# Participatory Groundwater Management

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- Conventional approaches to GW management
- Participatory water management: earlier experiences
- About Equity and Sustainability: Case of Pani Panchayat
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- Principles of Participatory Groundwater Management
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# CONVENTIONAL APPROACH OF GW MANAGEMENT

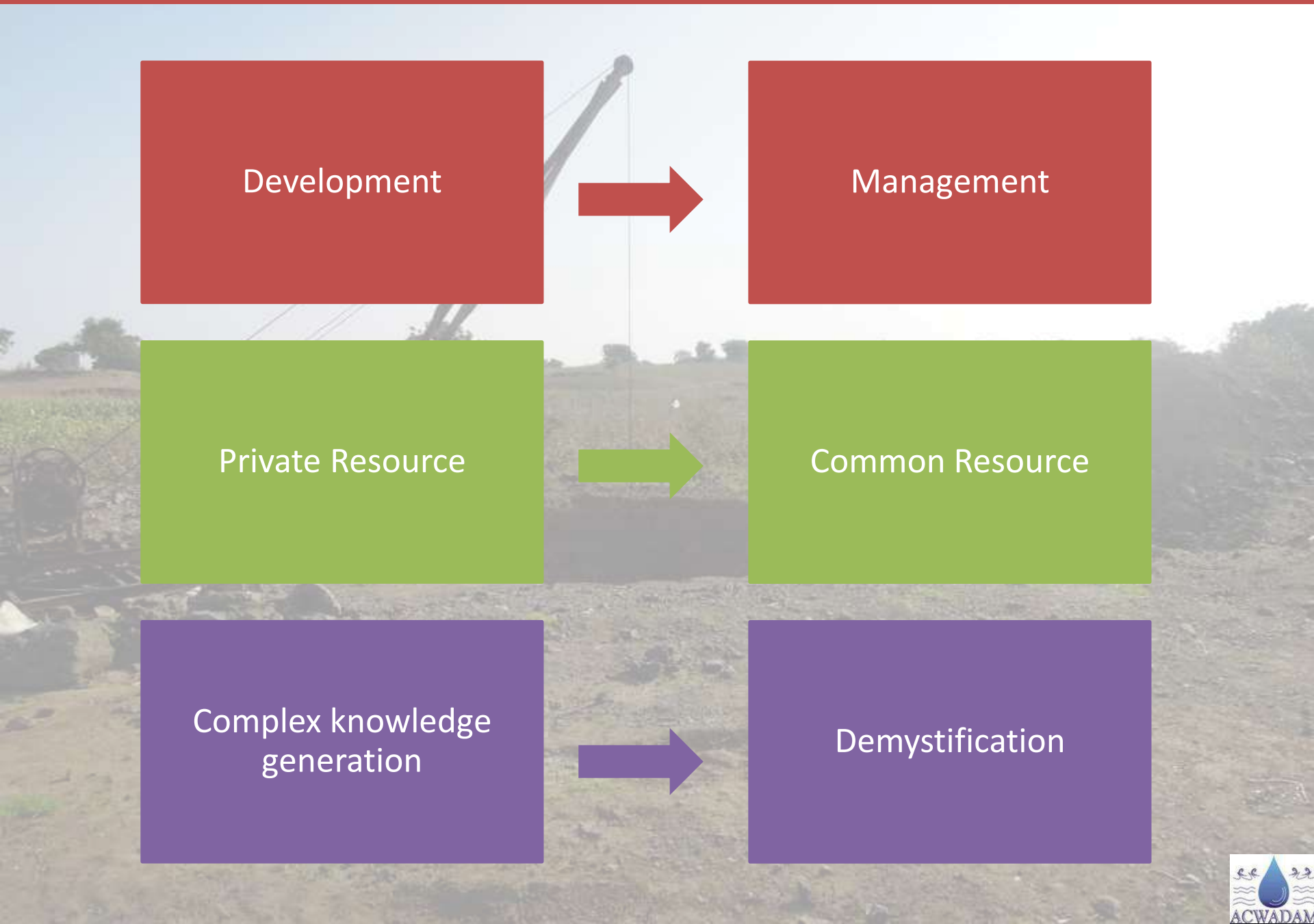
- **Watershed development programmes**
  - Focus on Structure building
  - Ridge to valley approach
  - Surface hydrology
  - Geology is missing
  - More development less management

- **Groundwater programmes**
  - Exploration of groundwater
  - Groundwater development


- **Community's perception**
  - Unlimited resource and freely available almost every where
  - Private property, My well-My water

