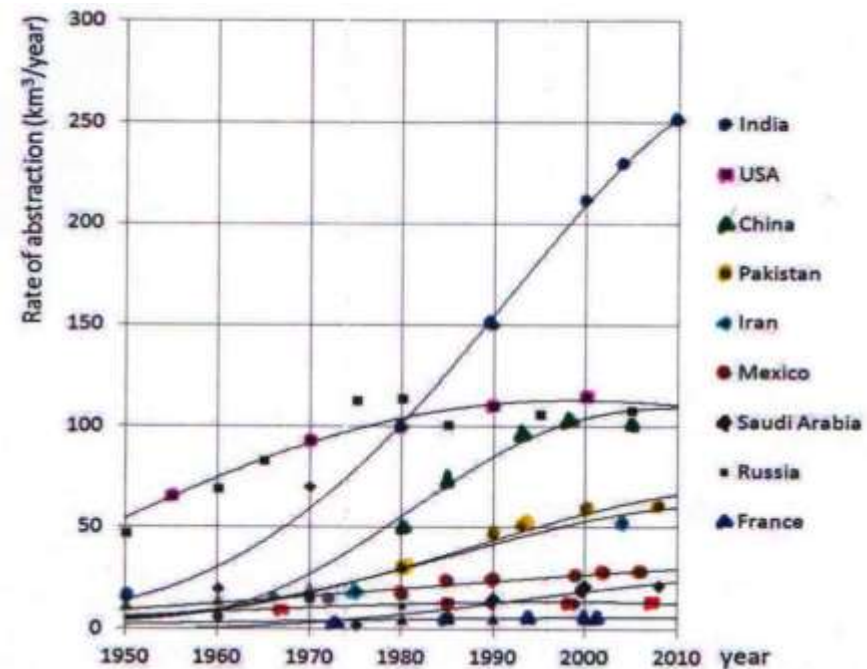


# Groundwater Governance

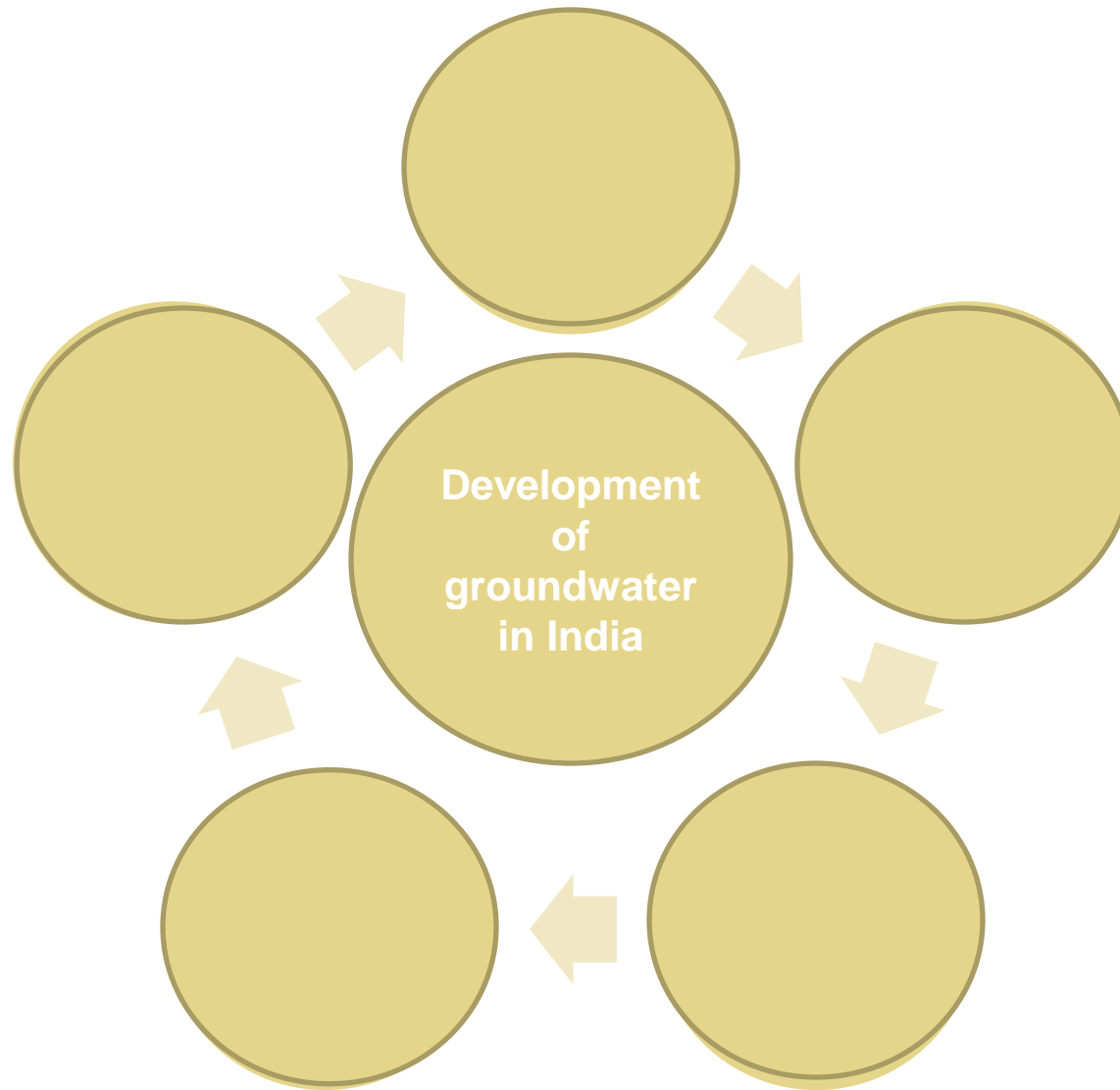
# Dependence on groundwater

- Global aggregated groundwater abstraction has increased six fold during last 50 years.
- It is estimated to be 986 km<sup>3</sup>/year in 2010.
- India, USA and China account for 48% for the global groundwater use.



