SOCIAL PROJECT WORK
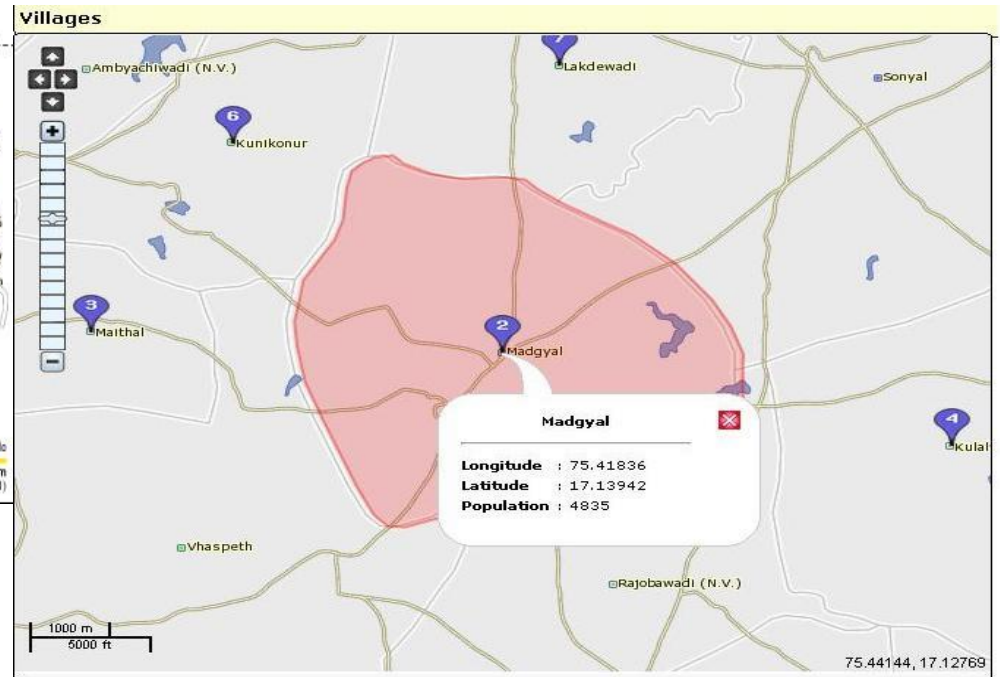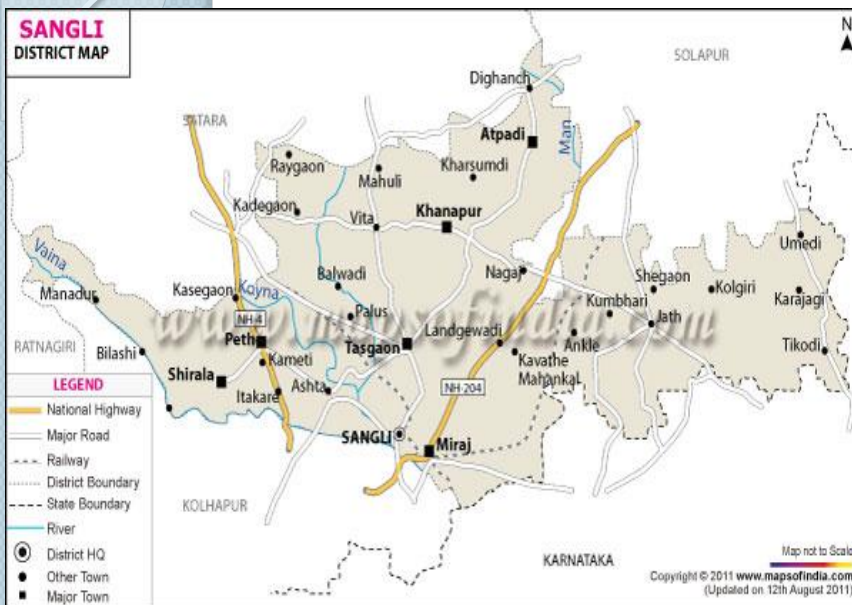
Work done by RIT

- 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

SANGLI DISTRICT MAP

Villages

Madgyal
Longitude : 75.41836
Latitude : 17.13942
Population : 4835

Map of Sangli District

Madgyal village

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
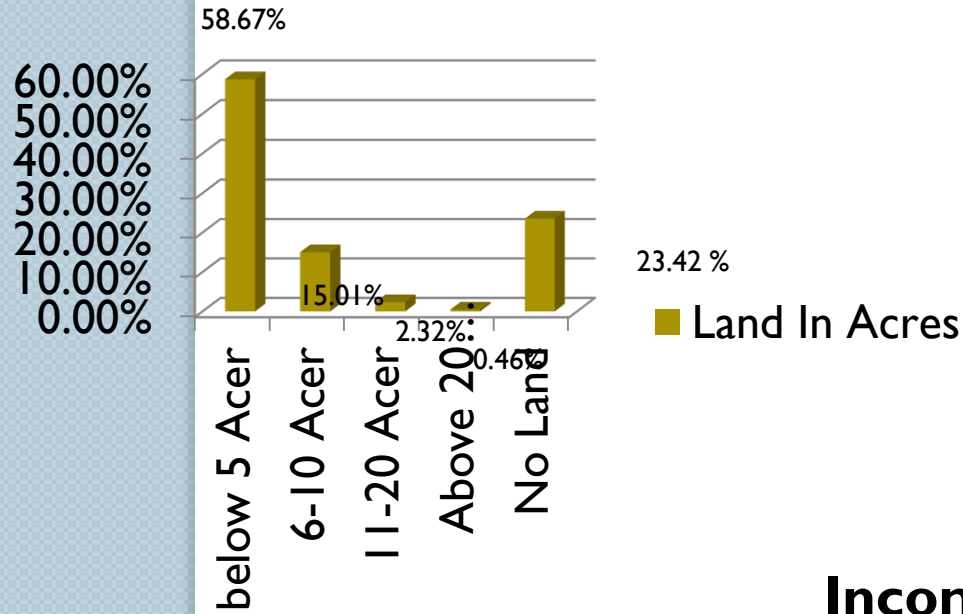## Minor occupation- agriculture