- **Legal Framework:**
  - Supportive laws and institutions are missing
  - Current laws are only focusing to govern GW management
  - No scope or favourable environment provided for community based initiatives

# What needs to be done?



# Participatory natural resource management

- Local governance of resource
- Participatory approach

- Community based initiatives:
  - Van Panchayats of Uttarakhand
  - Mendha Lekha village in Gadchiroli

- Participatory water resource management: earlier experiences
  - Water cooperatives for surface water management
  - Paani Panchayat
  - Hiware Bazaar
  - APFAMGS
  - Saurashtra Dugwell Recharge Programme

# Community in groundwater management

- Villages as communities
  - Forest management, fisheries etc.
- Farmer groups as communities
  - Surface water irrigation schemes
- User -based communities
  - Agriculture
  - Drinking water
  - Animal husbandry

# “Pani Panchayat”: A Model of Groundwater Management

- Community level water management system; started by Mr. Vilasrao Salunke in 1974 after the drought in Maharashtra.

- Based on Groundwater:

Percolation Tank

↓

Well

↓

Equitable water distribution System

# Naigaon Trial

- Mr. Vilasrao found that Govt. measures are not able to deal with the situation of drought and is a short term measure.
- Shifted to Naigoan with family and took 40 Acre land on lease from village temple trust.
- Made a recharge pond in the recharge area of the village and constructed a dug well in the discharge zone.
- Installed a lift irrigation system and started irrigating the land and got wonderful yield result.
- Farmers got impressed with the result and approached Mr. Vilasrao to start similar trial for them.
- Mr. Vilasrao started GGP and trial from Naigoan spread in nearby area through GGP.
- Expanded on both Groundwater and surface water.

# Pani Panchayat principles looks at

- Only ***community irrigation*** schemes
- **Decoupling** the water and land rights,
- Water distribution on **per capita basis**, maximum for 2.5 acre land
- **Ban on water intensive crops** like sugarcane and banana.
- **20% contribution** by community.
- **No individual wells** in the command area.
- **Restriction on sale of land**; in case land is sold, irrigation right will not be passed to the buyer.

- **Equity**
- **Demand Management**
- **Rights of landless**
- **Community participation**
- **Sustainability of the resource**

# Today…

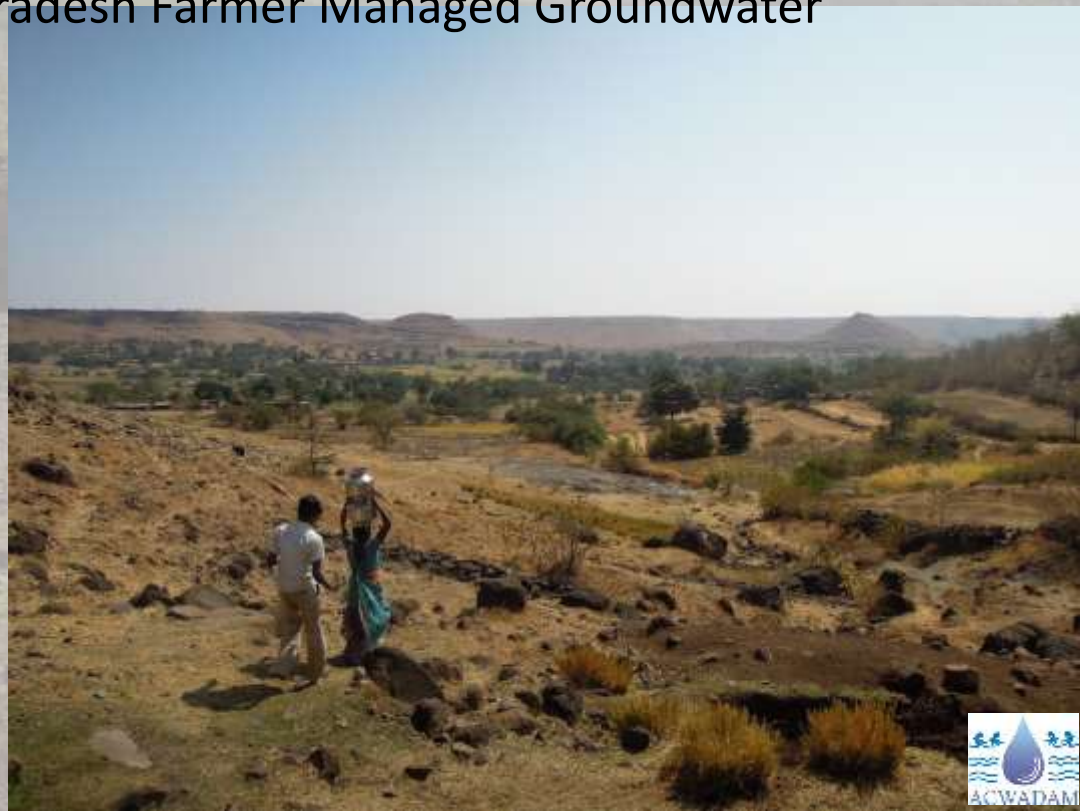
- Not existing in most of the villages or at the verge of closure
- Lack of Legal backup to the whole initiative, only community pressure and social mobilization
- Small size of initiative, which made it more vulnerable to “Free Riding”
- No control on abstraction in non Pani Panchayat  wells