*After Margat and Van der Gun, 2013*

# Development of groundwater in India

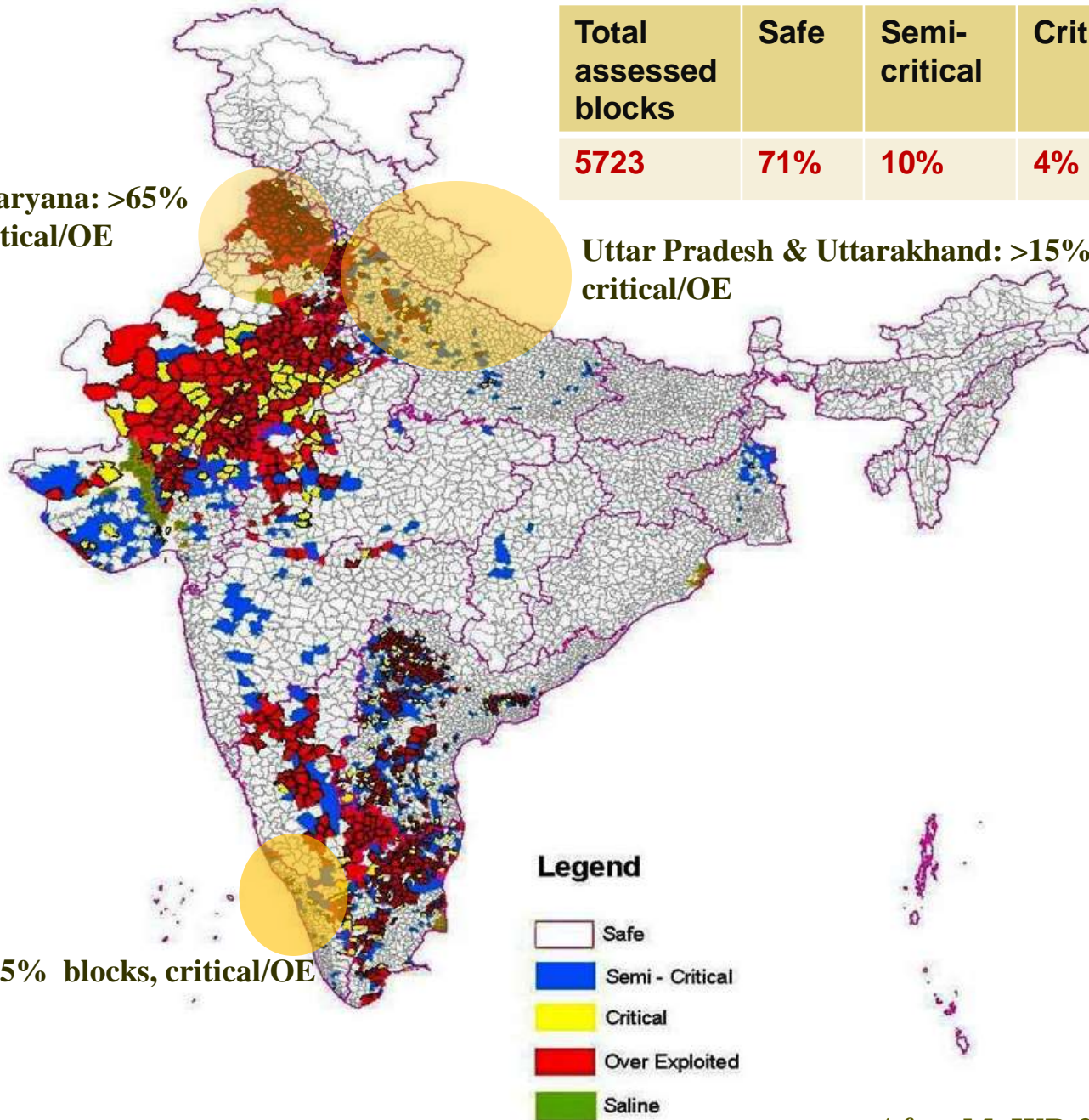


Total assessed blocks	Safe	Semi-critical	Critical	Over - exploited
5723	71%	10%	4%	15%

**Punjab-Haryana: >65% blocks, critical/OE**

**Uttar Pradesh & Uttarakhand: >15% blocks critical/OE**

**Kerala: >15% blocks, critical/OE**



*After MoWR 2004 & CGWB 2006*

## Legislation ???

- By imposing strict laws and regulation for groundwater use
- Many countries have legislation like EU, Iran.
- Agreements on controlling groundwater use

## Management ???

- Groundwater as CPR (Common Pool Resource)
- Community participation
- Awareness generation and community sensitization

## Answers to the groundwater problems



	USA	Middle east Asia (Saudi Arabia, Oman)	China	South East Asia (Pakistan, Bangladesh)	India
Political situation	Federal democracy	Monarchy	Communist	Democracy	Democracy
Economic status	High	High	Moderate	Poor to moderate	Moderate to poor
Density of population	Low	Low	High	High	High
Dependen cy on GW	Low	Moderate	Moderate	High	Very High
GW law/ policy	Yes	Yes	Yes	No	Partially yes
Control over GW use	Partially	Total	Mostly	No	No

# Groundwater management

- It is a planned and ongoing activity to optimize use of GW resources,
- In a sustainable manner,
- Through some formal agreement,
- To attain economic benefits and to have ecological balance.

**Groundwater management**



Inherent complexity of GW settings

Low level of political commitment

Lack of co-ordination among stake holders

Weak Institutional support

Flaws in legislation



# Critical issues

- Legal position of groundwater is not clear.
- No uniform policy for groundwater for the entire nation.
- No legal authority to 'Panchayats'.
- State wise policy: restricted for drinking water.
- No factual data available for GW for framing policy.



