



# **Water Governance -for Water Security & Sustainability**

**National Water Mission**  
Ministry of Water Resources,  
River Development & Ganga Rejuvenation

# NWM -Origin / Rationale



**Constituted as a strategy to adapt to and to mitigate the effects of Climate Change under -  
National Action Plan on Climate Change.**

## **Some of possible implications of climate change on water resources**

- Decline in the glaciers & snowfields in the Himalayas and rise of sea levels;
- Increased drought like situations due to overall decrease in the number of rainy days;
- Increased flood events due to overall increase in the rainy day intensity;
- Effect on groundwater quality in alluvial aquifers due to increased flood and drought events;
- Influence on groundwater recharge due to changes in precipitation and evapo-transpiration; and
- Increased saline intrusion of coastal & island aquifers due to rising sea levels

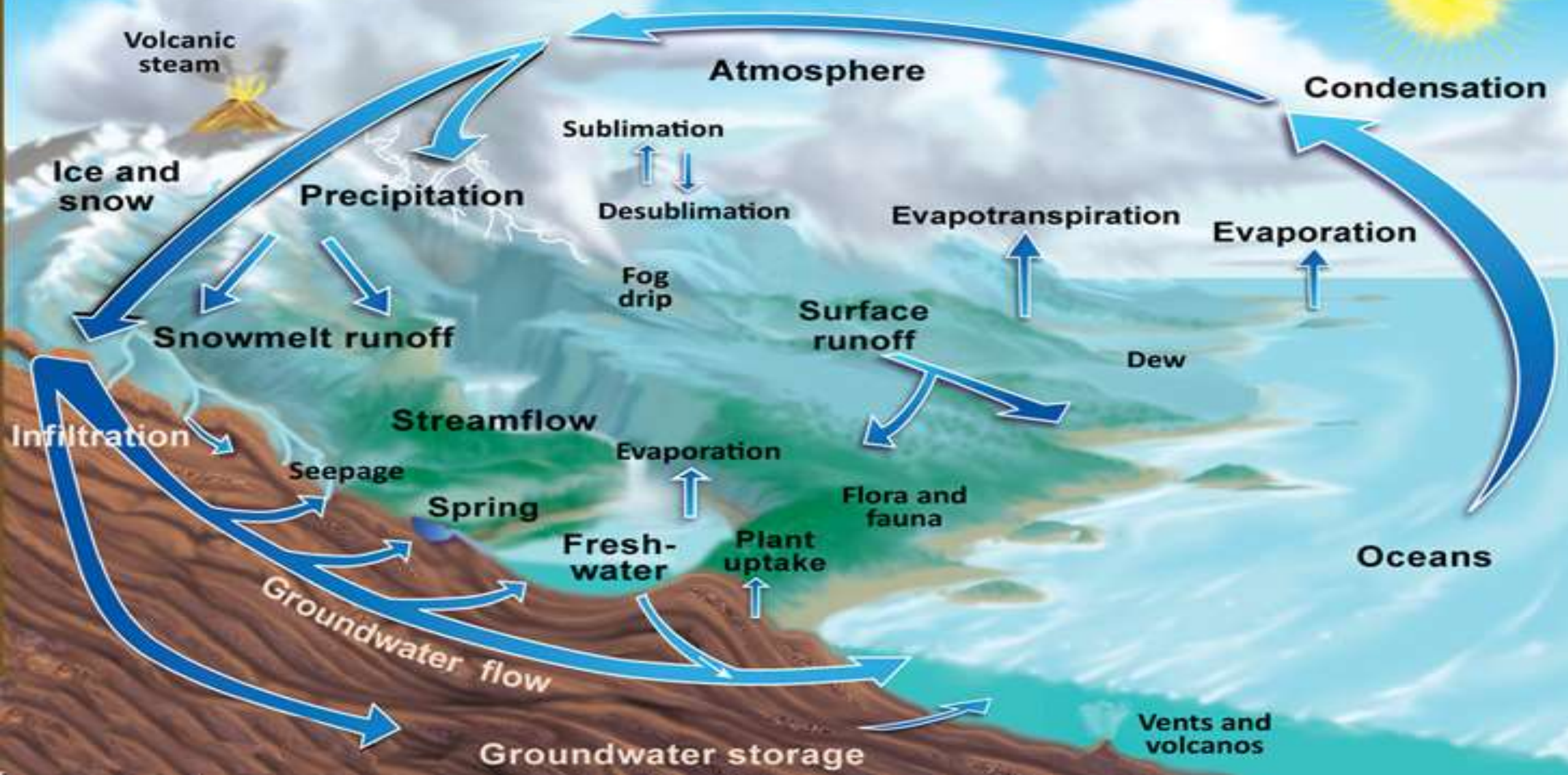
# NWM: Objective and 5 Goals

## Objectives:

1. Conservation of water,
2. minimizing wastage and
3. ensuring its more equitable distribution –  
both across and within States through integrated water resources development and management.

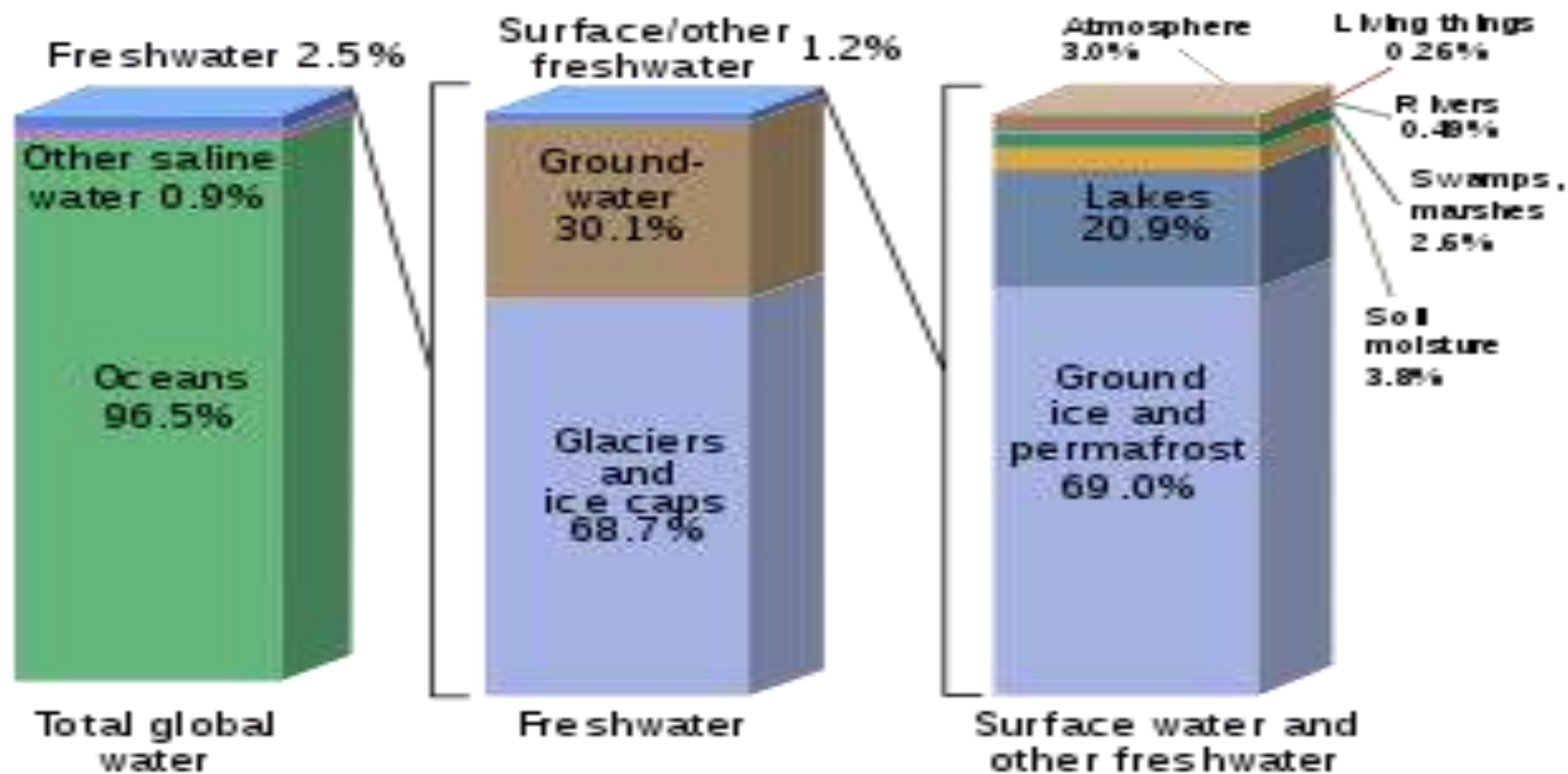
Goal	Statement
I	Comprehensive data base in public domain and assessment of impact of climate change on water resource
II	Promotion of citizen and state actions for water conservation, augmentation and preservation
III	Focussed attention on vulnerable areas including over-exploited areas
IV	Increasing water use efficiency by 20%
V	Promotion of basin level integrated water resources management