# Hiware Bazaar

- A drought prone village in Ahmednagar district of Maharashtra
- Initiated a series of water conservation and augmentation of supply through local interventions
- Decisions taken up in Gram Sabha, abided by all, local rules and sanctions
- Integrated demand management through:
  - Ban on water intensive crops
  - No bore-wells for agriculture
  - Rainfall based cropping decisions

# APFAMGS:
# Andhra Pradesh Farmer Managed Groundwater System

- Community based groundwater management
- APWELL program (late 80s and early 90s):focus on access to irrigation
- Post 1999: environmentally sound interventions
- Participatory Hydrological Monitoring- 1999-2003 pilots
- Extensive and intensive PHM
- APFAMGS (2003-09): Andhra Pradesh Farmer Managed Groundwater Systems



# APFAMGS
## Components of Participatory Groundwater Management

- Well irrigation system
- Hydrological unit
- Participatory hydrological monitoring
- Farmer data Management
- Crop water Budgeting
- Artificial groundwater recharge
- Farmer water schools
- Community based institutions

Response:

- Decade long- involved half million men and women
- 661 habitations
- 20000 barefoot water technicians

# Saurashtra dugwell recharge programme

- Initiated in Gujarat- response to depleting water levels
- Voluntary action for improving water availability
- Rain water harvesting by recharging dugwells
- *Swadhyaya Parivar*
- Between 1992 to 1996 about 92,000 wells were recharged in Saurashtra and 300 *nirmal neer* (farm ponds) were constructed (Shah, 2000)

# A comparison of different initiatives

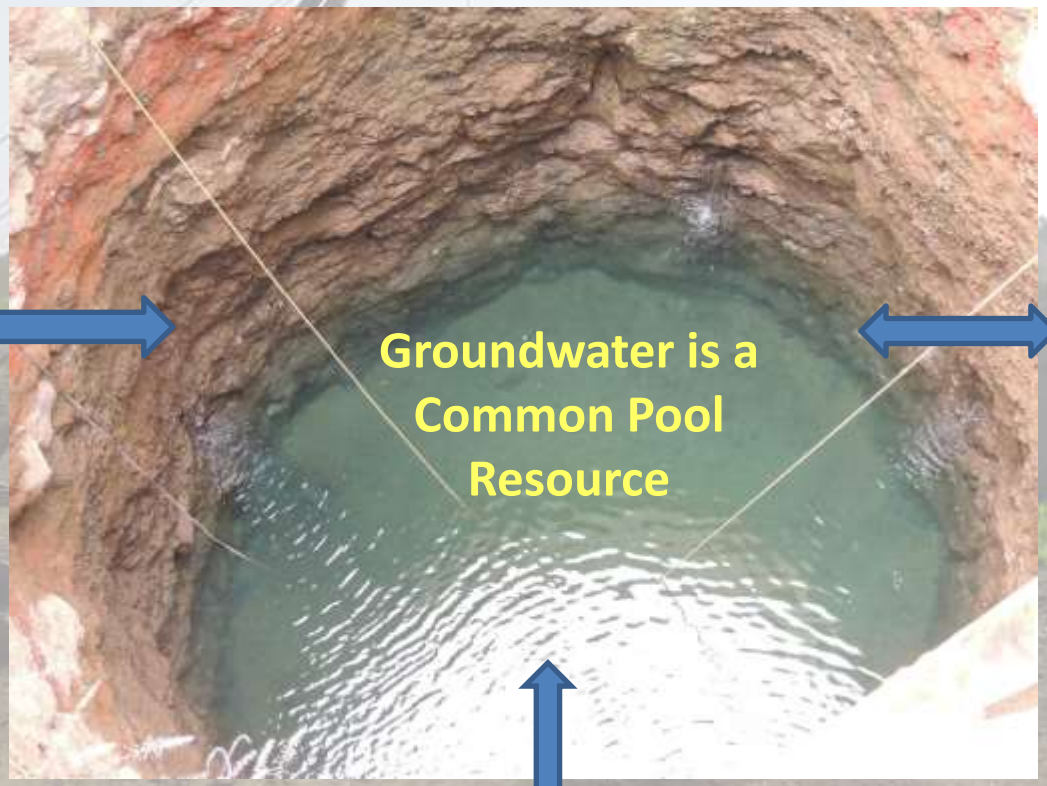
| Initiative | Source | Resource | Supply | Demand |
|---|---|---|---|---|
| Pani Panchayat | ✓ | | ✓ | ✓ |
| Hiware Bazaar | ✓ | | ✓ | ✓ |
| APFAMGS | ✓ | ✓ | ✓ | ✓ |
| Saurashtra dugwell recharge programme | ✓ | | ✓ | |

