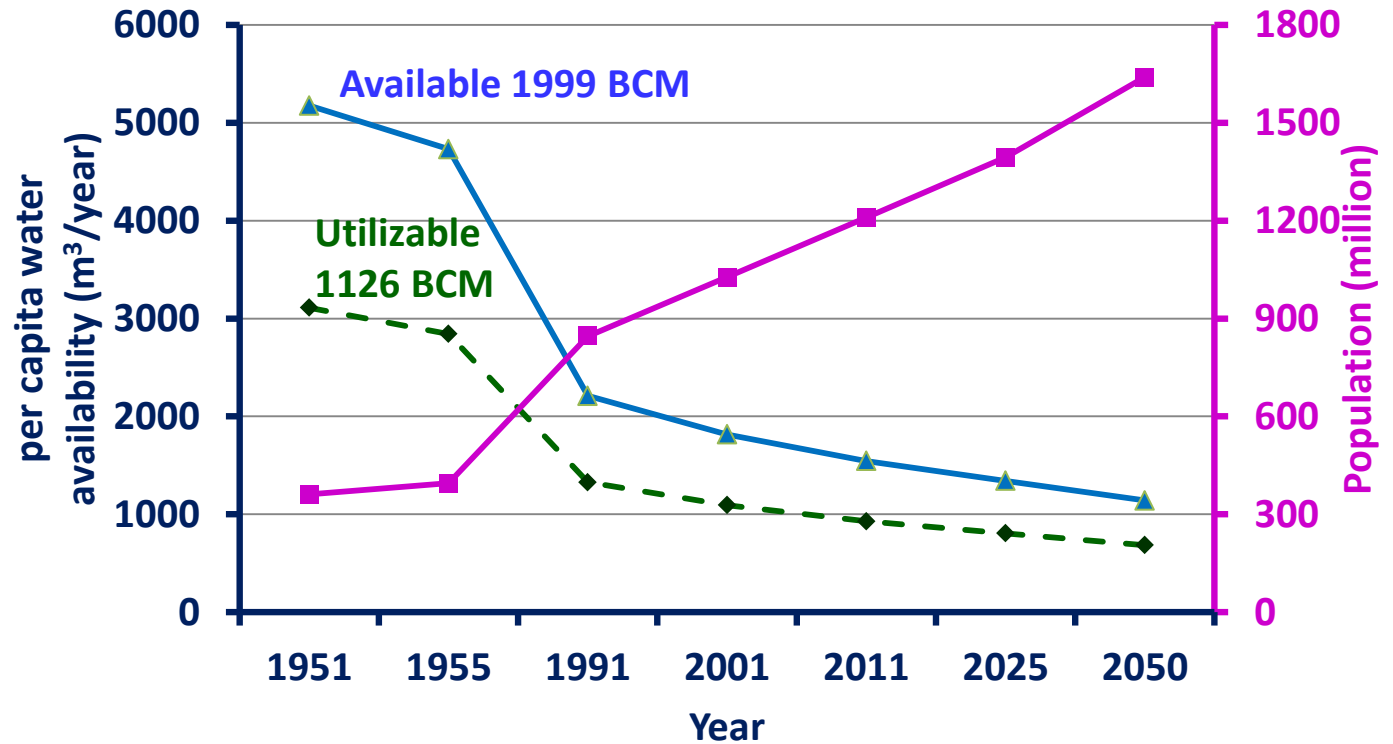


DAMS FOR WATER & ENERGY SECURITY

Dr. R K Gupta
Chairman, Central Water Commission
Ministry of Jal Shakti

