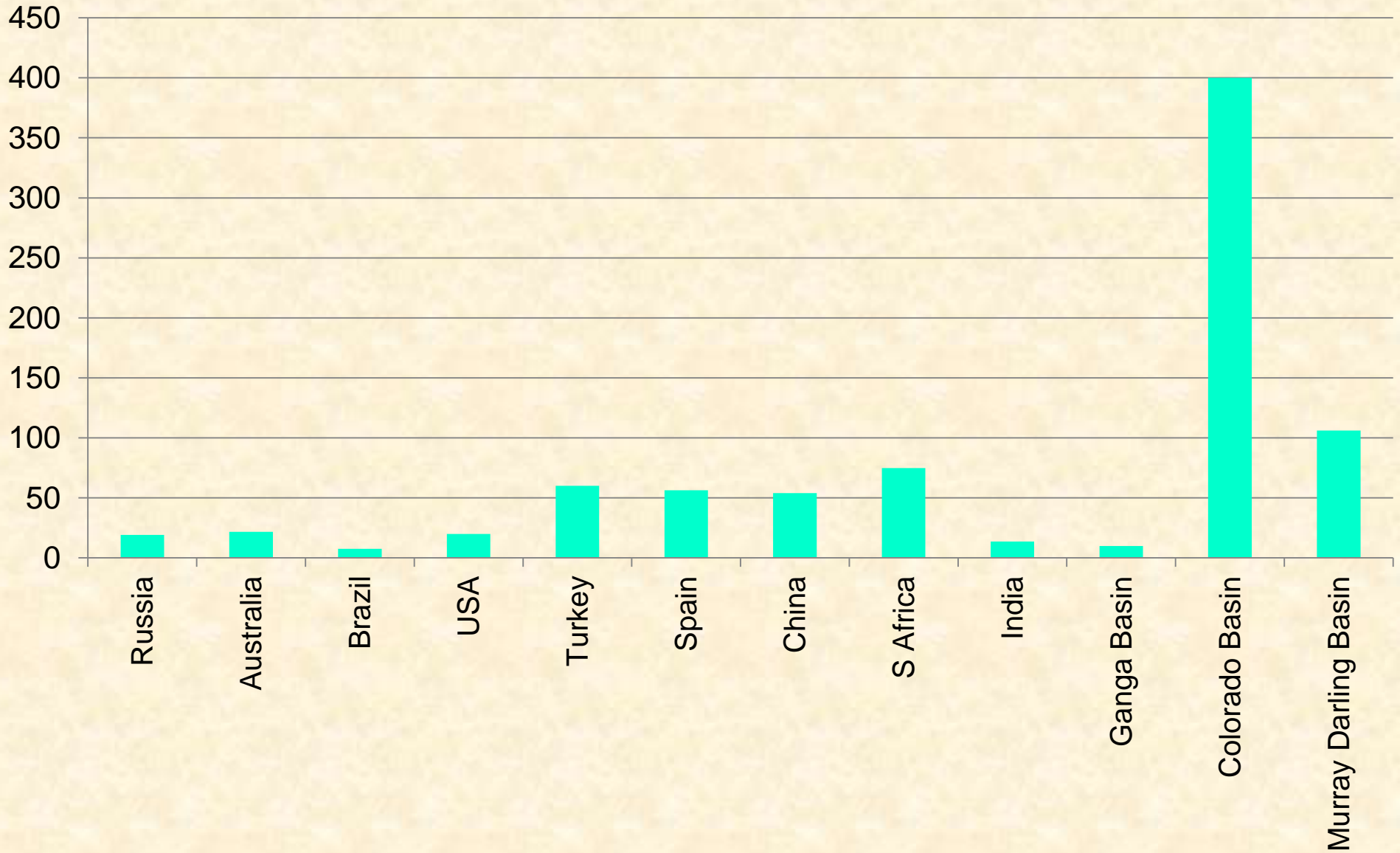
Key Issues and Challenges

- **17% of World's population, 4% of renewable water resource, 2.5% land area**
- **India is already under water stressed conditions (per capita availability is less than 1700 m³/per person per year)**
- **Most of the basins in western part and peninsular India already water scarce (per capita availability is less than 1000 m³ per person per year)**
- **Small per capita reservoir storage as compared to many countries**