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.
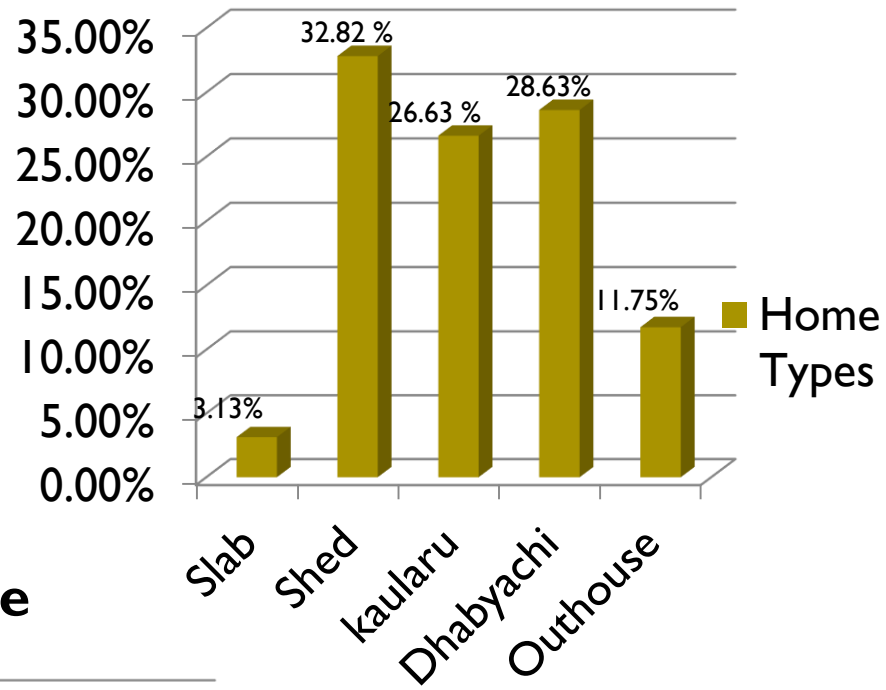
OBJECTIVES

* 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.

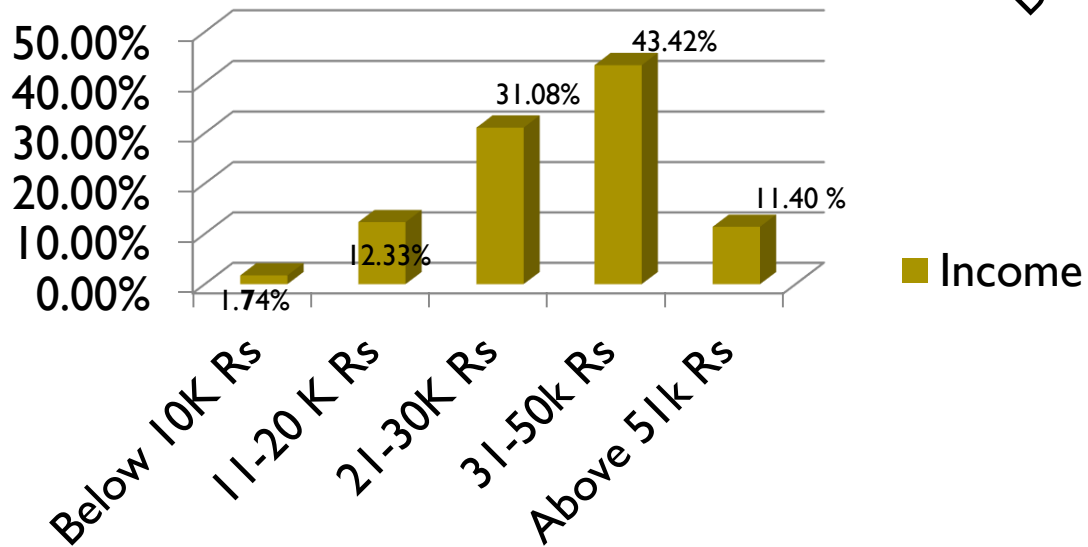* Data preparation with the help of GIS.

Land In Acres

Bar chart titled "Land In Acres" showing percentages:
- below 5 Acer: 58.67%
- 6-10 Acer: 15.01%
- 11-20 Acer: 2.32%
- Above 20: 0.46%
- No Land: 23.42%

Legend: Land In Acres

Home Types

Bar chart titled "Home Types" showing percentages:
- Slab: 3.13%
- Shed: 32.82%
- kaularu: 26.63%
- Dhabyachi: 28.63%
- Outhouse: 11.75%

Legend: Home Types

Income

Bar chart titled "Income" showing percentages:
- Below 10K Rs: 1.74%
- 11-20 K Rs: 12.33%
- 21-30K Rs: 31.08%
- 31-50k Rs: 43.42%
- Above 51k Rs: 11.40%

Legend: Income

DESIGNS

- RAIN WATER HARVESTING.
- FARM POND.
- LAKE CATCHMENT.
- CHECK DAM.
- PERCOLATON 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

    $Q=P-0.4813xTm$

- D'SOUZA AND INGLIS METHOD:

    $R= 0.85 P-30.5$

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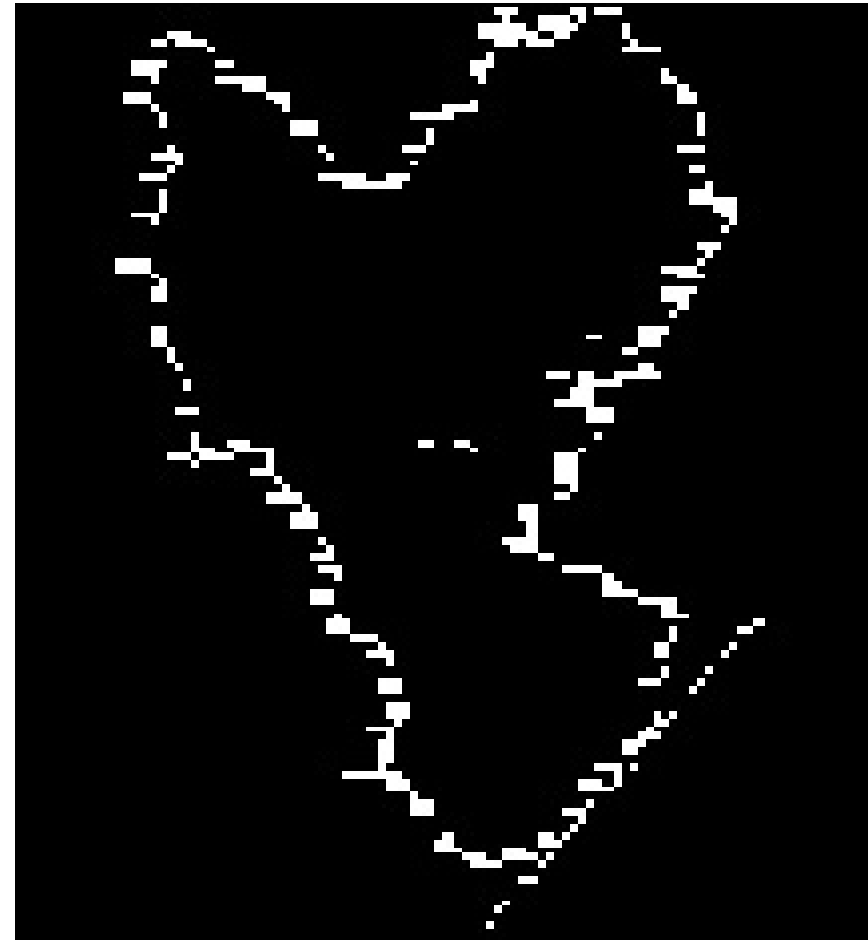
PERFORATED PIPES

• 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/-

Road
Grassed swale
Native soil
Stone filled trench
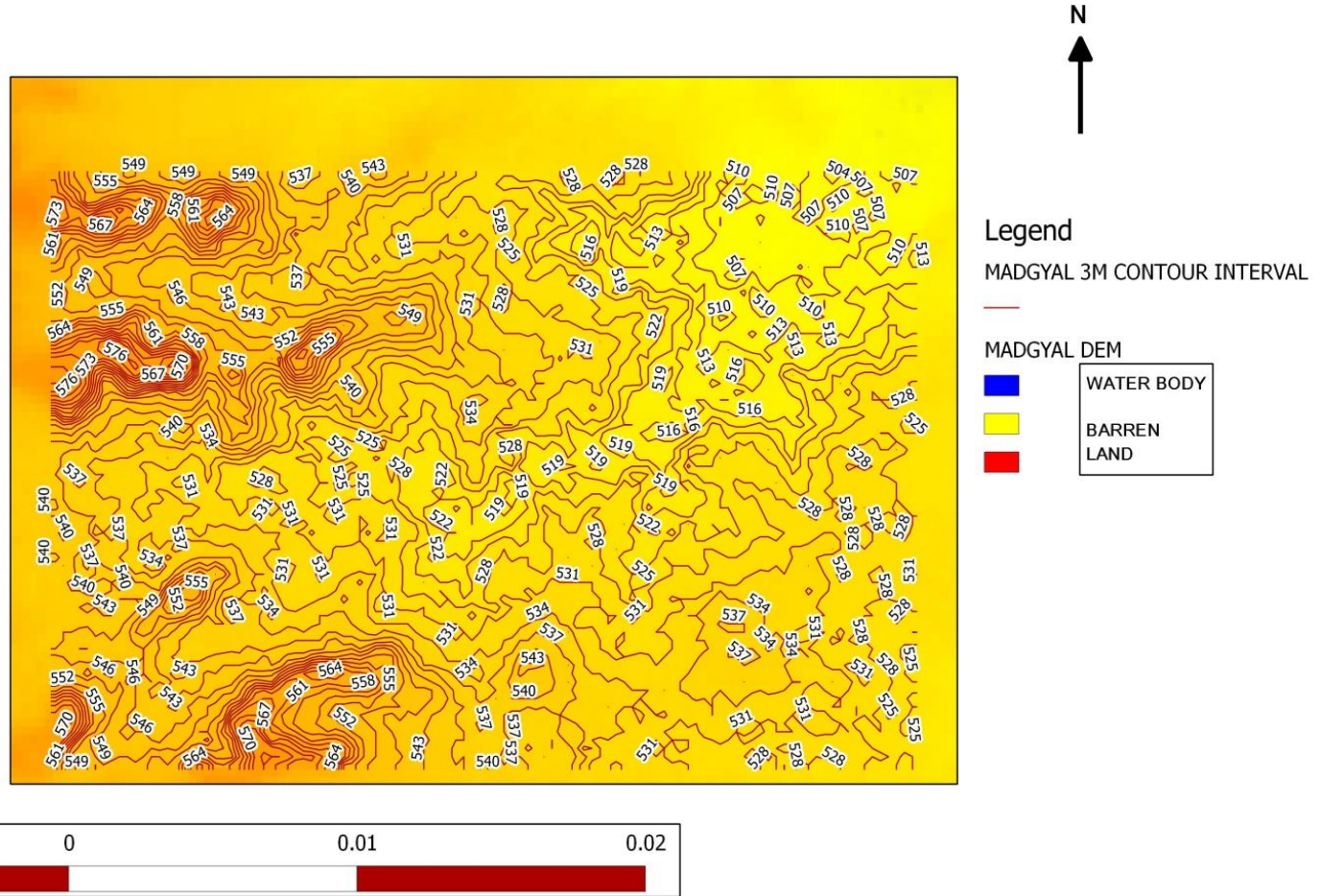Perforated pipe
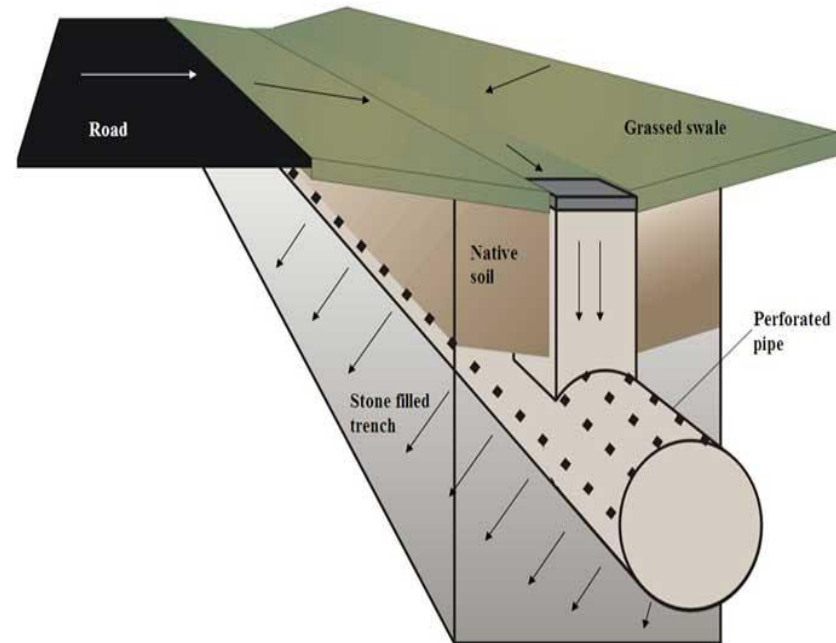
Design of Underground Water tank:

- Tank is provided in stream area.
- Perforated pipe will discharge collected water in the tank.
- Dimension of tank: 15m*10m*5m
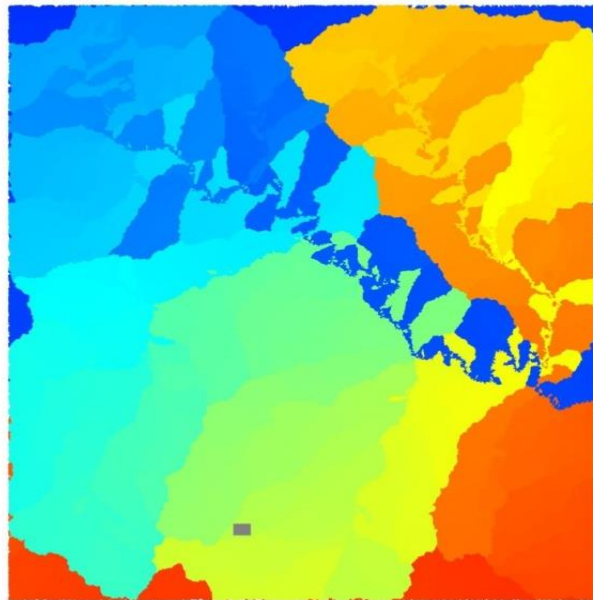- Capacity of tank=750m^3
- Estimated cost=Rs.7,30,638

CONTOUR MAP OF MADGYAL 3M INTERVAL

Contour Map at 3m Interval
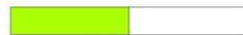
Watershed Delineation

Madgyal Streamline Map

MADGYAL RELIEF FEATURES
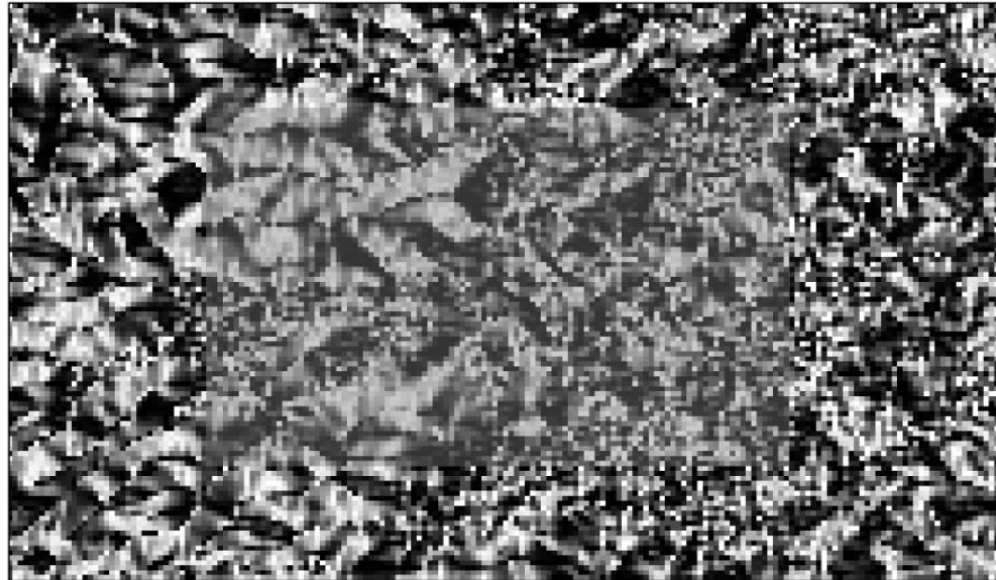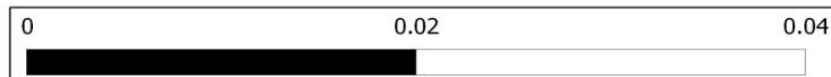
Madgyal Relief Features