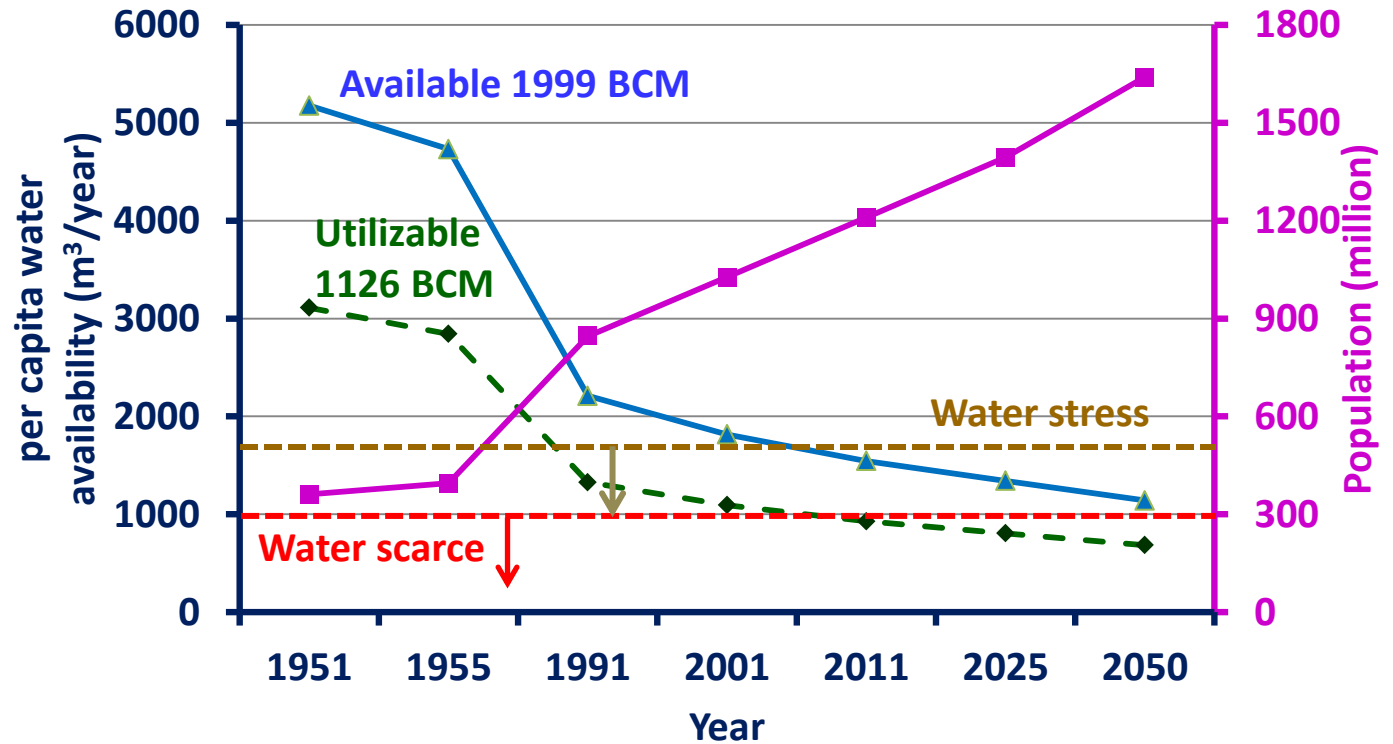


WATER SCENERIO IN INDIA



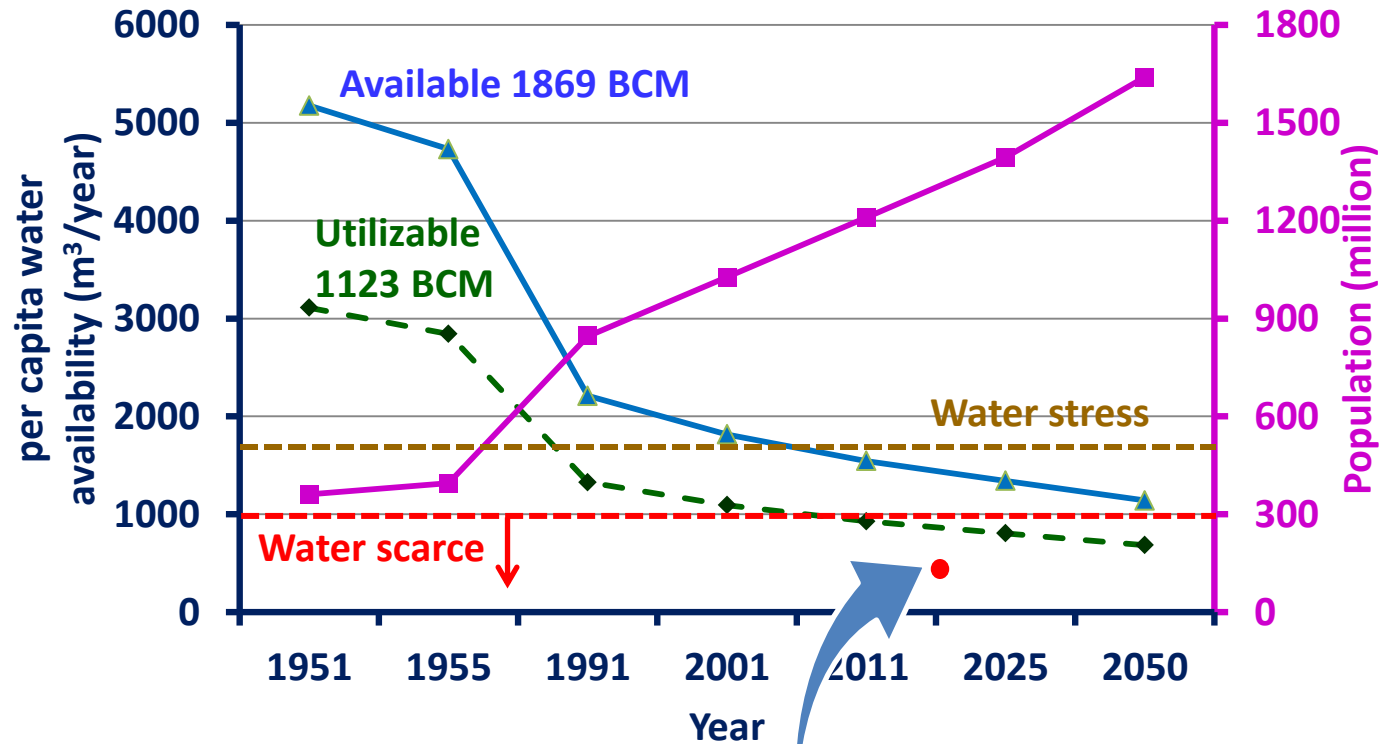
With population rise, per capita water availability goes down