# The Water Cycle

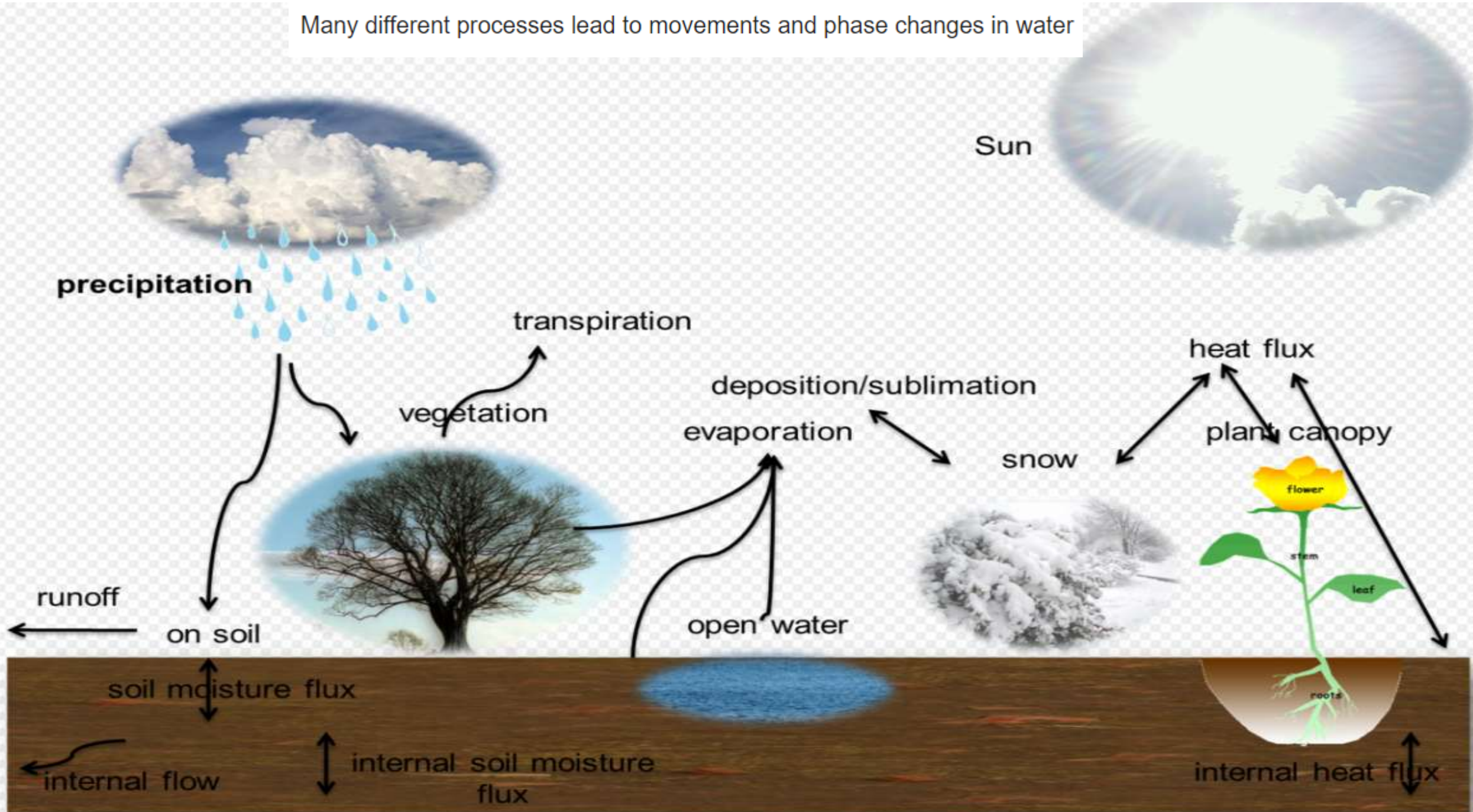




# Where is Earth's Water?



Many different processes lead to movements and phase changes in water