Contour Mapping of Madaval Village with Reservoir

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**
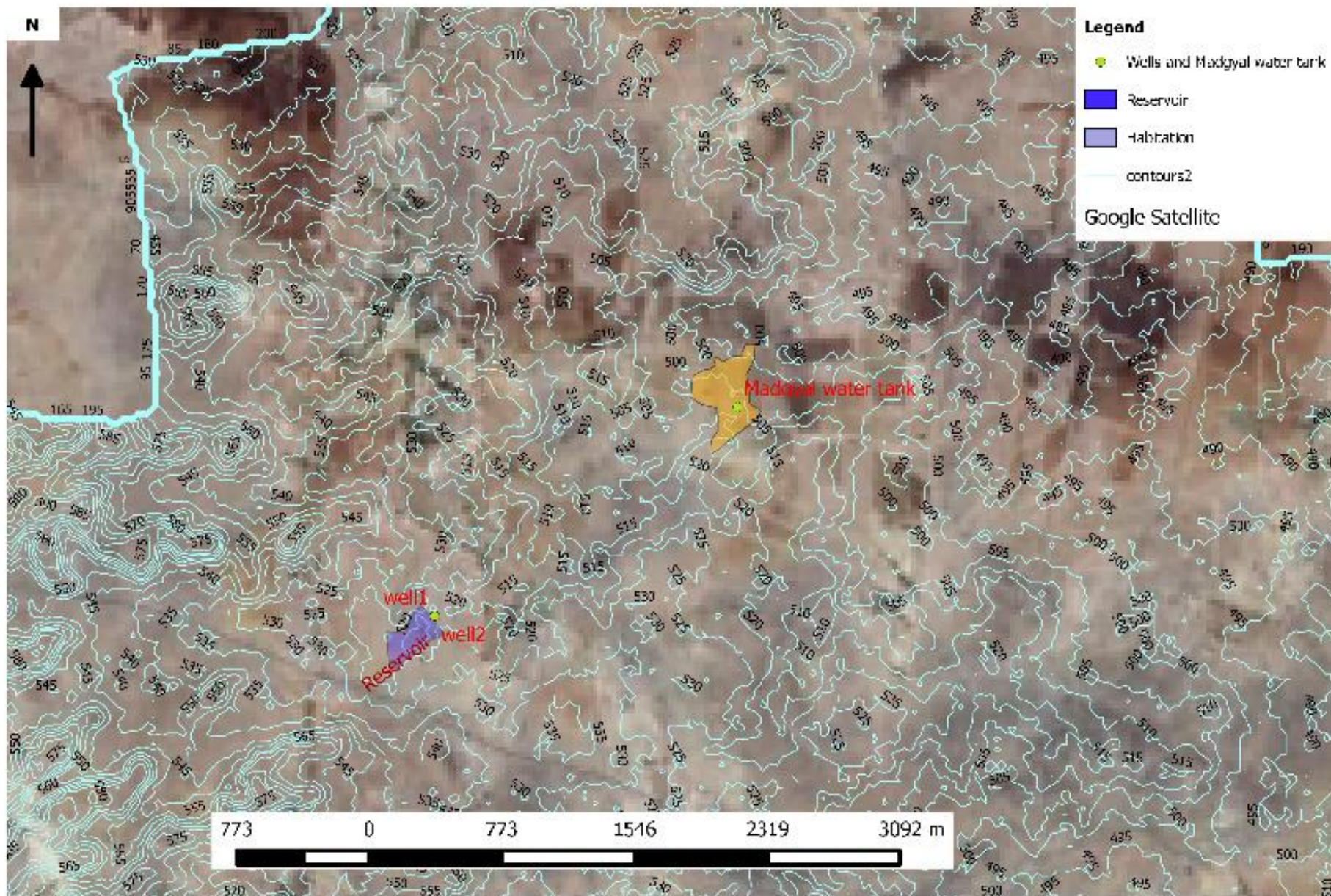
      b) **Animal**

        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: 60liter/day, buffalo: 65 lit/day, goats: 10 lit/day, sheep: 7lit/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**

Sr.no.	Type of structure	No. of structures	Water to be recharge(Cub.m)	Total water available (Cub.m)
1	Farm pond	10 Nos.	18360	
2	Check dam	2 Nos.	13669	1025176.4
3	Vanraibandhara	2 Nos.		
4	Rain water harvesting	758 Nos.	18101	
5	Underground storage tank (15x10x5m)	2 Nos.	1500	
			Total = 51630	

Hence, Water will be recharged if we construct
water conservation structures.
Extra water available= 51630 -26664cub.m
$$= 24966 \text{ cub. m}$$
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
$$= 111100 \text{ lit}$$
$$= 111.1 \text{ cub. m}$$

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

$$= 136 \text{ days}$$

= 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.

Sunday, September 04, 2005 1:40:00 AM

आर.आय.टीने घेतले माडग्याळ दत्तक

माडग्याळ : वार्ताहर

जत तालुक्यात दुष्काळाची तीव्रता आणखी वाढली आहे. इस्लामपूरच्या आर.आय. टी. (राजारामबापू इन्स्टिट्यूट ऑफ टेक्नॉलॉजी) कॉलेजने माडग्याळ गाव दत्तक घेतले आहे. दुष्काळग्रस्त परिस्थितीशी सामना करण्यासाठी तसेच पावसाचे थेंब न थेंब संकलित करण्याच्या हेतूने २० हून अधिक तज्ज्ञांच्या समितीने माडग्याळचा सर्व्हे सुरू केला आहे.

जत तालुक्यात पावसाचे अजूनही आगमन झालेले नाही. या भागात भूजल पातळी हजार फुटांपेक्षा खाली गेलेली आहे. तसेच पिण्याचे पाणी मिळविण्यासाठी नागरिकांना दाही

▶ **वीस तज्ज्ञांची समिती गावात**

▶ **टंचाई सर्वेक्षणाचे काम गतीने**

दिशा भटकंती करावी लागत आहे. प्रशासनाकडून टँकरद्वारे पाणी पुरवठा केला जात असला तरी तो पुरेसा नाही. टँकरलाच पाणी मिळेनासे झाल्याने काही टँकर चालकांनी टँकर बंद केले आहेत.

माडग्याळ परिसरात पिण्याचे पाणी मिळणे कठीण झाले आहे. पावसाळ्यात पडणारे पाणी वाचवणे आणि त्याची साठवणूक करण्याबाबत मार्गदर्शन करण्यासाठी

आर.आय.टी मधील २० तज्ज्ञांची समिती माडग्याळमध्ये दाखल झाली आहे. त्यांनी गाव दत्तक घेतले आहे.

गावाचा परिसर, पाझर तलाव, तलावातील गाळ काढणे, पावसाचे पाणी थांबविणे, विहिरींचे पुनर्भरण करणे, पाणी अडवा-पाणी जिरवा आदी योजनांची अंमलबजावणी करणे याची माहिती ही समिती ग्रामस्थांना देणार आहे. तसेच शासनाच्या विविध योजनांची माहिती प्रात्यक्षिकाद्वारे देण्यात येणार आहे. दुष्काळी परिस्थितीवर कशी मात करता येईल याचे प्रबोधन करण्यात येणार असल्याची माहिती आर. आय. टी. कॉलेजचे प्रा. श्रीधर कुंभार यांनी दिली.