WATER SCENERIO IN INDIA



With population rise, per capita water availability goes down

WATER SCENERIO IN INDIA

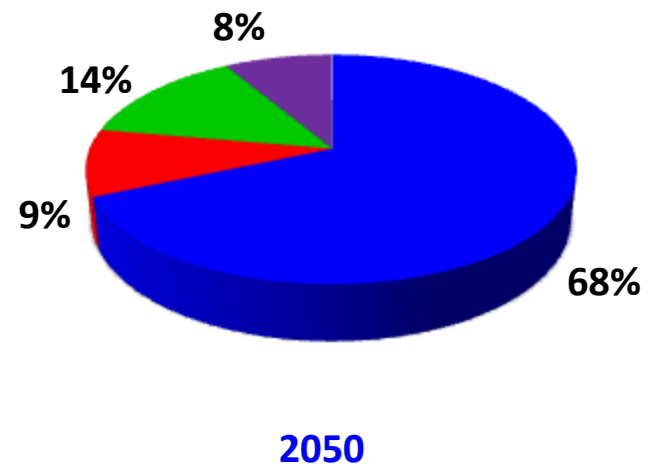
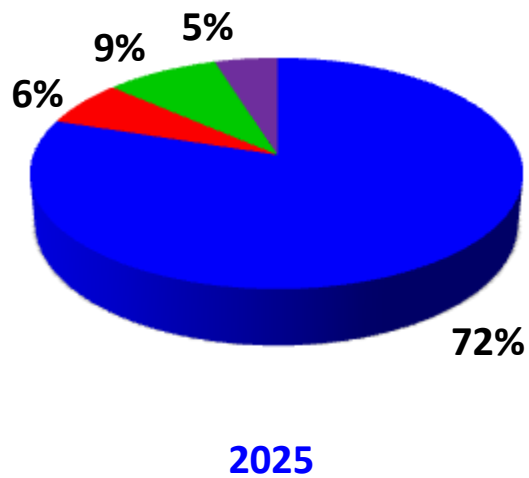
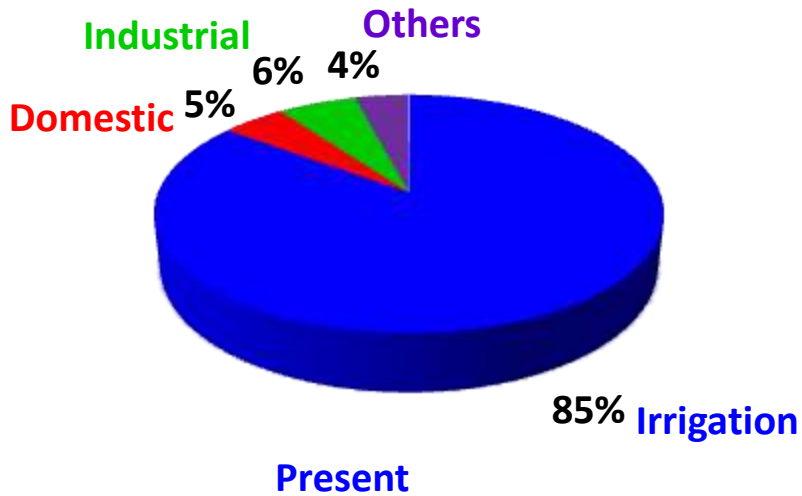
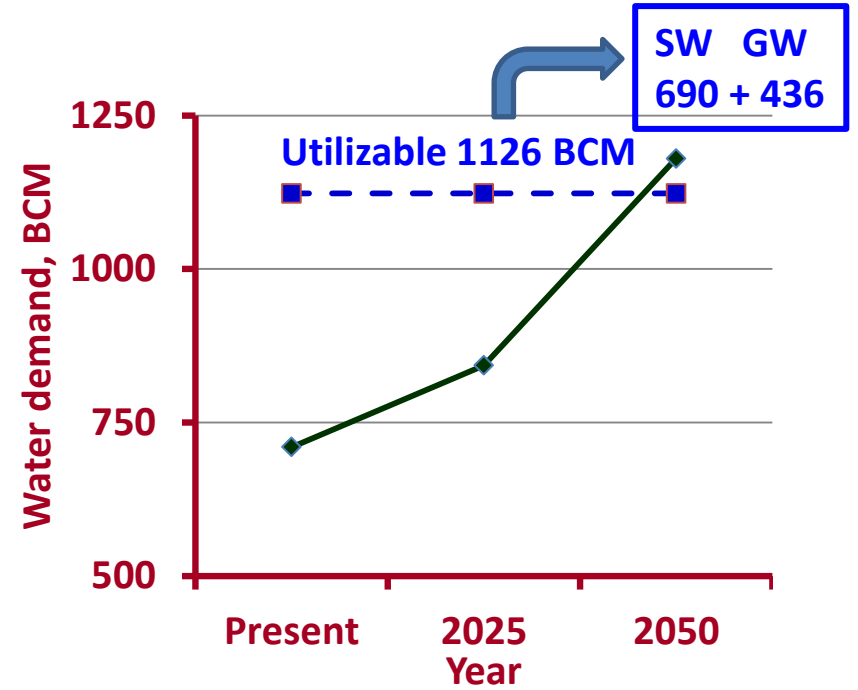
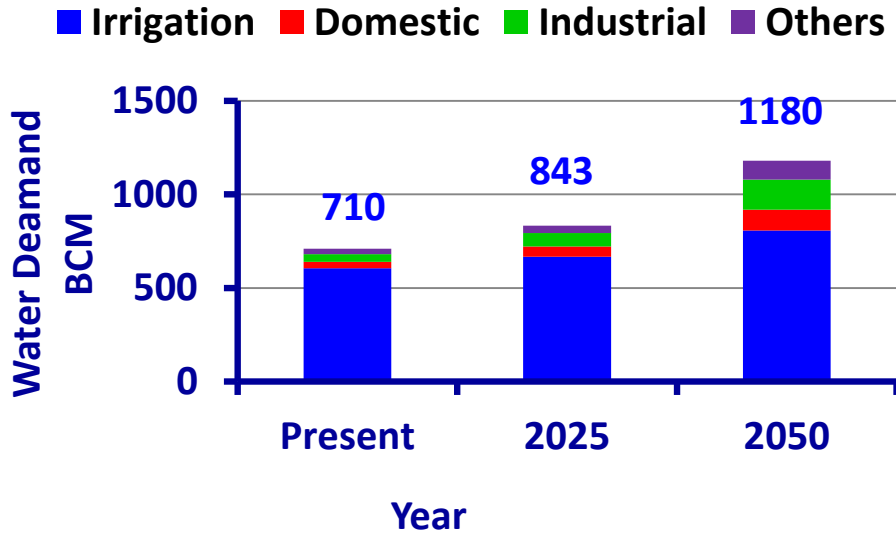


