Third Party Evaluation and Impact Assessment by TDSC-IIT Bombay of Jalyukt Shivar Abhiyan in Palghar District

10 Oct 2016

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Key Objectives of JSA

- Harvest maximum rainwater within village boundary
- Increase groundwater level
- Increase area under irrigation
- Guarantee reliable and sufficient drinking water for all – rejuvenate dead WSS in rural areas
- Implement Groundwater Act
- Create decentralized water storages, repair old structures, remove silt
- IEC on afforestation, water budgets, efficient water use

Methodology as per GR

- Selection of villages at taluka level based on - DW scarcity, drought-affected, GW over-exploited
- Preparation of base-line survey and village plan
  - Determining water balance and matching demand-supply
    - rainfall within village boundary
    - runoff generated
    - water impounded within village - **supply**
    - water requirement - a) Drinking b) Crop water - **demand**
  - Compute surplus/deficit and accordingly plan new structures
  - Technical and administrative approval
- This plan has to be approved in Gram Sabha and needs to be prepared by coordinated effort from all concerned departments
- Integration at taluka and district levels

Role of TDSC – IIT Bombay

- Technical Evaluation, Social impact Assessment, Process improvement suggestions
- **List A**
  - All 50 villages in Phase 1
  - Measurements and Engineering Assessment, Location, Photographs, Rapid assessment of JSA village plan, GIS map
- **List B**
  - Detailed study and evaluation of all stages of JSA of selected villages
- **Deliverables**
  - Technical evaluation report for List A
  - Detailed overall planning process evaluation
  - Success indicators, replicable assessment methodology
  - Impact assessment report, recommendations
  - Support for tools for Monitoring, GIS, data sharing

Assessment process

- Review of village plans, collection of intervention data and analysis
- GIS preparation
- Department-wise assessment
  - Designing intervention-wise methodology
  - Interaction with concerned officials and scheduling of visits
  - Build and use of ODK for field survey / notes
  - Intervention-wise village-wise field assessment
  - Preparation of assessment report
- Field-work calendar and Report (Village level and Taluka level)
  - Part I (East wing) (February-May 2016, May 25, 2016)
  - Part II (West wing) (March-August 2016, August 14, 2016)

Sample Methodology

Structure		Parameters
CNB	Constructed	base leakage, side leakage, blasting, anchoring, reinforced or not, main structure condition, side wall condition, siltation, deterioration, utilization, wells nearby
	Under Construction	Reinforced or not, cover OK or not, blasting, vibration, anchoring, downstream slope, shuttering quality, utilization, wells nearby
	Repair Work	repair method, leakage base, leakage sides, blasting, anchoring, reinforced, main structure condition, side wall condition, siltation, deterioration, utilization, wells nearby
Ponds		Side wall condition, siltation, soil discarded, utilization, nearby wells