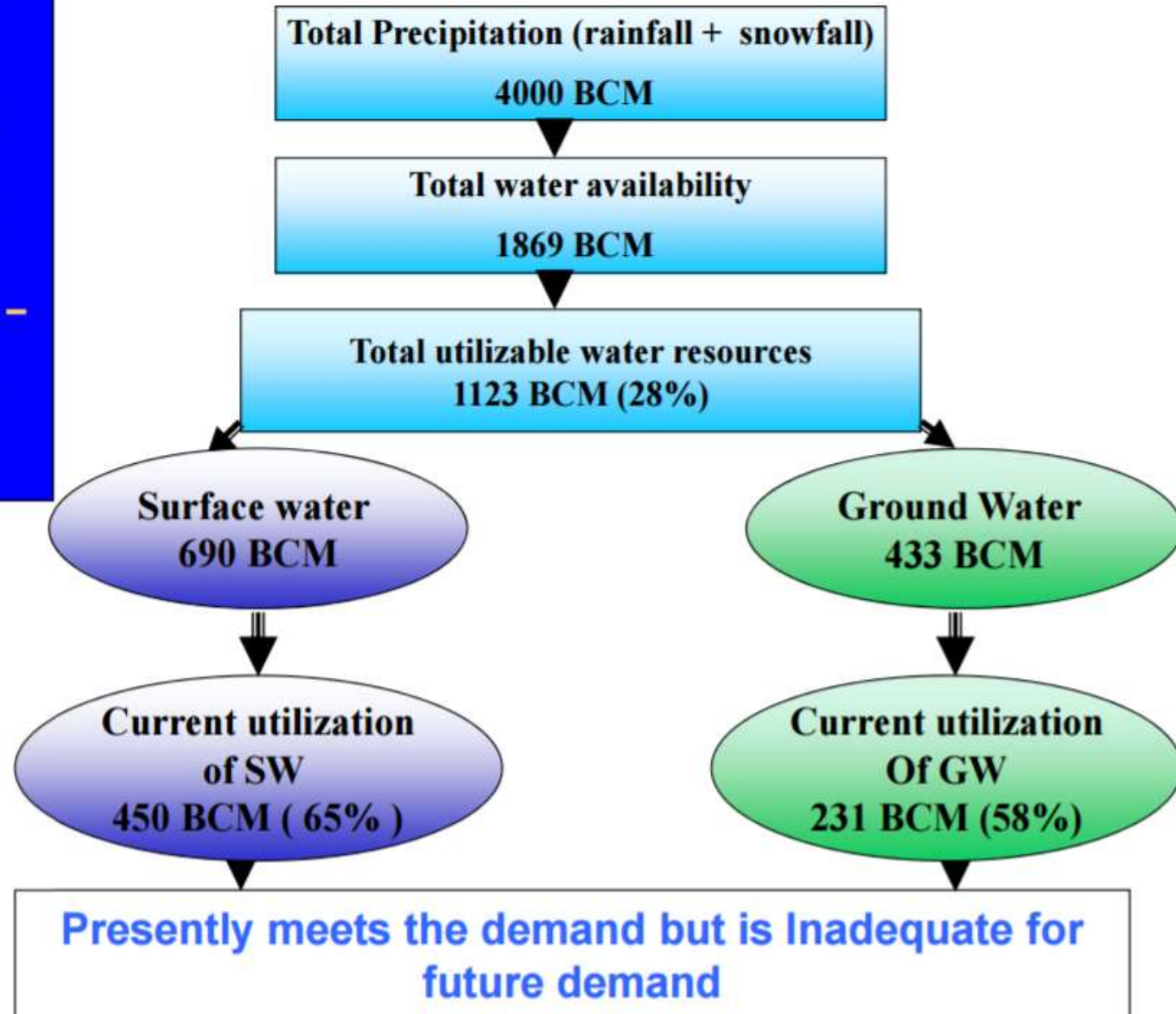


(Chen et. al., 1996, 1997; Chen and Dudhia, 2001; Ek et. al., 2003; Koren et. al., 1999)