Present per capita water use

With population rise, per capita water availability goes down

Present water use
SW[≈] 450 BCM + GW[≈] 245 BCM

WATER DEMAND



WATER AVAILABILITY

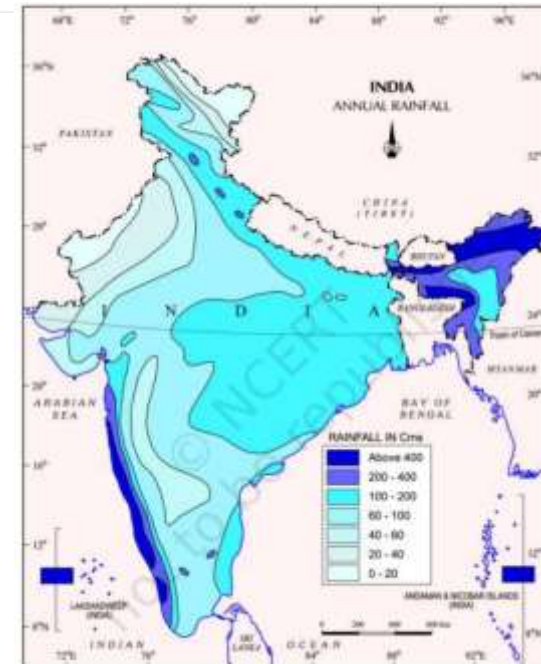
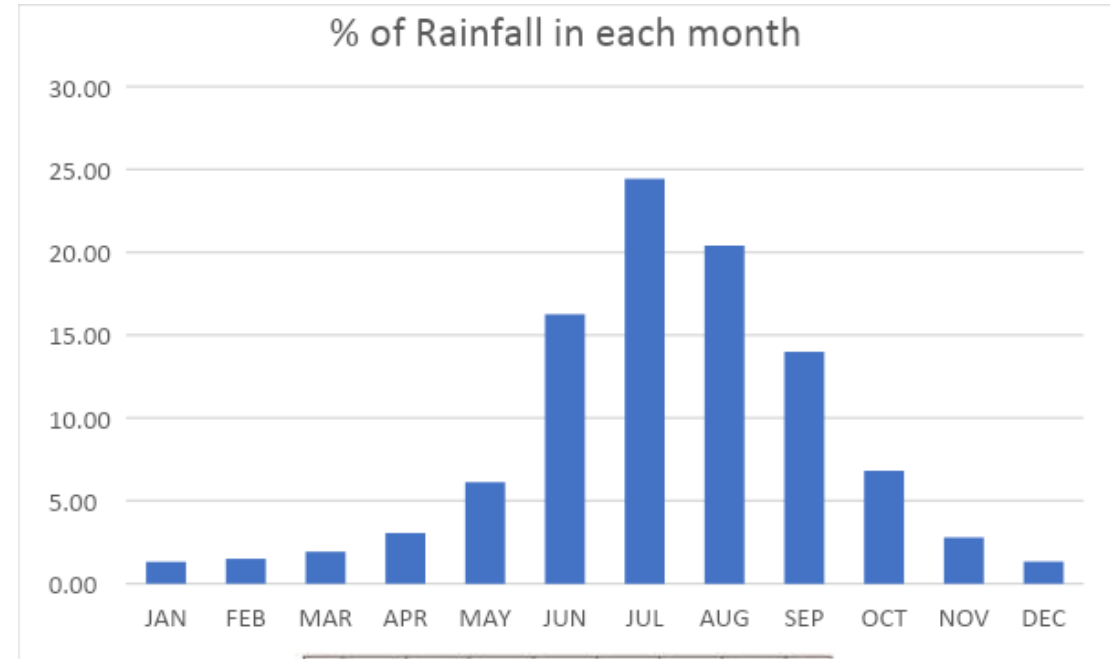
SPATIAL & TEMPORAL VARIABILITY