# Participatory Groundwater Management

# Need for Collaboration on Groundwater

Science, Information, Participation and actions backed by policy will lead to better groundwater management

Understanding of the aquifers which involves:
- Mapping
- Monitoring
- Data collection
- Analysis




Backed by law and policy on groundwater use

Community involvement
- Participation, Capacity Building
- Sensitization, awareness generation

# What is participation in PGWM?

| Level/type of participation | |
|---|---|
| Capacity building and training | understanding the resource and the problem |
| Action specific | undertaking specific tasks like hydrological monitoring, mobilizing community members etc. |
| Nominal and Passive | be part of meetings, surveys, group discussions- not necessarily effecting decisions |
| Empowering | Gram sabha, decision making process, institutional participation, engaging |
| Intervention | specific actions on ground based on inputs and agreed upon decisions like net planning, pump set regulation, etc. |

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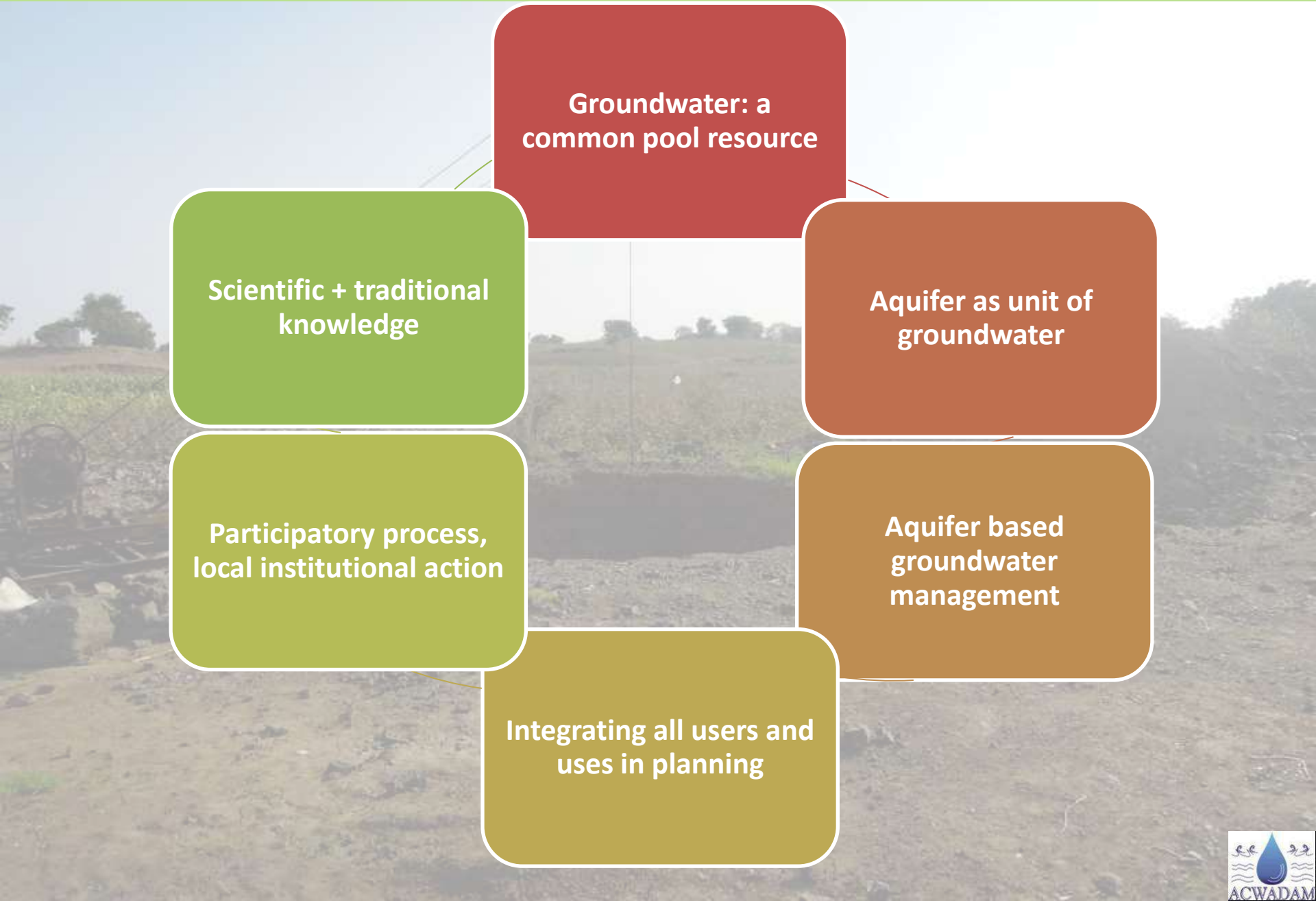
# Principles of Participatory Groundwater Management