# Coca Cola Vs Perumatty GP

- Plachimada village in Perumatty GP in Kerala complained against Coca-Cola for over-exploitation of GW and polluting the water resources.
- Single bench in the Kerala High Court upheld the action taken by the Panchayat for protecting the fundamental rights of the people.
- But the division bench in appeal decided in favour of the Company's right to extract groundwater from its property

# Serious Issues in Plachimada

- The delay on the part of the government to notify the Ground Water Act of 2002 .
- Ignorance by CGWB and KGWD on issues regarding water pollution and depleting water levels...
- Permission to Coca cola to set up its plant in OE block.
- Dangerously high amount of heavy metals in water- no action by KPCB initially.

# Role of Panchayat

- **73<sup>rd</sup> and 74<sup>th</sup> Amendment in constitution- Panchayat to act as a micro level unit of local self-governance.**
- **The subjects 'minor irrigation, water management and water shed development' and 'drinking water' has been included in the Schedule of the powers and functions of the Panchayat.**



# Worldwide scenario

Several nations have  
GW legislation.

- Mexico
- Spain
- Iran
- USA
- Australia (1969)
- EU

International  
agreements on  
controlling GW

- Chad-Egypt-Libya-Sudan: Utilization of Nubian Sandstone aquifer system
- Algeria-Libya-Tunisia: NW Sahara aquifer system

# European Union Community Action in the field of Water Policy (2000)

- Water is not commercial product but a heritage which must be protected, defended & treated.
- GW quantity & quality
- Monitoring & impact assessment
- Protection zones
- Research, education & information
- International co-operation



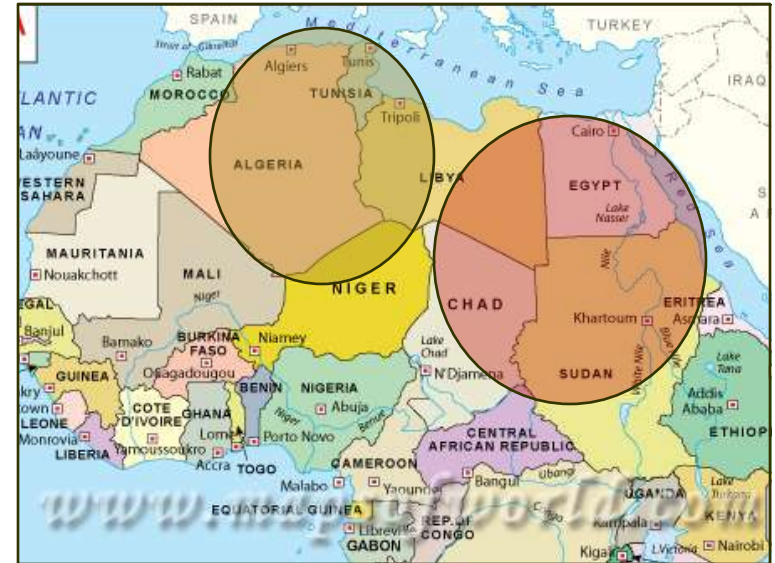


# International Groundwater Treaties

- Chad-Egypt-Libya-Sudan:  
Utilization of Nubian  
Sandstone aquifer system  
(NSAS)

- Algeria-Libya-Tunisia:  
NW Sahara aquifer system  
(SASS)

- South Australia-Victoria:  
Border Groundwater  
Agreement



# Development of Regulatory structure

- **Easement law (1882): Basic principles of access and control over groundwater.**
  - Proclaim the absolute rights of government on all natural water.
  - Landowners have rights to collect and dispose of all water found under their land.
- **National Water Policy (2002): Scientific approach**
- **Model bill (1970 re-proposed in 2005)**

2007 3 19

# Position of GW in States

- Groundwater as state's subject – actual prescription for adoption of Model bill has been left to state governments.
- So far, 11 states have enacted the Model bill while 18 other states are in process.