India receives about 80% of rainfall in just four monsoon months

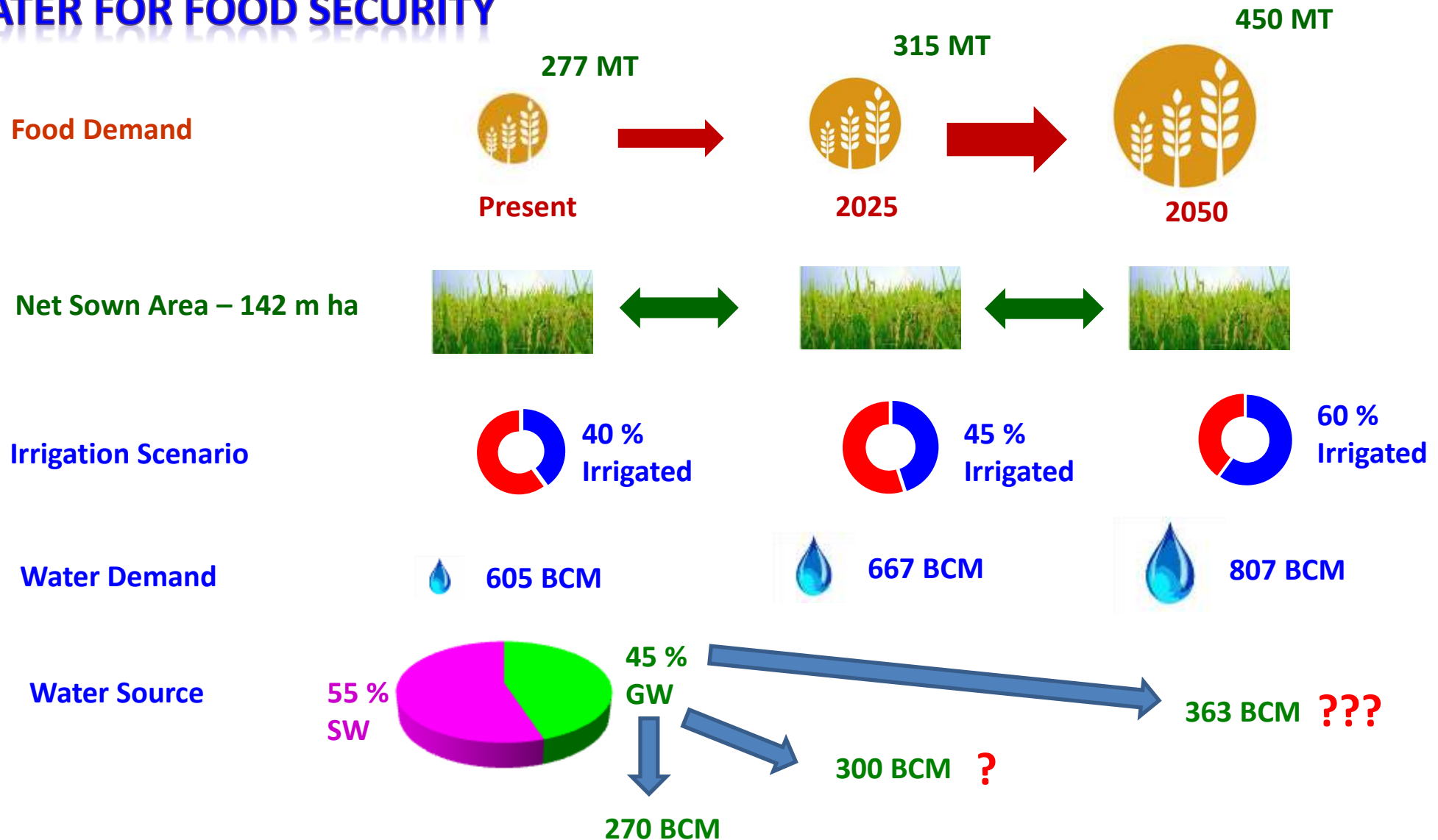
75% of Monsoon rainfall occurs just in 28 days

Annual rainfall variation – 200 mm to 4000 mm

To meet the challenges of spatial and temporal variability of water availability- Water storages are needed

