

Paper presented at the Fourth World Water Forum
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LAO145RAPFT2

Andhra Pradesh Farmer Managed Groundwater Systems Project

apfangs

Demystifying Science for Sustainable Development



The problem

- Farmer's in-access to scientific information
- Depleting groundwater levels and increasing dependence on groundwater
- Futile investments in failed bore wells put farmers in debt-trap, leading to large scale suicides, hunger deaths and migration



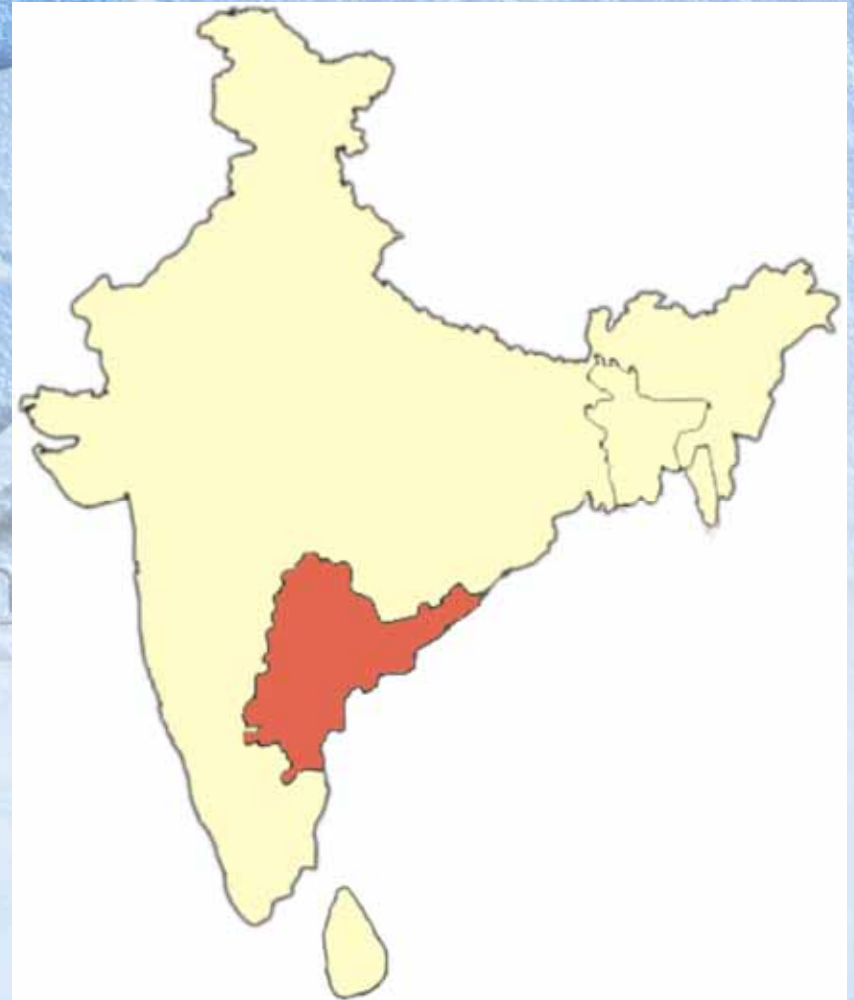
The Local Action

Goal:

“Stage is set for enabling the farmers to manage their groundwater systems by the year 2008”

Location:

62 delineated Hydrological Units, covering 650 habitations, in seven districts of the State of Andhra Pradesh in Southern India



The Activity

- Representative Hydrological Monitoring Networks established
 - 194 rain gauge stations
 - 2038 observation wells for measuring water levels
 - 896 observation wells for measuring water levels and discharge
- Farmers trained in groundwater management tasks
 - 6882 farmers in data collection
 - 3385 farmers in data recording and display
 - 1530 farmers in book keeping
 - 855 farmers in Crop Water Budgeting
- Hydrological Information shared openly through:
 - 608 water level data display boards
 - 615 rain fall data display boards
 - 113 HU information display boards



The Activity

- Trained farmers conducted Crop Water Budgeting exercise with all groundwater users (about half a million) in 38 HUs
- Farmers identified 36 over exploited aquifer zones
- 29 Artificial Groundwater Recharge measures taken up in 8 over exploited aquifer zones in 33 habitations
- Farmers reduced groundwater draft in 36 over exploited aquifer zones through:
 - Switching to low water consuming crops
 - Practicing water efficient irrigation practices
 - Use of water saving devices
 - Organic farming
- Groundwater Management Committees formed:
 - 574 at habitation level
 - 56 at Hydrological Unit level
- GMC membership:
Women 2231 and Men 3129



Social Impacts

- Groundwater Management Committee (GMC) is organized at three levels
 - Habitation
 - Hydrological Unit
 - Sub-basin
- GMC provides platform for discussions around water issues
- Crop Water Budgeting brings out status of aquifer
- More water using farmers are reprimanded
- Change of crops
- Bore well drilling holidays
- Equal opportunity for men and women to participate in data collection, training and GMC membership
- Functional linkages with government departments



Economic Impacts

- Farmers realized futility of investing in bore wells
- Farmers raised less water consuming crops
- Farmers started using water saving devices
- Farmers changed pump placement based on hydrological data, cutting the costs on electricity bill and motor repairs
- Using their own data farmers convinced government to declare their area as drought hit