Water Sample Testing

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

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

3. Conductivity Test
    Tanker Water-0.3
    Pump water-0.3
Standard conductivity is4.6µS/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.

R. R. Scheme Analysis in Atpadi

➢ 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%.
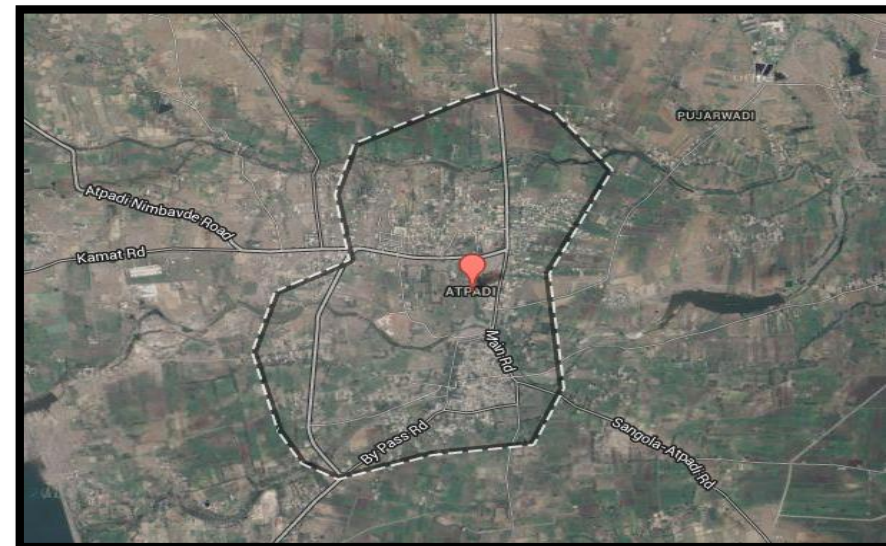
Methodology

➤ Problem Identification

➤ Field survey (analysis of existing schemes)

KEY PLAN FOR ATPADI TALUKA W/S SCHEME
WITH SOURCE KRISHNA RIVER
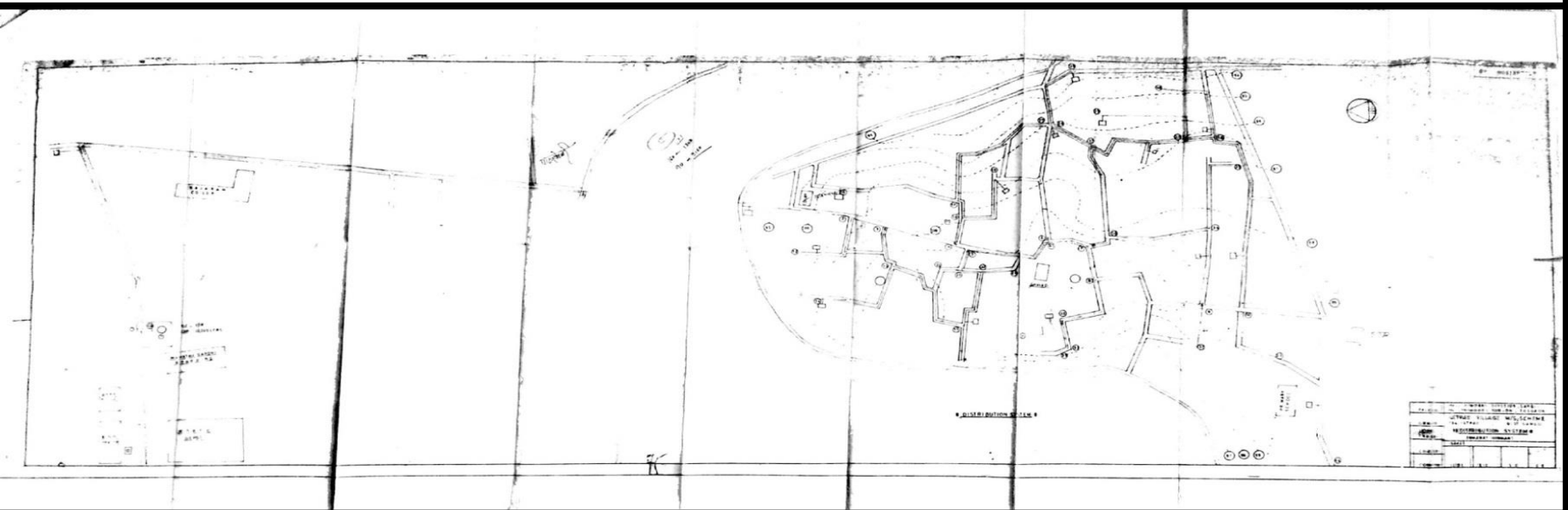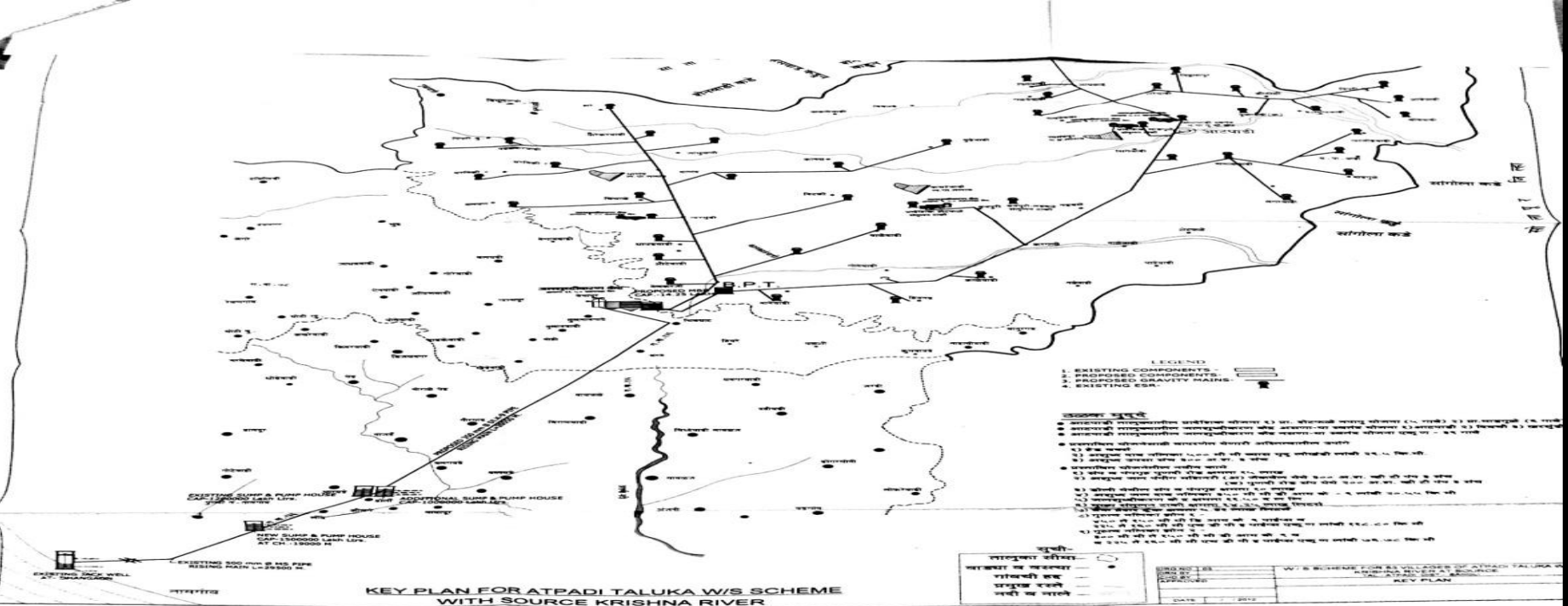
Wet Scrubber for Small Scale Industries