# India Outline Map

Blank Outline Map of India



# State-wise GW Law

State	GW Law
Andhra Pradesh	Andhra Pradesh Water, Land and Trees Act and Rules, 2002) Andhra Pradesh Ground Water (Regulation for Drinking Water Purposes) Act, 1996
Bihar	Bihar Groundwater (Regulation and Control of Development and Management) Act, 2006
Chhattisgarh	Chhattisgarh Ground Water (Regulation and Control of Development and Management) Bill, 2012
Delhi	Delhi Groundwater Regulation Direction, 2010
Goa	The Goa Ground Water Regulation Act, 2002
Punjab	Punjab Preservation of Subsoil Water Act, 2009
Haryana	Haryana Preservation of Subsoil Water Act, 2009) and (Haryana State Groundwater Management and Regulation Bill, 2008)



Tamil Nadu	The Tamil Nadu Groundwater (Development and Management) Act, 2003 and Chennai Metropolitan Area Groundwater (Regulation) Act, 1987
Kerala	The Kerala Ground Water (Control and Regulation) Act, 2002
Karnataka	Karnataka Ground Water (Regulation and Control of Development and Management) Act, 2011 and The Karnataka Ground Water (Regulation for Protection of Sources of Drinking Water) Act, 1999
West Bengal	The West Bengal Ground Water Resources (Management, Control And Regulation) Act, 2005
Himachal Pradesh	The Himachal Pradesh Ground Water (Regulation and Control of Development and Management) Act, 2005
Lakshadweep	Lakshadweep Ground Water (Development and Control) Regulation, 2001
Pondicherry	The Pondicherry Ground Water (Control and Regulation) Act, 2002
Maharashtra	Maharashtra Groundwater (Development and Management ) Bill, 2009) and The Maharashtra Groundwater (Regulation for Drinking Water Purposes) Act, 1993

# **Maharashtra Groundwater (Development and Management) Act, 2009**

- Maharashtra Water Resources Regulatory Authority (MWRRA) is the state groundwater authority for implementation of this Act.
- The Act will be enacted in close consultation with GSDA.

# **State GW authority, its power, function and duties**

- Powers to notify and de-notify areas to regulate development and management of groundwater.
- Protection of groundwater quality
- Registration of all well owners in the state
- Prohibition of drilling of deeps wells, withdrawal of groundwater from existing deep well for irrigation and industry.

# **In notified areas...**

- Total prohibition on pumping from existing deep well of a depth of 60 m. or more.
- Users shall follow GW use plan and crop plan prepared by govt.
- Sale of groundwater, without prior permission is banned.