Environmental Impacts

- Farmers identify over-exploited aquifer zones
- Farmers discuss about crop-water relationship
- Farmers change cropping pattern to reduce the groundwater draft
- Farmers reduced groundwater draft by using water saving devices such as drip and sprinkler
- Farmers take initiative to take measures to supplement natural groundwater recharge



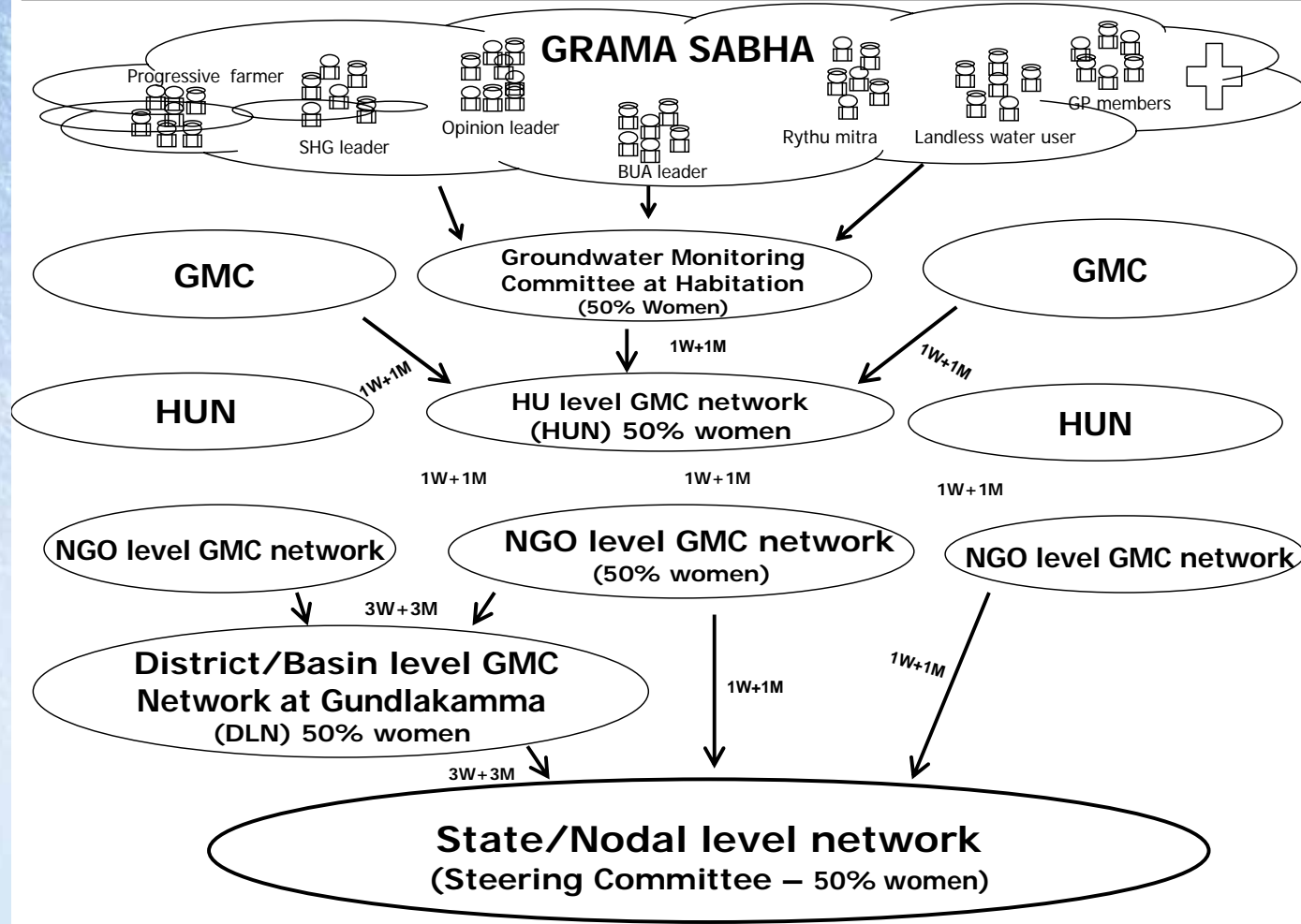
Indirect Impacts

- Farmers used hydrological data to lobby with the Government
- One block was declared drought affected based on the farmer data
- Farmers share hydrological data freely with several government departments for scientific interpretations



Institutional Framework

GROUNDWATER MONITORING/MANAGEMENT COMMITTEE CONCEPT



Long-term commitments

- Empowered communities with self generated scientific information
- Building functional linkages between GMCs and Government Departments for professional support
- Building up funds for GMCs through income generation activities
- Make GMCs as pressure groups to raise public investment in sustainable groundwater development
- Make GMCs functional sub-committees of Panchyat Raj Institutions
- Create platform for equal participation of men and women
- Crop Water Information kiosks for storing static data and updating dynamic data by farmers



Innovative solutions to unsolved problem

- Farmer generated hydrological data
- Hydrological data for usage of farmers
- Crop Water Budgeting
- Demand side management
- Non Formal techniques for demystifying groundwater science
- Farmer Field School approach to transfer skills of groundwater management to farmers
- Farmer work station (Information kiosk), using GIS based visual presentation
- Mutual exchange of knowledge between farmers and scientists



Relation to thematic content of the Forum

- Water for Growth and Development
- Integrated Water Resources Management (IWRM)
- Water supply and sanitation for all
- Water management for Food and Environment
- Risk Management
- New models for financing local water initiatives
- Institutional Development and political process
- Capacity building and Social Learning
- Application of Science, Technology and knowledge





Thank U