- 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,
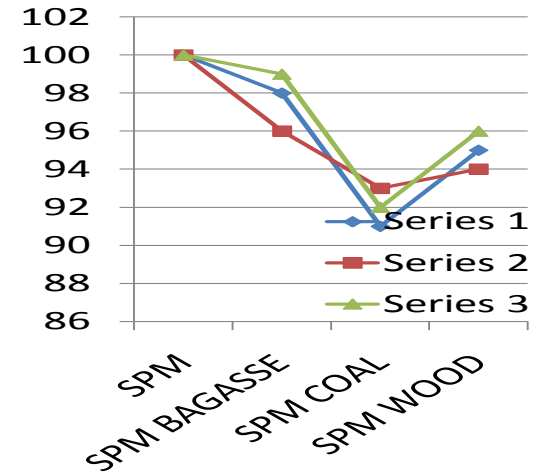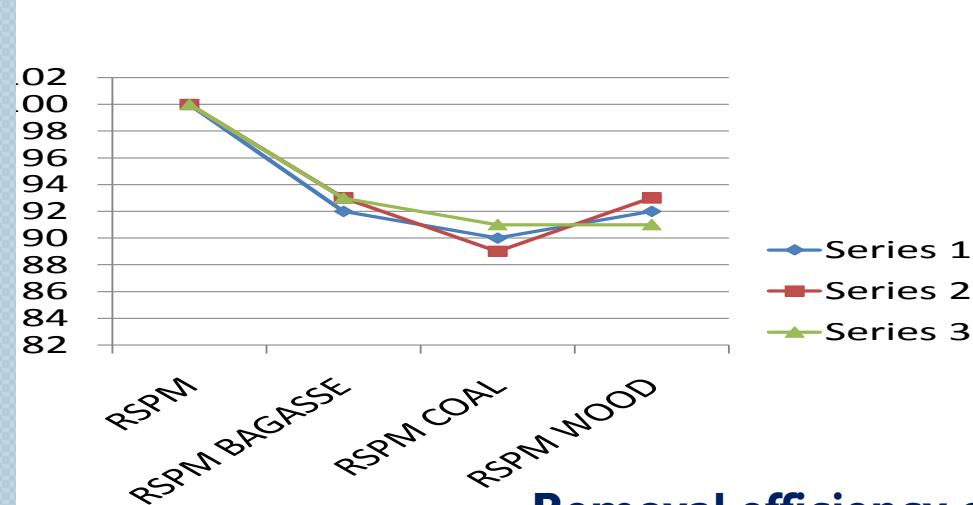 - ➤ Precipitation and chemical transformation