# Other recommendations

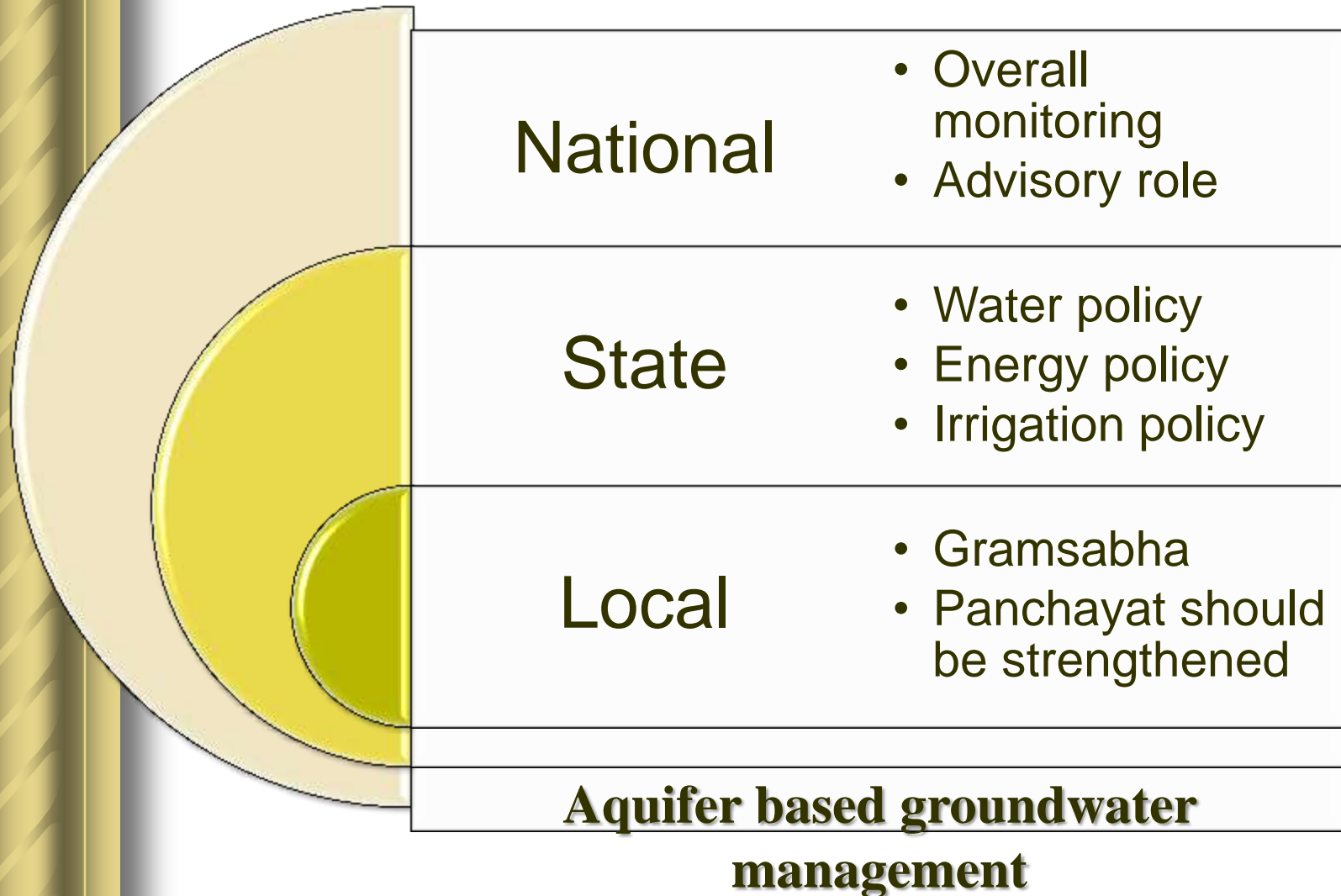
- Identification of recharge worthy area and implementation of the Integrated Watershed Development and Management plan through community participation.
- Rainwater harvesting in urban areas
- Sensitization and awareness generation about GW.
- Registration of drilling agencies



# Limitations of state legislation

- External interference is enormous.
- Legislation is more of controlling and regulating mechanism.
- No incentive to already existing initiative of GW management in the policy.

# Groundwater governance



# Village based protocols

Protocols	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Geo-hydrology in WSD		✓	✓	✓	✓
Protection of recharge areas	✓	✓	✓	✓	✓
Efficient well use		✓	✓	✓	✓
Pump capacity regulation			✓	✓	✓
Distance (wrt drinking water well) regulation			✓	✓	✓
Depth Regulation (wrt drinking well)			✓	✓	✓
Regulation of Agricultural water use			✓	✓	✓
Groundwater management through sharing		✓	✓	✓	✓

GW  
exploitation

Governance

Good market  
links

Leadership

Availability of  
energy

Strong  
institutional  
presence

Good socio-  
economic  
condition

Felt need

Hivre Bazar  
Manyali

APFMGS  
Pani Panchayat

Springs  
Randullabad



# Proposed Model GW Bill 2011

- GW is a public trust. State at all levels (from the Panchayat to the state government) is the custodian of the resource.
- Right to water is an integral part of right to life.
- Proposes institutional framework for protection, conservation and regulation of GW in the spirit of 73<sup>rd</sup> and 74<sup>th</sup> amendment
- Proposes a new legal framework to ensure effective regulation of large-scale groundwater use (industrial commercial and infrastructure)
- Built around the need to regulate unreasonable uses of sources of groundwater that threaten the aquifer to ensure that the resource itself is protected
- Promotes conjunctive use of GW and surface water.
- Recognizes and accords protection to critical natural GW recharge zone.
- Aquifer based GW security plan.
- Proposes to set up a transparent information regime.
- Penalties for offences have been made more stringent.





**THANK YOU!**