SOCIAL PROJECT WORK
Work done by RIT

- Watershed Management in Madgyal, Sangli
- Jal Swarajya
- R.R. Scheme analysis in Atpadi
- Affordable Wet Scrubber to Small Scale Industries
- Investigation and repair of percolation tank at Manikwadi
- Affordable housing
- Economical village road
- Turmeric treatment Plant
- Sugarcane Harvester
- Bio-medical
Current Projects in Water Sector

- Nutrient Management in Warana River basin
- Low cost Grey Water Treatment
Map of Sangli District

Madgyal is a village in Jath Taluka, district Sangli. Area of Madgyal village is 2256 hectares. Total population- 5555

Average annual rainfall :382.18mm(2002-2012)

Major occupation- sheep rearing
Minor occupation- agriculture
Water-shed Management in Madgyal

- Water Sources
  - Krishna (100km).
  - Vaspeth lake and Guddapur lake.
- Lakes are not perennial
- The existing water supply scheme is driven by lake water
- No rain water harvesting scheme present in the village.
- The dual effect of less rain and no conservation has led to scarce conditions in the village.
OBJECTIVES

• To analyze water resources available in selected area.

• To know the socio-economic condition of people.

• To know the water demand and supply.

• Suggestion of watershed management techniques.

• Data preparation with the help of GIS.
Land In Acres

- Below 5 Acre: 58.67%
- 6-10 Acre: 15.01%
- 11-20 Acre: 2.32%
- Above 20 Acre: 0.46%
- No Land: 23.42%

Income

- Below 10K Rs: 1.74%
- 11-20K Rs: 12.33%
- 21-30K Rs: 31.08%
- 31-50K Rs: 43.42%
- Above 51K Rs: 11.40%

Home Types

- Slab: 32.82%
- Shed: 26.63%
- Kaularu: 28.63%
- Dhabyachi: 11.75%
- Outhouse: 3.13%
DESIGNS

- RAIN WATER HARVESTING.
- FARM POND.
- LAKE CATCHMENT.
- CHECK DAM.
- PERCOLATION TANK.
- PERFORATED WATER PIPES.
Lake catchment

- Area of the lake- 1,47,503 sq.m
- Max RL- 104.77m
- Min RL- 98.06m
- Average depth of lake- 3.5m
- Capacity of lake catchment- 516260.5 cum.

- KHOSALA FORMULA
  \[ Q = P - 0.4813 \times Tm \]

- D'SOUZA AND INGLIS METHOD:
  \[ R = 0.85 \times P - 30.5 \]

- Quantity of water in lake catchment= 230018.37cu.m
PERFORATED PIPES

• A perforated pipe is designed to allow water to enter or exit through small holes or slots along the pipe.
• A perforated pipe is redirects surface and groundwater away from an area.
• Perforated hollow pipes along the bottom of soil laid to quickly vent water that seeps down through the upper gravel or rock (shown in fig.).
• Size of catchment = 10mx 200m
• Size of pipe = 900mmØ
• No. = 5
• Estimated cost = Rs. 9,81,000/-
Design of Underground Water tank:

- Tank is provided in stream area.
- Perforated pipe will discharge collected water in the tank.
- Dimension of tank: 15m*10m*5m
- Capacity of tank=750m³
- Estimated cost=Rs.7,30,638
Contour Map at 3m Interval
Watershed Delineation
Madgyal Streamline Map

Legend
Msdgyal Sub
str
-32768-32767
2
48618.7
97235.3
145852
MADGYALDEM
WATER BODY
BARREN LAND
ARID LAND
Madgyal Relief Features
Water Budget

Total water requirement for domestic and animal

a) Domestic
   Population = 5555
   For drought area water requirement per capita = 40 liter
   = 5555x40
   = 111100 liter /day

   Annual water requirement for domestic = 222200x365
   = 40551500 liter
   = 40551 cub.m
   = 4.0551e+7 Lit

b) Animal
   Total no of cows = 1319
   Total no of buffaloes = 835
   Total no of goat = 1574
   Total no of sheep = 317

   Water requirement per animal is, cows: 60 liter/day, buffalo: 65 lit/day, goats: 10 lit/day, sheep: 7 lit/day. (Veterinary doctor data)

   Total water requirement for animal = 55251510 liter/year
   = 55251 cub.m

   Annual water requirement for domestic and animal = 81103 + 55251
   = 136354 cub m.
   = 1.3635e+8 Lit
<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Type of structure</th>
<th>No. of structures</th>
<th>Water to be recharge (Cub.m)</th>
<th>Total water available (Cub.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Farm pond</td>
<td>10 Nos.</td>
<td>18360</td>
<td>1025176.4</td>
</tr>
<tr>
<td>2</td>
<td>Check dam</td>
<td>2 Nos.</td>
<td>13669</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vanraibandhara</td>
<td>2 Nos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rain water harvesting</td>
<td>758 Nos.</td>
<td>18101</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Underground storage tank (15x10x5m)</td>
<td>2 Nos.</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>51630</td>
<td></td>
</tr>
</tbody>
</table>

Hence, Water will be recharged if we construct water conservation structures.

Extra water available = 51630 - 26664 cub.m

= 24966 cub. m

Extra water is to be used for agriculture purpose.