| Principles | Action Agenda |
| --- | --- |
| Groundwater: A common Pool Resource | Shared resource, overarching dependency, ownership across caste, class, gender and other divisions |
| Clearly Defined Groundwater Problem | Quality and Quantity Issues, Over-abstraction, Weather characteristics, geological structures |
| Aquifer Based Groundwater Management | Hydrogeological Studies, Rock Structure, Water Table, Aquifer Mapping, Well Inventory, Watershed Mapping |
| Address Quantity as well as Quality Issues | Aquifer Storage, Groundwater availability, Quality: pH, Salinity, TDS, Fluoride & Arsenic |
| All Water Uses and Users should be integrated in the process | Crop Water Budgeting, Domestic, Drinking Water & Livestock Requirements |
| Participatory Process Engaging Local Community | Data Collection, Focused Group Discussions, Gram Sabha meetings, Trainings, Capacity Building |
| Institutional Arrangements, Sustainability of systems | Gram Panchayat Resolution, Water User Groups, Norms setting |

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# Phases of Participatory Groundwater Management

Collect historical, Socio-economic, Institutional data about the village

Understand groundwater use of the village (agriculture, domestic, drinking water)

Generate data about rock structure, hydrogeology, weather, water quality of the village

Community participation

Sensitization and Trainings for capacity building

Groundwater Management Plan

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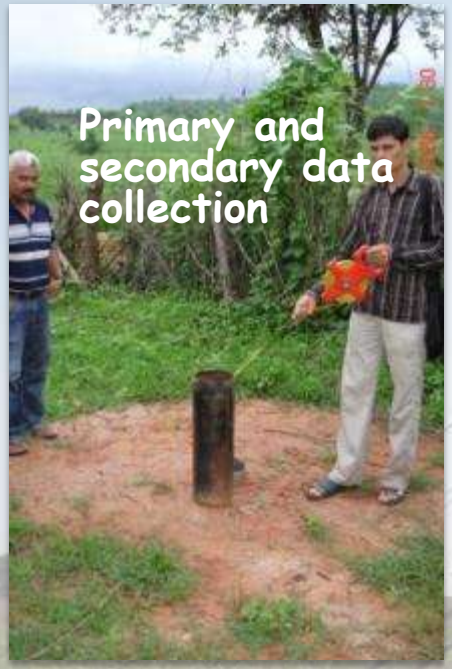
Primary and secondary data collection


Community dialogue
Estimate groundwater resources availability under various scenarios
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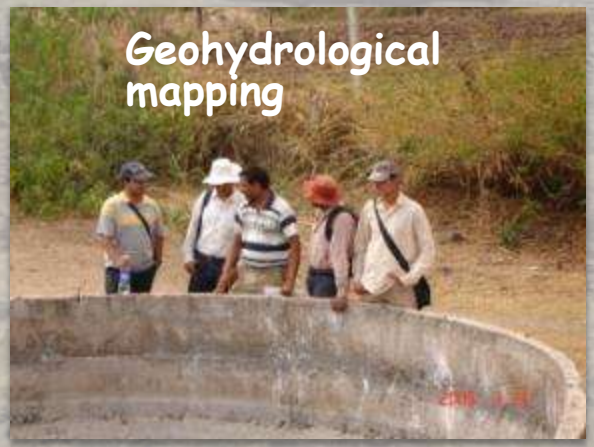
Participatory decision making system


Water quality investigation, including past data and Health data surveys


Geohydrological mapping


Capacity building and communication


Groundwater balance
Crop Water Budgeting
Capacity building and Training
Awareness building & Sensitization
Contribution to Watershed programme
Drinking Water Security
Groundwater Management Plan


Thank You!
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