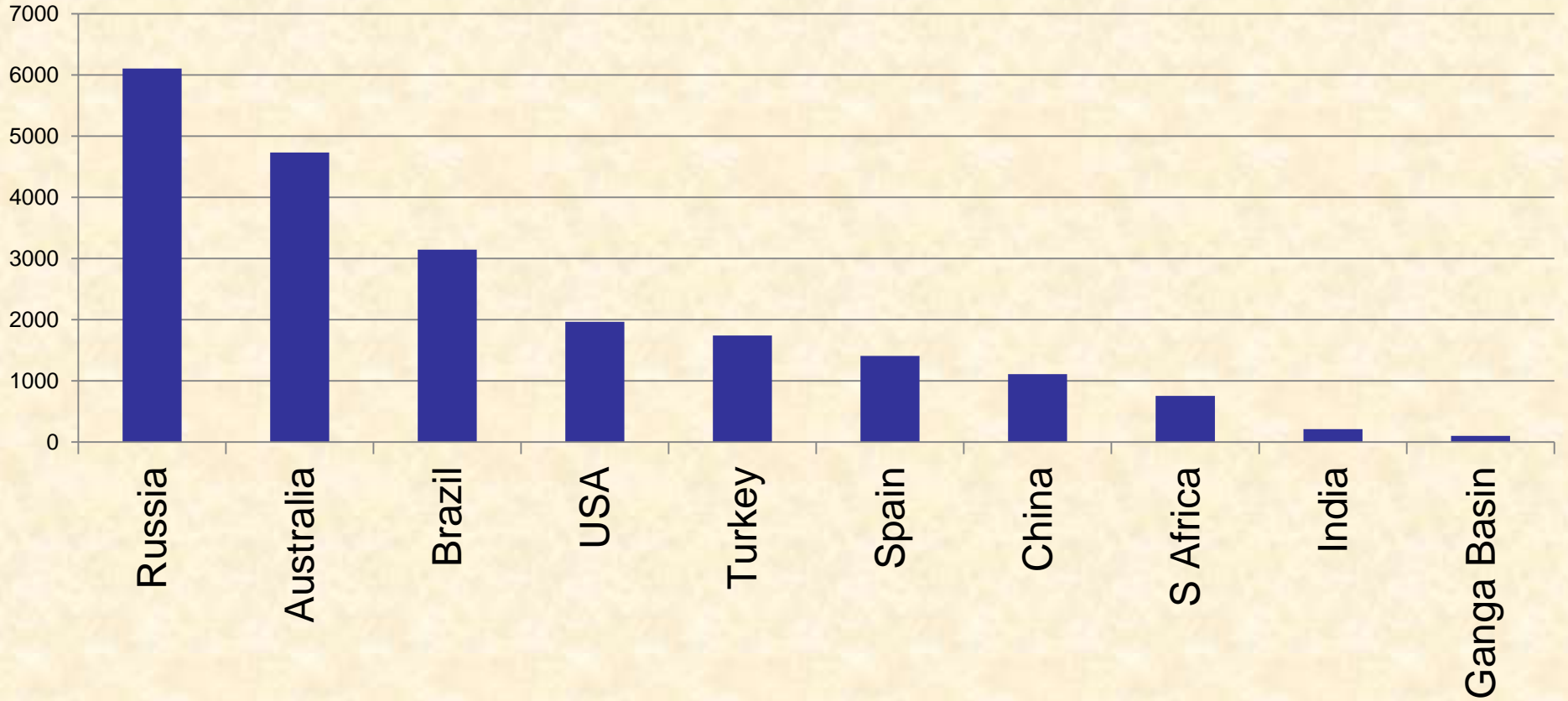
Per Capita Water Availability (National Average)



Storage as % of annual availability in countries / basins



Per capita Live Storage (m³)



Key Issues and Challenges (cont...)

- **Low water use efficiencies**
- **Over-exploitation of groundwater resources, leading to rivers getting dry in lean season due to no base flow contribution from depleted aquifers**
- **Poor water quality in many rivers due to lack of treatment facilities**
- **Planning and implementation of water resources projects in fragmented manner**

What Is the Solution?

**Integrated Water Resources Management
(IWRM)**

What is IWRM?

“IWRM is a process which promotes the coordinated development and management of land, water and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems .”

--- Global Water Partnership (GWP-2000)

- **IWRM addresses the “three E’s”: Economic efficiency, Environmental sustainability and social Equity, including poverty reduction.**

IWRM Takes into Account

- 1. Basin or Sub-basin as a basic planning unit.**
- 2. All Sources of water like Surface water, Groundwater, soil moisture, recycled water etc., their spatial and temporal variation, quantity and quality**
- 3. All stakeholders and sectoral interests (Domestic, Ecology, Irrigation, Industry, Power, Navigation, Recreation, Socio-cultural , Floods, etc)**
- 4. Existing and ongoing projects and socio-techno-economic and environmental feasibility of new infrastructure development**
- 5. Relevant policy and legal frameworks**
- 6. Institutional aspects**

National Water Policy on IWRM

The National Water Policy-2012, in several provisions, has enumerated the integrated perspective of water resources planning, development and management.

One of the basic principles of the policy is that planning, development and management of water resources need to be governed by common integrated perspective considering local, regional, State and National context, having an environmentally sound basis, keeping in view the human, social and economic needs.

National Water Policy on IWRM (Contd)

There is a need for comprehensive legislation for optimum development of inter- State rivers and river valleys to facilitate inter-State coordination ensuring scientific planning of land and water resources taking basin/sub-basin as unit with unified perspectives of water in all its forms (including precipitation, soil moisture, ground and surface water) and ensuring holistic and balanced development of both the catchment and the command areas. Such legislation needs, inter alia, to deal with and enable establishment of basin authorities, comprising party States, with appropriate powers to plan, manage and regulate utilization of water resource in the basins.

National Water Policy on IWRM (Contd)

Highlighting the importance of integrated water resources management, the policy states that Integrated Water Resources Management (IWRM) taking river basin / sub-basin as a unit should be the main principle for planning, development and management of water resources. The departments / organizations at Centre / State Governments levels should be restructured and made multi-disciplinary accordingly.

IMPORTANT STEPS OF INDIA TOWARDS IWRM

Basin Scale Studies

- **Work of preparation of IWRM plan for Brahmani-Baitarni river basin is currently going on with collaboration between CWC, IMD, CGWB, NIH, CSIRO (Australia) and co-basin States (Odisha, Chhattisgarh, Jharkhand).**
- **There is proposal to carry out IWRM study of 10 more basins.**
- **IIT Delhi has taken up a project for preparation of IWRM plan of 4 basins [Mahi, Narmada, Palar and Yamuna (up to Etawah)] in association with eWater of Australia and CWC.**

Basin Scale Studies ...

- **A pilot study on reassessment of water resources potential of Godavari and Brahmani-Baitarni basins using space inputs has been jointly done by CWC and NRSC**
- **Study to be improved and being up-scaled in all the river basins through regional offices of CWC.**
- **Damodar Valley System: Comprehensive System Studies of Damodar-Barakar River system was carried out in CWC in 2005 involving 5 reservoirs and a barrage to study the basin response in respect of 2005 and 2025 demand levels.**

THANK YOU