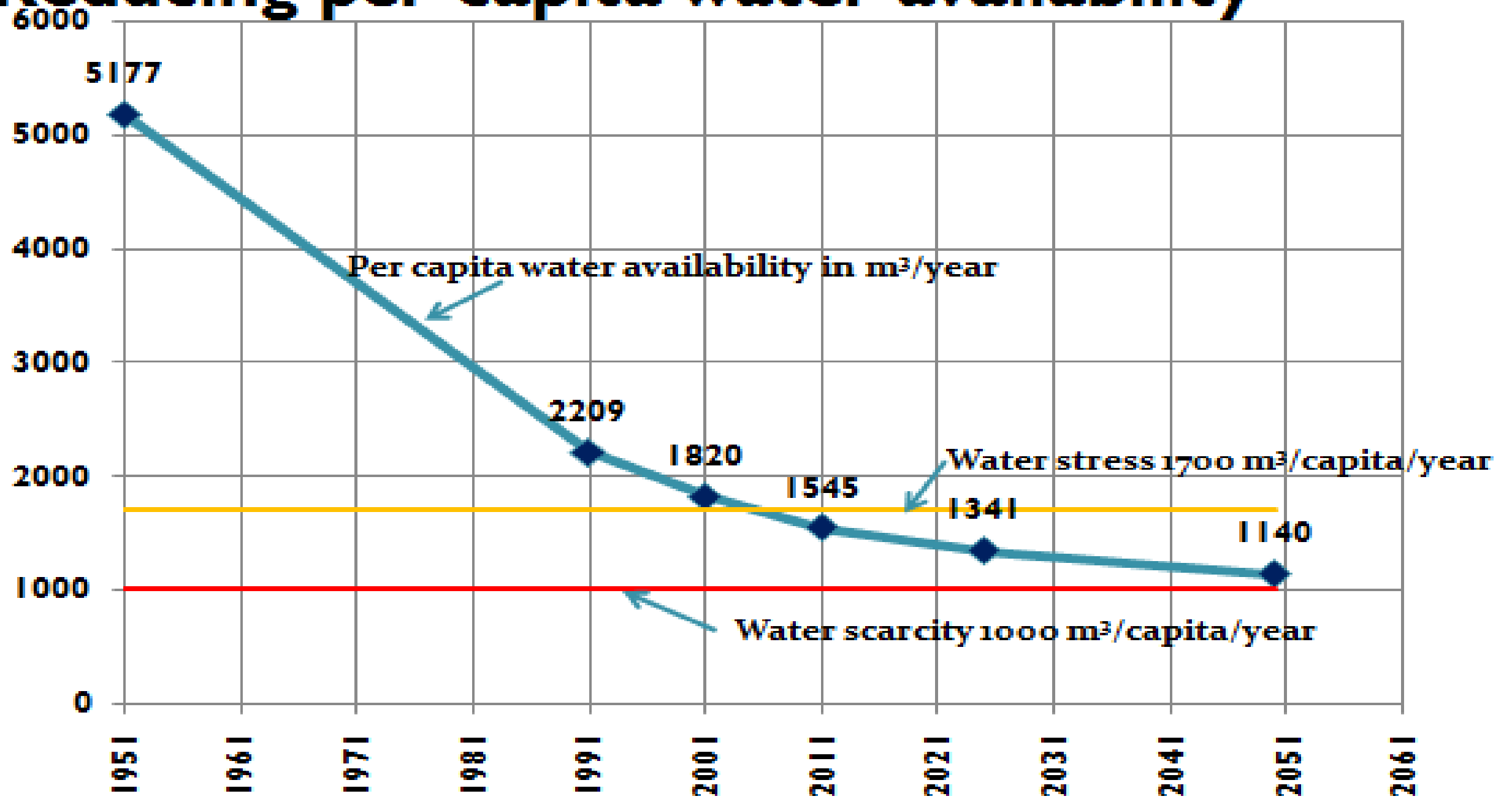


# Water Resources Scenario - INDIA

- 2.45% of World's Land Area
- 4% of World's Renewable Water Resources
- 17.5% of World's Population
- Water Availability – 1545 cum/person/year
- Scarcity - 1000