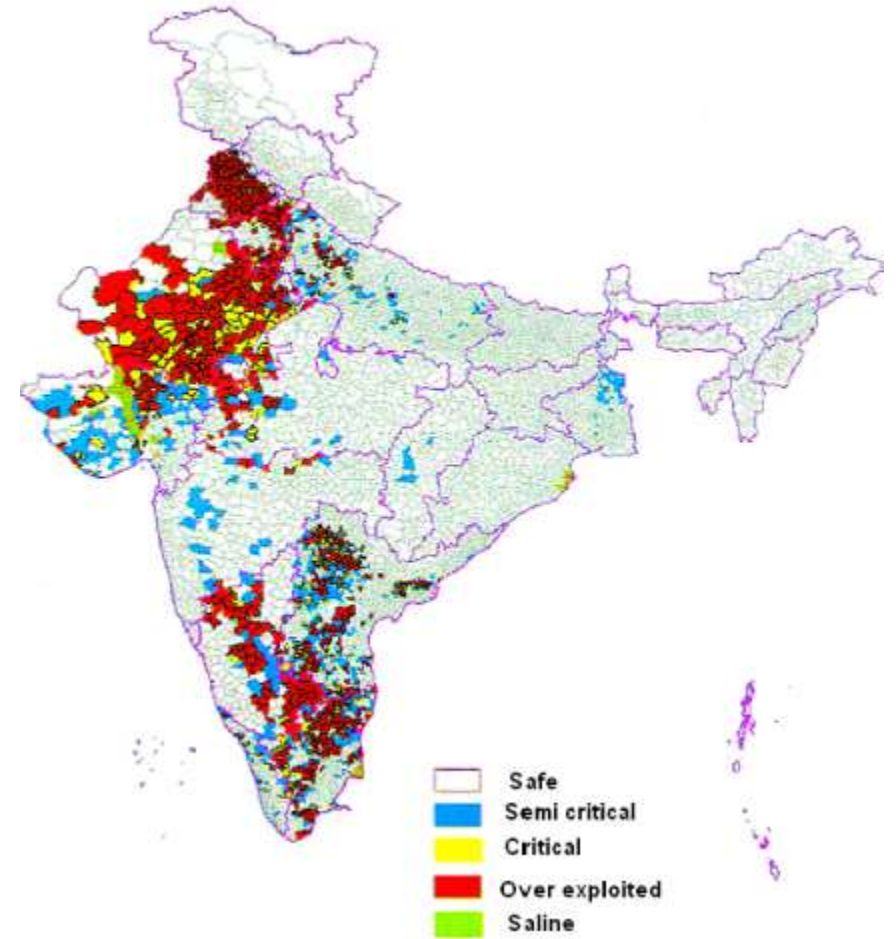
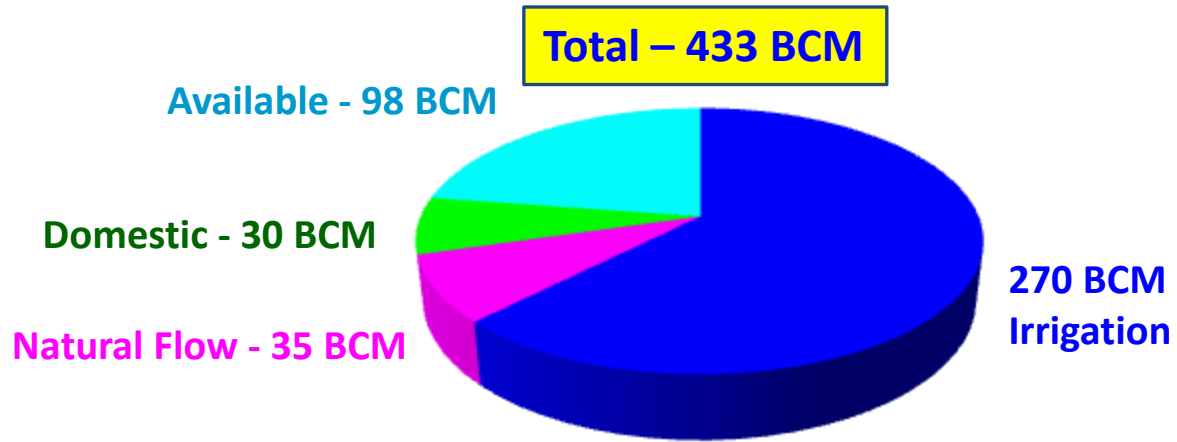


WATER FOR FOOD SECURITY



Water availability has to be increased with increased Efficiency

GW SCENARIO – *Can ground water solve the water Scarcity problem ?*



GW - Already a case of over-exploitation

- 15% Blocks (out of 5723) – over-exploited
- Another 15% - Critical stage
- Low water table