Model of Wet Scrubber

SAMPLE ANALYSIS RESULT
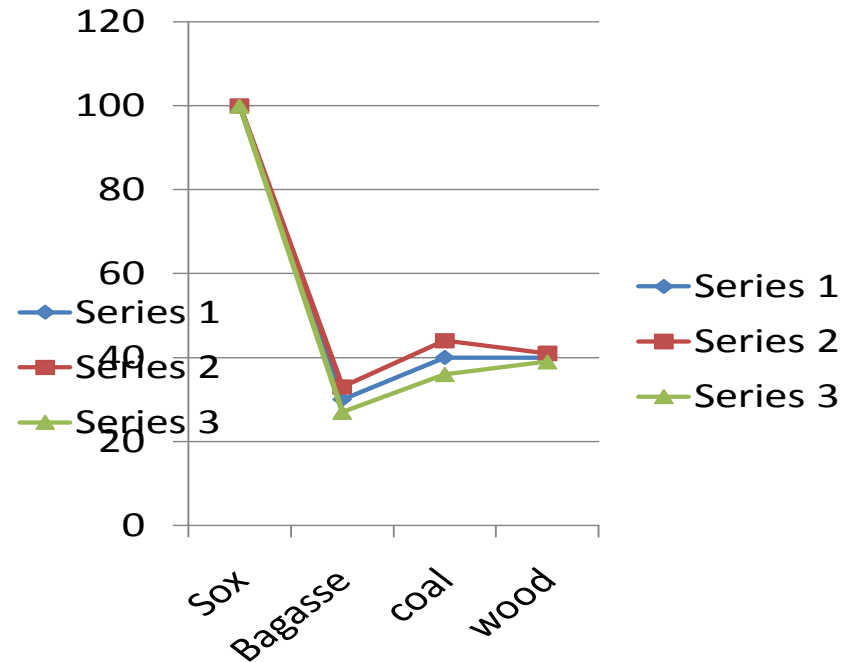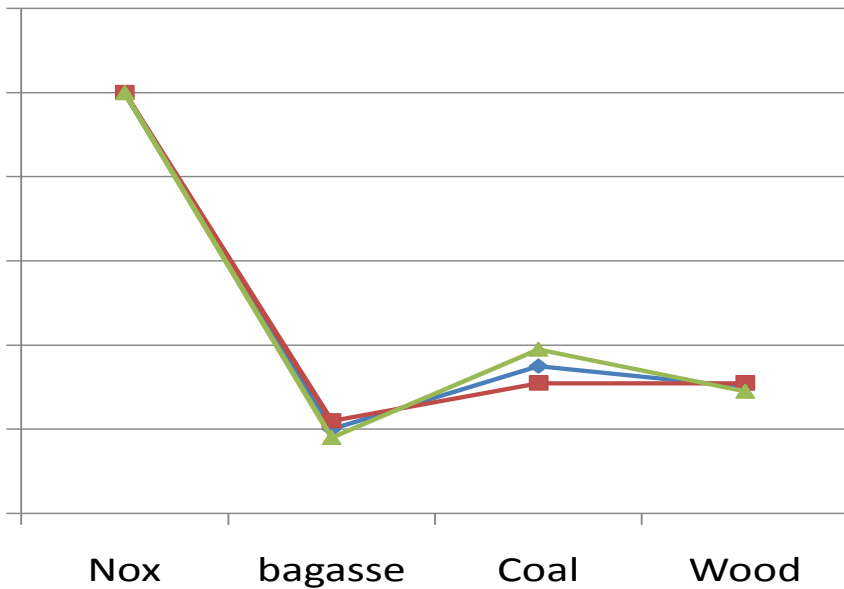
Sr. No.	Fuel used	Removal Efficiency			
		SPM	RSPM	SOx	NOx
1	Bagasse	98%	93%	30%	20%
2	Coal	92%	90%	40%	35%
3	Wood	95%	92%	40%	30%

Removal efficiency

Removal efficiency of particulate matter

Removal efficiency

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
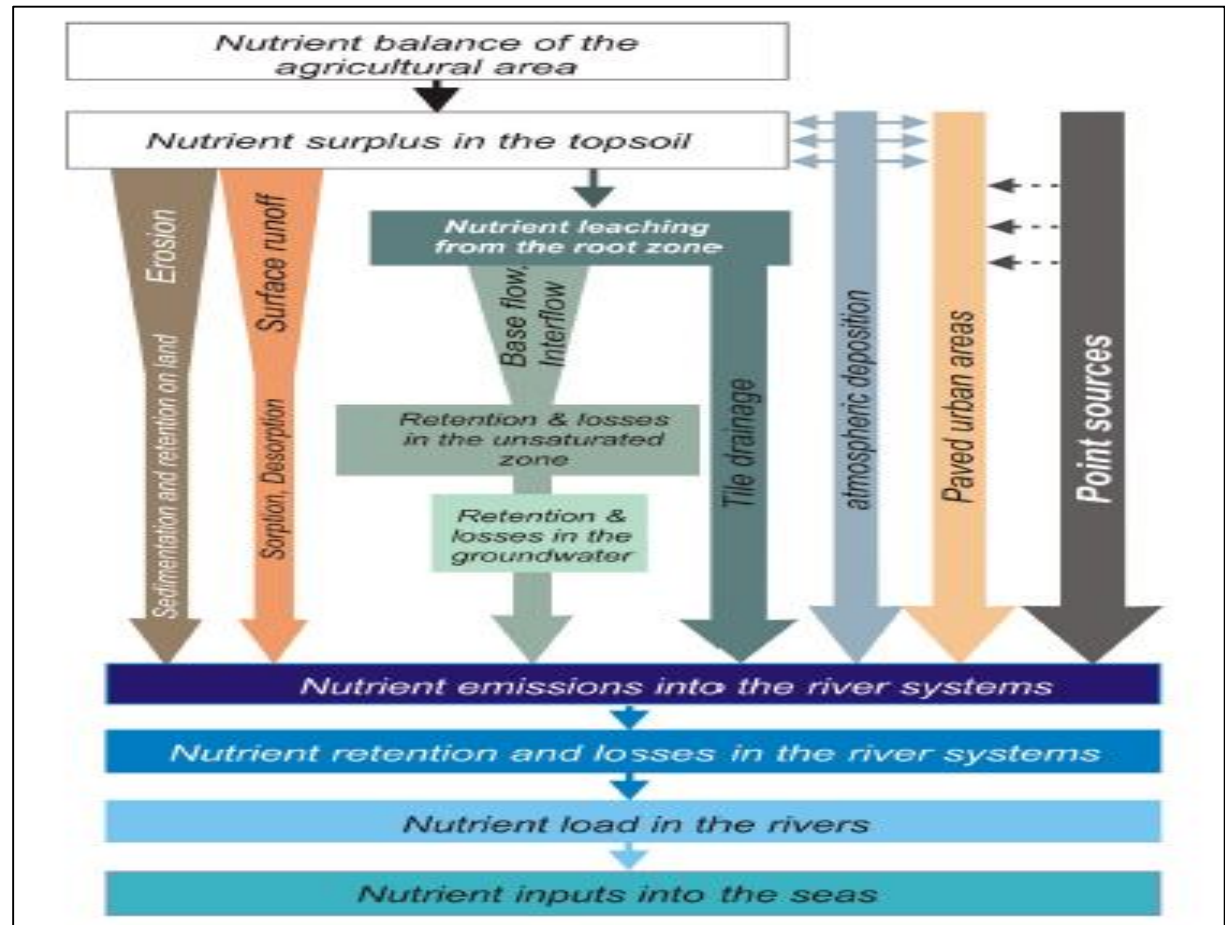
Low cost Grey water Treatment

THANK YOU