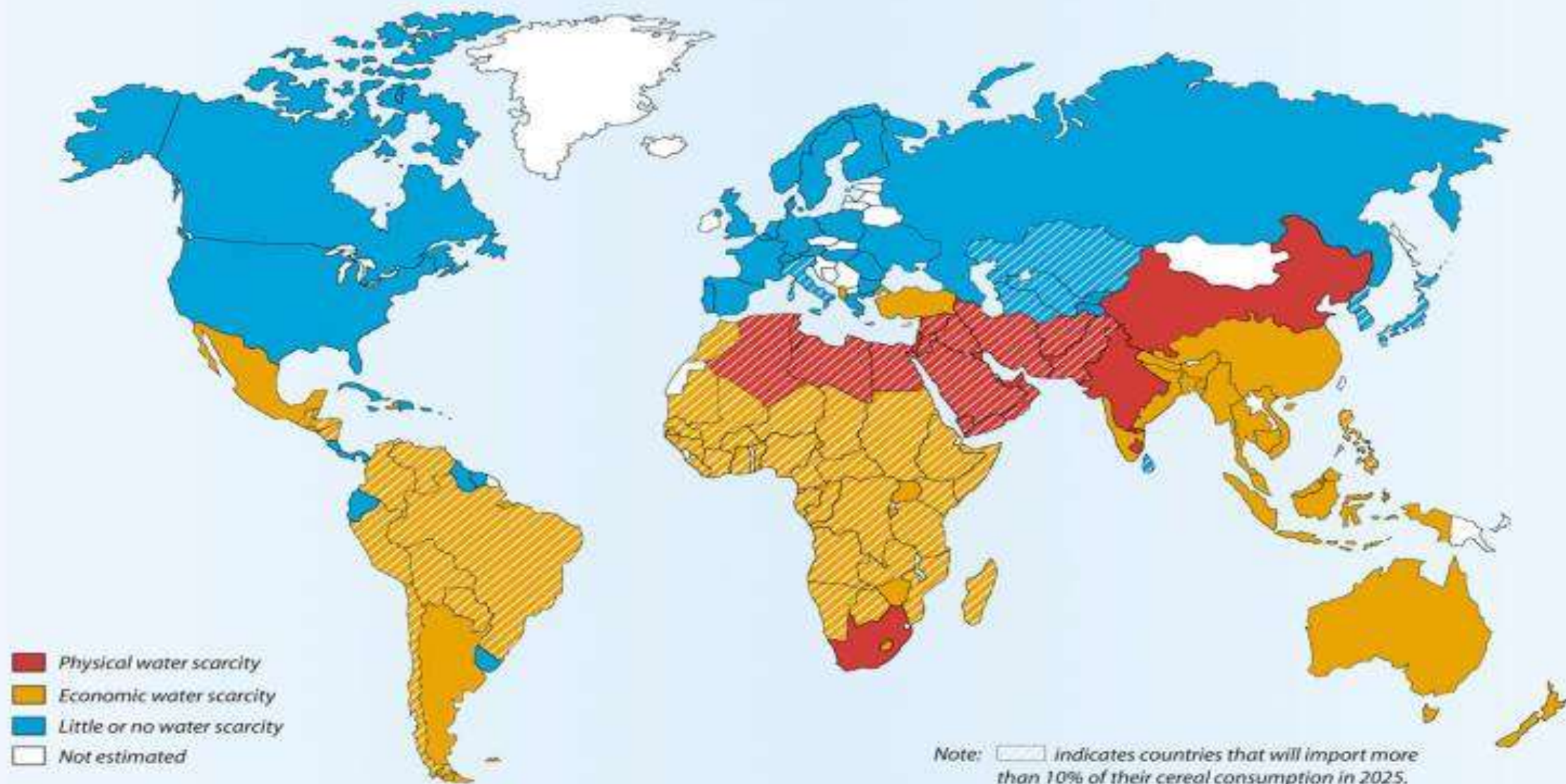
# Reducing per capita water availability



\* As per Falkenmark Water Stress Indicator



## Projected Water Scarcity in 2025



DTP Unit, IWMI-January, 2000

# Importance of Ground water

## Ground water accounts for

- 60 % of irrigation needs
- 85% of rural drinking water needs
- 50% of urban water needs
- Last 40 years – GW contributed more than 80 % in increasing Net Irrigated area
- Contributes about 9 % to GDP
- Since 1975 , Indian Agriculture has emerged as worlds largest user of ground water to grow food and fiber.