Ground water depletion & contamination



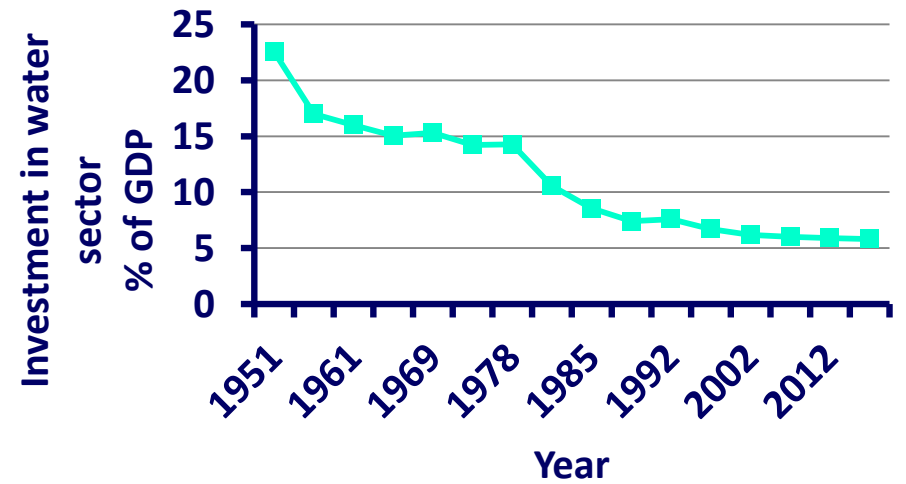
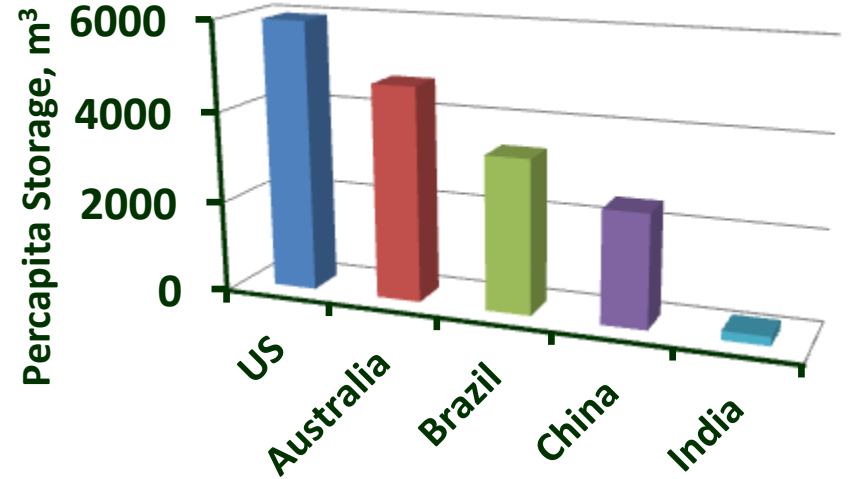
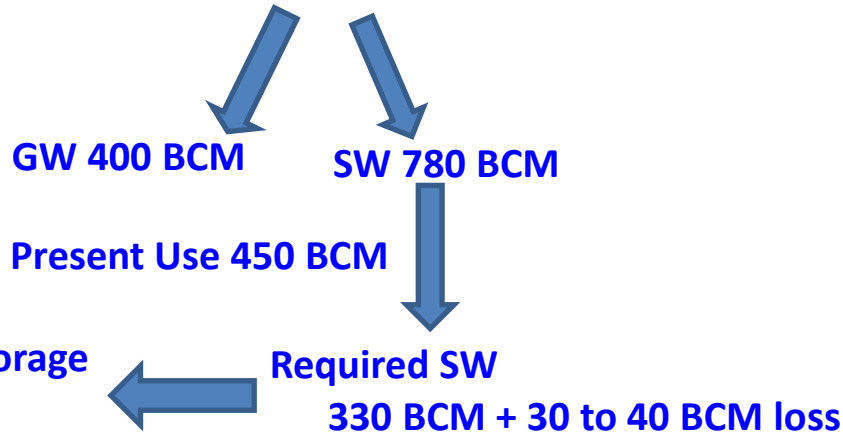
***Urgent need to stop over-exploitation
And to regulate the GW extraction***



GW recharge to be promoted for its sustainability

THE CASE OF CREATION OF STORAGES IS COMPELLING

Water Demand in 2050 – 1180 BCM



Creation of Storages, large or small are inevitable.

Major thrust is needed with large investments.

CLIMATE CHANGE WILL INCREASE THE NEED OF STORAGES

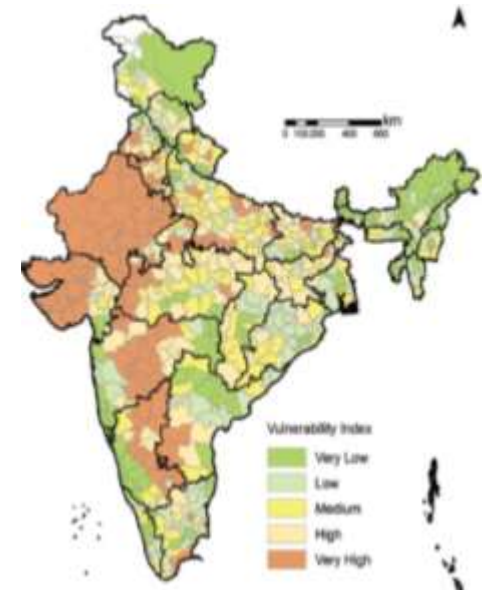
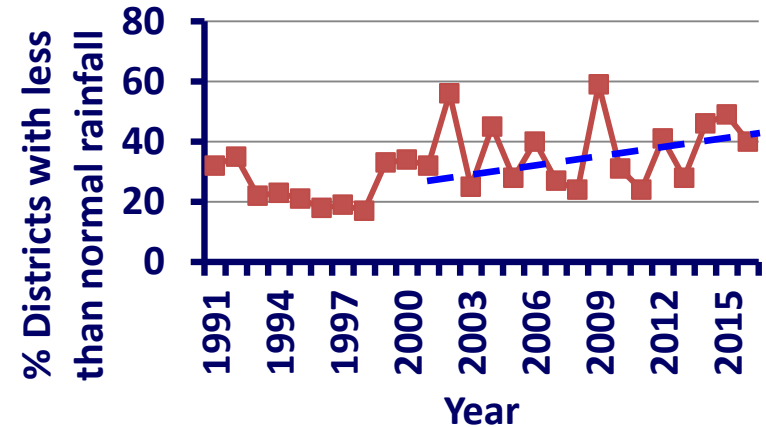
As per WB Report, Climate Change Impacts on India