**Stored water usage duration** –

Total stored water in tank and check dam – 15169 cub.m

Daily water requirement = 20 x 5555

= 111100 lit

= 111.1 cub. m

Water can be used by 20 lpcd norm = 15169/111.1

= 136 days

= 4 month and 6 days
RECOMENDATIONS

1. Silt removal from the lake and wells
2. Cleaning of the wells
3. Rain water harvesting
4. Underground water tank
5. Perforated pipe system
6. Farm ponds
7. Social Aspects
Discussion with Tahshildar.
आर. आय. टी ने घेतले मादग्यावठ दत्तक

वीस तज्ज्ञांची समिती गावात

टंचाई सर्वेक्षणाचे काम गतीने

दृष्टा भटकती करावी नालगाव आहे.
प्रशासनांकडून टंकरून पाणी पुरवठा केला जात असला तरी
तया पुरस्कार नाही. टंकरून पाणी
मिळताने झाल्याने काही टंकर
वाळकानी टंकर मंदे केले आहेत.
मादग्यावठ परिसरात पिण्याचे पाणी मिळतं अदिहणे कठीण झाले आहे.
पाण्यावलीत पडतं पाणी
बाचकाने आणि त्यांची साहित्यकृत
राजस्वातात यांमध्ये करण्यासाठी
मादग्यावठ: वर्तांहून
अतावर तलावाची तांत्रिकता आणण्यासाठी उपरांतली आहे.
इ.स.प.स. आय. आय. टी. (राजस्थानातील इन्स्टीट्यूट मूव ऑफ टेक्नोलॉजी) काल्यन जे मादग्यावठ गाव दत्तक घेतले आहे.
दृष्टी एवढी अधिक तज्ज्ञांय समतीतीने मादग्यावठ नाही मुख्य केला आहे.
ज्या तलावाची पावसाची
अजूनही आगमन झालेले
नाही, त्या भागात भुजल पातळी
हवामुळे फुटपाटक खाली गेलेली
आहे, तसेच पिण्याचे पाणी
मिळतो साहित्याठी नागरिकाना दायी
Water Sample Testing

1. Hardness-
   Tanker Water-436 mg/l
   Pump Water-41 mg/l
   Standard Hardness of water is 75 mg/l

2. Chloride Content-
   Tanker Water-132.02 mg/l
   Pump Water-119.11 mg/l
   Standard Chloride Content is 250 mg/l

3. Conductivity Test
   Tanker Water-0.3
   Pump water-0.3
   Standard conductivity is 4.6 µS/cm (@PH 7)

4. pH Test-
   Tanker Water-7.63
   Pump water-8.78
   Standard for pH is 7
Condition of lake in the month of August 2012.

Condition of lake in the month of February 2013.
Condition of SVS Well in August 2012.

Condition of SVS Well in February 2013.
Total Station Survey Outcomes

Area of the lake is 1,47,503 sq.m
Max RL is 104.77m
Min RL is 98.06m
Avg depth of lake is 3.5m
Capacity of lake is 516260.5cum
Jal Swarajya
(World Bank funded Project)

• To identify villages with vulnerable sources of drinking water

• Testing and analysis of 100 % public (Govt.) drinking water sources.

• Disseminate the results and their analysis to communities and district level functionaries so as to plan for the mitigation measures.
Background of Atpadi village

- Atpadi is a village in Atpadi Taluka, Sangli District.
- Co-ordinates are Latitude: 17°25'0 N, Longitude: 74°57'0 E.
- Total Population of Atpadi Taluka is 1,38,440 consisting of 69,276 males and 69,164 females.
- Sex ratio is 998 females per 1000 males.
- Literacy rate is 73.45%.
Methodology

- Problem Identification
- Field survey (analysis of existing schemes)
Wet Scrubber for Small Scale Industries

- Reducing the impact of Air pollution
  - To ascertain air quality standards.
  - To assess health hazard and damage to materials;
  - To control on ongoing process of producing air pollution in an urban and industrial areas;
  - To obtain preventive and corrective measures;
  - To understand the natural cleansing
    - Pollution dilution,
    - Dispersion,
    - Wind based movement dry deposition,
    - Precipitation and chemical transformation
### SAMPLE ANALYSIS RESULT

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Fuel used</th>
<th>Removal Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SPM</td>
</tr>
<tr>
<td>1</td>
<td>Bagasse</td>
<td>98%</td>
</tr>
<tr>
<td>2</td>
<td>Coal</td>
<td>92%</td>
</tr>
<tr>
<td>3</td>
<td>Wood</td>
<td>95%</td>
</tr>
</tbody>
</table>

**Removal efficiency of particulate matter**

- Series 1
- Series 2
- Series 3
Removal efficiency of gaseous matter
DISCUSSION

- Maintenance:
  - Due to straight vertical gas movement no clogging take place.
  - Less maintenance.
  - Easy to operate.
  - Easy to clean.
  - Less erosion due to use of anti corrosive material
Benefits

✓ SPM & RSPM removal efficiency is 95 %.
✓ Less capital and operating cost.
✓ 80 % of water is recycled.
✓ Waste collected can be used as raw material for compost and fertilizer.
✓ Less maintenance
✓ Easily operated by unskilled worker
✓ Work on gravity force hence less power consumption.
✓ **No clogging effect in gas flow movement.**
Special Gains

- Economical
- Easy to handle.
- Can be handled by unskilled labor.
- Water can be recycled (efficient use of water)
- Waste collected can be used as a fertilizer.
- Efficiency up to 95 %.
- Best suitable for small scale industry.
Investigation and repair of percolation tank at Manikwadi
Current Projects

- Nutrient Management in Warana River basin
Low cost Grey water Treatment
THANK YOU