**Sustainability is major Challenge**

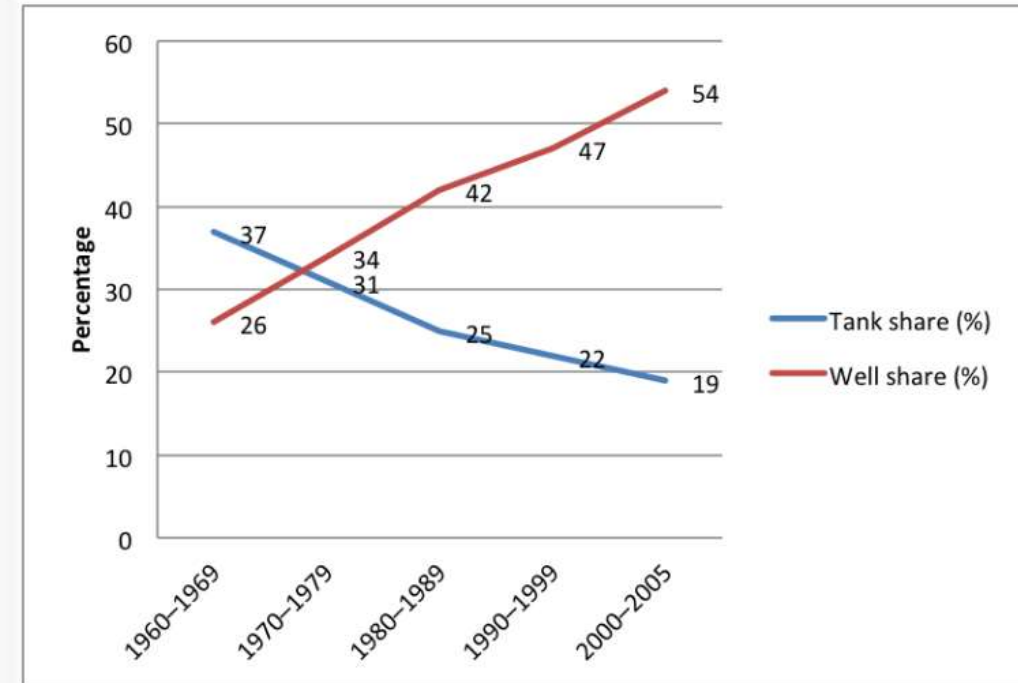


Figure 1: Percentage share of well-irrigated and tank-irrigated area in total irrigated area in Tamil Nadu from 1960 to 2005

An assessment of the replacement of traditional irrigation systems by private wells in Tamil Nadu, India  
POSTED ON OCTOBER 30, 2012 IN [DEVELOPMENT, ECONOMICS](#)  
Dr. Kei Kajisa, International Rice Research Institute, the Philippines

**Can we sustain this level of Utilization of GW Resource...???**



# Water Governance-National Perspective

**State List- entry 17 of List-II subject to the provision of Entry 56 of List-I i.e. Union List.**

**Entry 17 of List II (State List): “Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to provisions of entry 56 of List I.”**

**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.”**

**River Boards Act, 1956 (Under Art.246, List 1, Entry 56)**

**Art.262. Adjudication of disputes relating to waters of inter-State rivers or river valleys**

**Inter State Water Disputes Act, 1956 –provides for setting up of Tribunals**



# State / UT Specific Action Plan on Water

1. State Water Budgeting- Annual exercise
2. Preparation of interim report on:
  1. Impact of Climate change on State.
  2. Alternative Interventions required to address each of the issues/concerns identified in Status Report and Interim Report.
3. SSAP- Water 2050