- Changing rainfall patterns
- Increase in frequency of extreme events leading to shortages in some areas
- Dry years are expected to be drier & wet years wetter
- Draughts may be more frequent in some regions
- GW table may further fall
- Seasonal water scarcity
- Food production will fall



What is needed ?

Storages will increase resilience to impacts of Climate Change



Vulnerability of agriculture to climate change

STORAGE DAMS FOR HYDROPOWER DEVELOPMENT

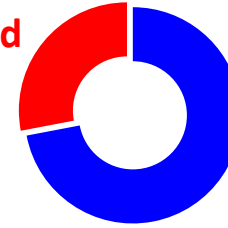
Need for Hydro-electric energy is well known

- *Increase in other renewable energy with intermittent nature*
- *Water scarcity for thermal plants*
- *Low carbon energy solutions are needed*

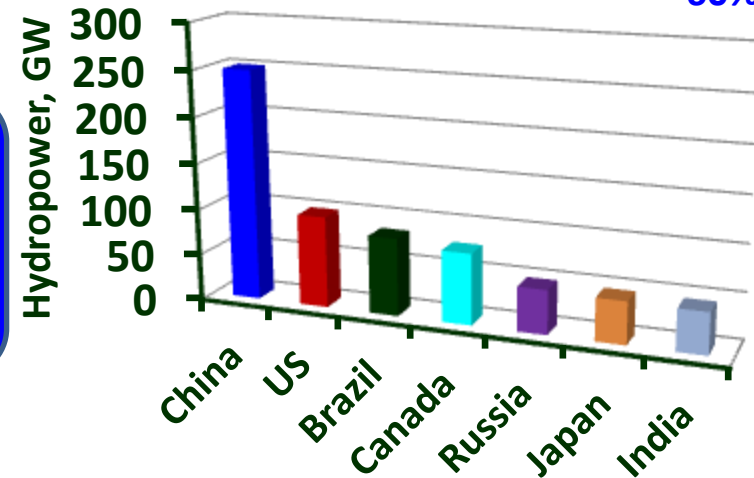
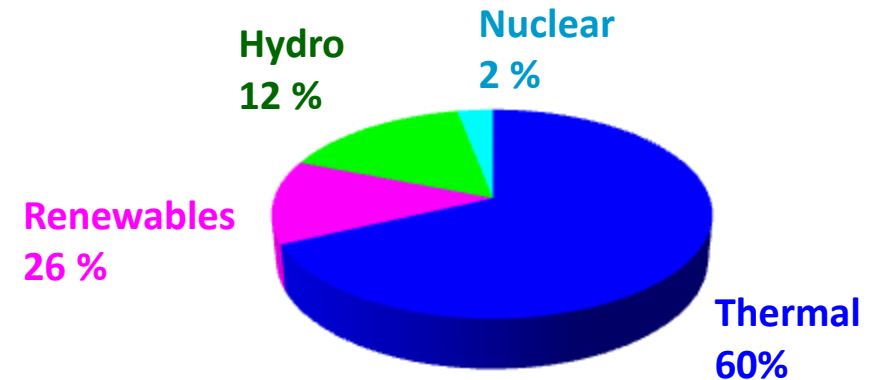


- *Thrust to Hydropower Development is needed for energy security*
- *Multipurpose developments are needed for better economic and financial performance of large projects*

**45GW
Tapped**



**1,15 GW
Untapped**



STORAGE DAMS FOR FLOOD CONTROL

Hydrological Shocks

- *75 – 80% Rainfall in 4 months*
- *Frequency of extreme events on rise*
- *Spatial variability in rainfall*
- *Climate change will further worsen the situation*
- *Extreme flooding events will rise*

Dams with *flood storages* are needed to control the disasters



INFERENCES

Storages are needed to quench thirst, to eradicate hunger & poverty.

Storage Dams, small to large needs to be developed for water security, energy development, to control water disasters and to fight the fury of climate change.

To save fresh water and to avoid its wastage, Storage Dams are needed.

For sustainability of GW, artificial GW recharge dams are needed.

For safe and happy future, Storage Dams are inevitable.



THANK YOU

