STUDIES IN WATER QUALITY & SANITATION

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Content

- Background
- Perspectives in W&S
- Water Quality
- Sanitation
- Learnings
- Linkages
Background
Visit to Chikurde to see organic farming in 2011

- Well water not usable for irrigation or drinking?
- Some lands unusable due to high salinity
- Inadequate water for households
- Water logging problems in some of our lands

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The Questions

• Where does the water supplied go?
• What is the quality of water supplied to the people?
• What is the inputs from agriculture to drinking water sources
• How does the sanitation scenario influence the drinking water quality
• How does local soil quality influence the water quality?
• Understanding of pollutants/contaminants transport in ground water
• Agricultural Water Loading and Water logging & Salinity Issues
The Challenge

- Lack of base maps for GPs, watersheds, drainages, local soils
- No / Incomplete and Incorrect Data
- No region level irrigation / cropping policy
- No synchronised water supply and sanitation systems
- No low cost sewerage system
- No regional level study for pollutants transport especially for non-point pollutants
- No treatment of nitrates and phosphates from NPS

Complexity

Scale

Village

Basin
The Warana Basin

Need for linking basin approach with village units for water & sanitation

Tributary of Krishna
Length: 150 km
Area: 2095 km²
Villages: 319

Rainfall
~ 2500 mm

Evapotranspiration & N/C Cycles
~ 1200 mm

Sanitation & Agriculture
~ 600 mm

GW Infiltration

Pollutant Transport & Water Quality

Out of Watershed

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Warana Basin

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Village / habitation locations

Warana River Basin - District Map

SOI Toposheets

Google Maps

Legend
- stream
- village
- district
topographic
- Kolhapur
- Ratnagiri
- Sangli
- Satara

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Integrated River Basin Plan

Data collection

- Geo-spatial data
  - DEM
  - LISS III
  - Village Boundary
    Source: Bhuvan, WRIS

- Industrial water usage
  Source: MPCI Regional office, Kohlapur

- Agricultural data
  - Block level cropping pattern
    Source: District Agriculture office

- Hydrological data
  - Rainfall data
    Source: CWC, CROPWAT

- Census data
  - Part I data
    - Part II data
    Source: Census office

Preparation of datasets

- Drainage Map
- Census Map
- Groundwater contour map
Supply Estimation

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Chikurde Gram Panchayat

1. Collection of Maps and Digitization
   - Revenue Map
   - Resettled Area Map
   - Gaothan Map

2. Scaling and Merging Various Maps

3. Updating Maps

4. Base Map

Base Map: Chikurde village
(Walwa Taluka)
(Gondi District)

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Water Scenario - Chikurde

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Sanitation Scenario - Chikurde

Drainage, Sanitation and Solid Waste

Mapping
Sanitation
Drainage
Solid Waste
Chikurde Studies
Water Problem Identification Tool

- Listing of problems
- Development of linkages
- Designing of Problem tree
- Testing of the problem tree
Water Problem Identification Game

Master Question 1: Are there any fights in the village due to water?

Yes

Fights occur on community water sources or individual household connection?

Community

Type of community water source: Handpump, Well, Public tap?

Handpump

Is it due to the less number of handpumps?

Yes/ No

Is it due to the reason that some of the handpumps are dysfunctional?

Yes

Is it due to the reason that water is unfit for drinking?

End

No

Is it due to the less number of wells?

Yes

Is it due to malfunction of handpump machine?

Yes

Is it due to a local leader or influential person not allowing its usage?

No

Is it due to local leader or influential person not allowing its usage?

Is it due to some taps are not in function?

Yes

Is it due to some taps are installed at inaccessible location?

Yes

Is it due to lack of maintenance?

Is it due to lack of funds?
Learnings / Research Outputs

- Sewerage System Design – Specific for Rural Areas (TD 654)
- Linking water, sanitation, solid waste and roads plans and implementation (Village Plans)
- Nutrient-shed approach towards water quality (NPS)
- People's level planning of natural resources
- Replicability possibilities

- 2012: Kirubhaharan – IRBP; Ajith – NO₃ in DW treatment
- 2013: Apoorva – Soil Mapping & Salinity Assessments; Nataraj – LCA of Sugarcane
- 2014: Nishant – Village Planning for Water, Sanitation, etc.; 8 TDSL students; Akanksha and Pragyan – TD 609
- Shridhar Kumbhar – pursuing PhD
Thank You

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