# Water Dimensions



# Water – Multi-Disciplinary

## Source wise

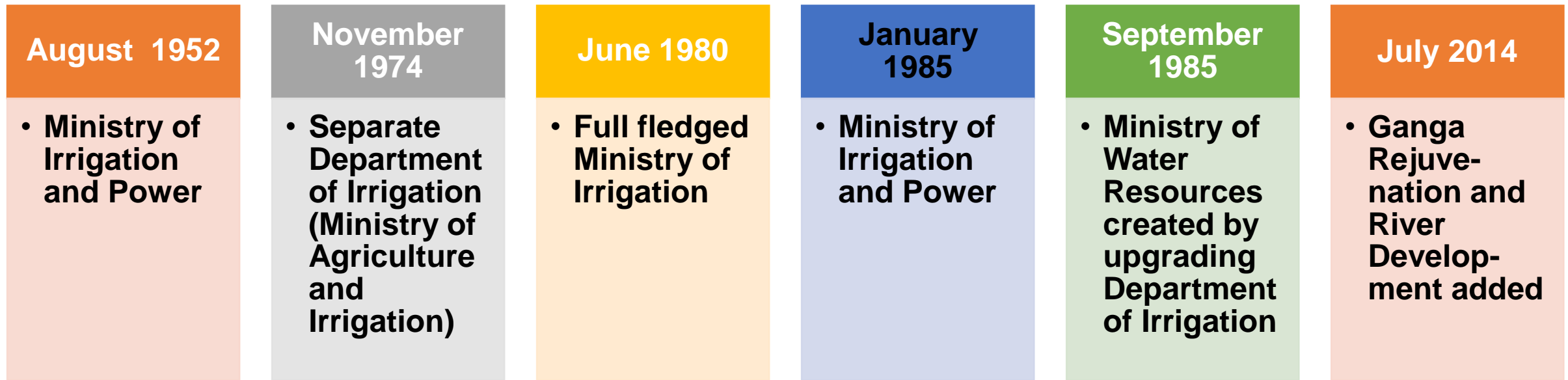
1. Climate-Precipitation (Rainfall/ Snow)
2. Glaciers
3. Springs
4. River Basins
5. Projects- Irrigation / Multi-purpose
6. Water Bodies-(urban and Rural) : Ponds/ Tanks
7. Wetlands
8. Coastal Region
9. Ground Water Resources
10. Waste Water
11. Other Sources

## Demand / Consumption side:

1. Forestry and Wild Life
2. Farm sector
1. Agriculture- Rain fed& Irrigated
• Rice / Wheat/ Sugarcane / Cotton
2. Horticulture
3. Livestock, Birds and others
4. Fisheries & Others
3. Industry & Infrastructure
1. Packaged Water
2. Thermal Power Plants
3. Textiles and Jute
4. Paper and Pulp
5. Iron and Steel
6. SEZ etc.
4. Establishments / Institutions
• Universities / Hospitals/ Establishments
5. Drinking water and Domestic use- Rural/ Urban



# Evolution of Ministry of Water Resources, River Development & Ganga Rejuvenation



Evolution timeline



Governance

Supply

Water  
Sustainability /  
GapsChallenges/  
Water Budget

Demand

Technology

W  
A  
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# STATE / UT WATER BUDGET-ANNUAL EXERCISE

Challenge: Hydrological Unit vs Administrative Unit

## State/ UT Water Budget

<b>Income</b>		<b>Expenditure</b>		Gap
Utilisable Water Resources		Allocation of Water Resources		
Source wise		Sector wise		
Surface Water		Rain fed Agriculture		
Irrigation Projects		Irrigated Agriculture		
Water Bodies		Industry		
Lakes				
Ponds / Tanks		Thermal		
Ground Water		Steel		
Other sources		Textiles		
		Others		
		Drinking Water		
Waste water		Other uses		



# Pareto principle: 80/20 rule

- For many events, roughly 80% of the effects come from 20% of the causes.
- Pareto noticed that 80% of Italy's land was owned by 20% of the population

**Distribution of world GDP,  
1989<sup>[8]</sup>**

Quintile of population	Income
Richest 20%	82.70%
Second 20%	11.75%
Third 20%	2.30%
Fourth 20%	1.85%
Poorest 20%	1.40%

# Way forward: Water Security and Safety

## Challenges

- Understanding
- Single Agency for management
- Identification of Stakeholders
- Convergence- Common understanding
- Harmonising –Science and Administrative units
- Re-engineering of Governance
- Institutionalisation

## Way forward

- State Water Budgeting



*Only by together  
we can make a difference*