Monitoring Progress

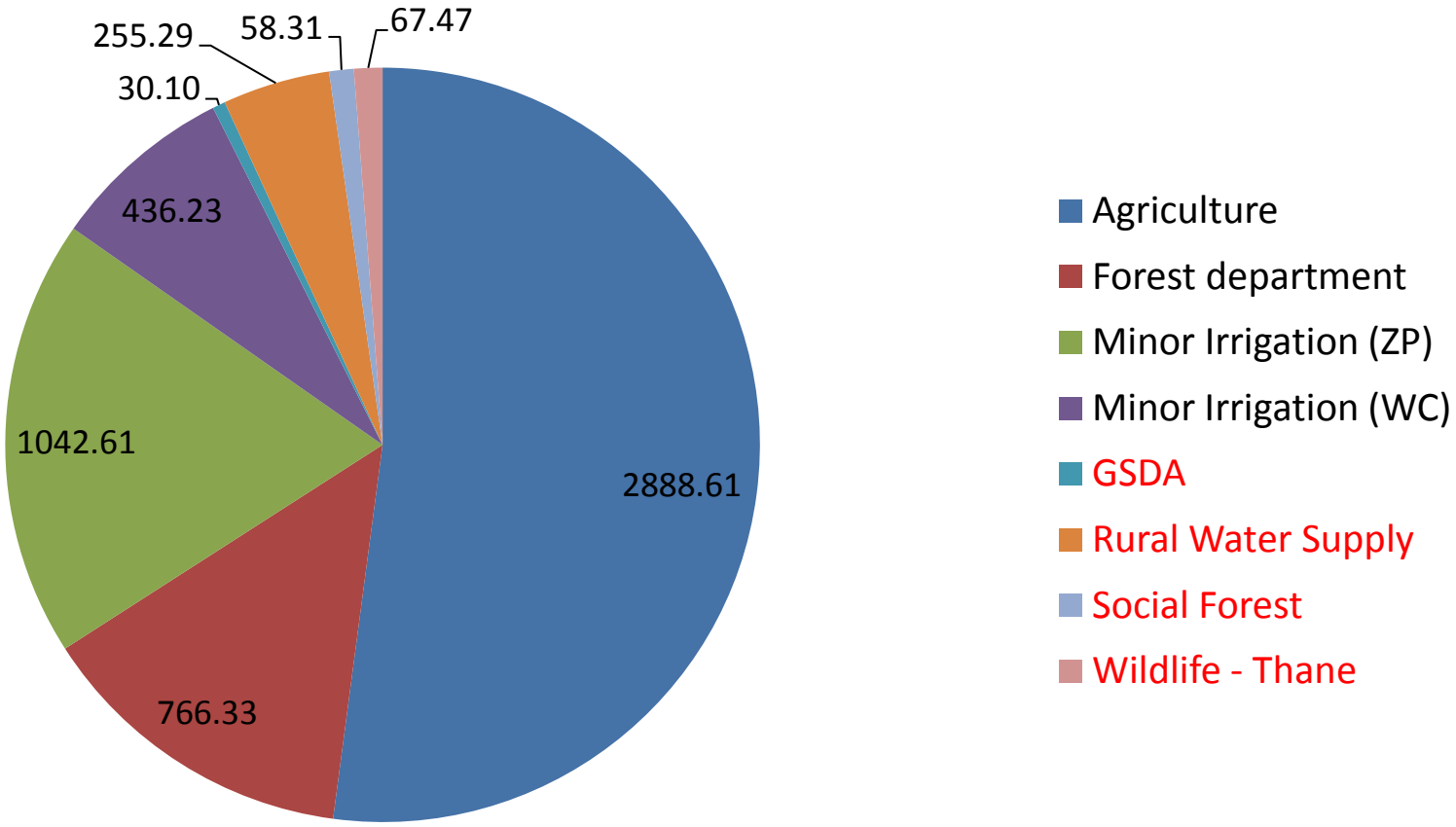
	Taluka	Village	Department Agriculture	Forest	MI(WC)	MI(ZP)	GSDA	Report Status
1	Mokhada	Beriste	1	-1		1		1
2		Aase	-1	1		-1		1
3		Chas	-2	-1		-2		1
4		Dhamani	1					1
5		Suryamal	-1					1
6		Dolhare	1	1		1	1	1
7		Brhmangao	-1	-1				1
8		Khoch	-2	-2		1	1	1
9		Kiniste	1		1	1		1
10		Karegao	1			1		1
11		Nilamati	1					1
12		Poshera	1	n		-1	1	1
13		Udhle	1		1	1		1
14		Jogalwadi	1			1		1
15	Jawhar	Kasatavadi						1
16		Juni Jawhar	1	n				1
17		Kashivali						1
18		Dengachimet	1	-2		1	1	1
19		Sarsun	-2	-2				1
20		Malghar	1				-1	1
21		Dadar Koparapada						1
22		Nyahale	1	n		1		1
23		Raitale	1			1	n	1
24		Dhanoshi						1
25		Jhambulmatha						1
26	Wada	Hamarapur				1		
27		Gorhe	1			n		
28		Ujjain	1	1				
29		Tuse	1					
30		Galtare	'-5/17'					
31	Vikramgarh	Sakhare	1			n		
32		Uprale	1					1
33		Utavali	1			n		
34		Khoste	1			-1		

1	Done
-1,-2	Started; 1,2 works remain
n	Not Started
	No work
ns	Taluka yet to be started

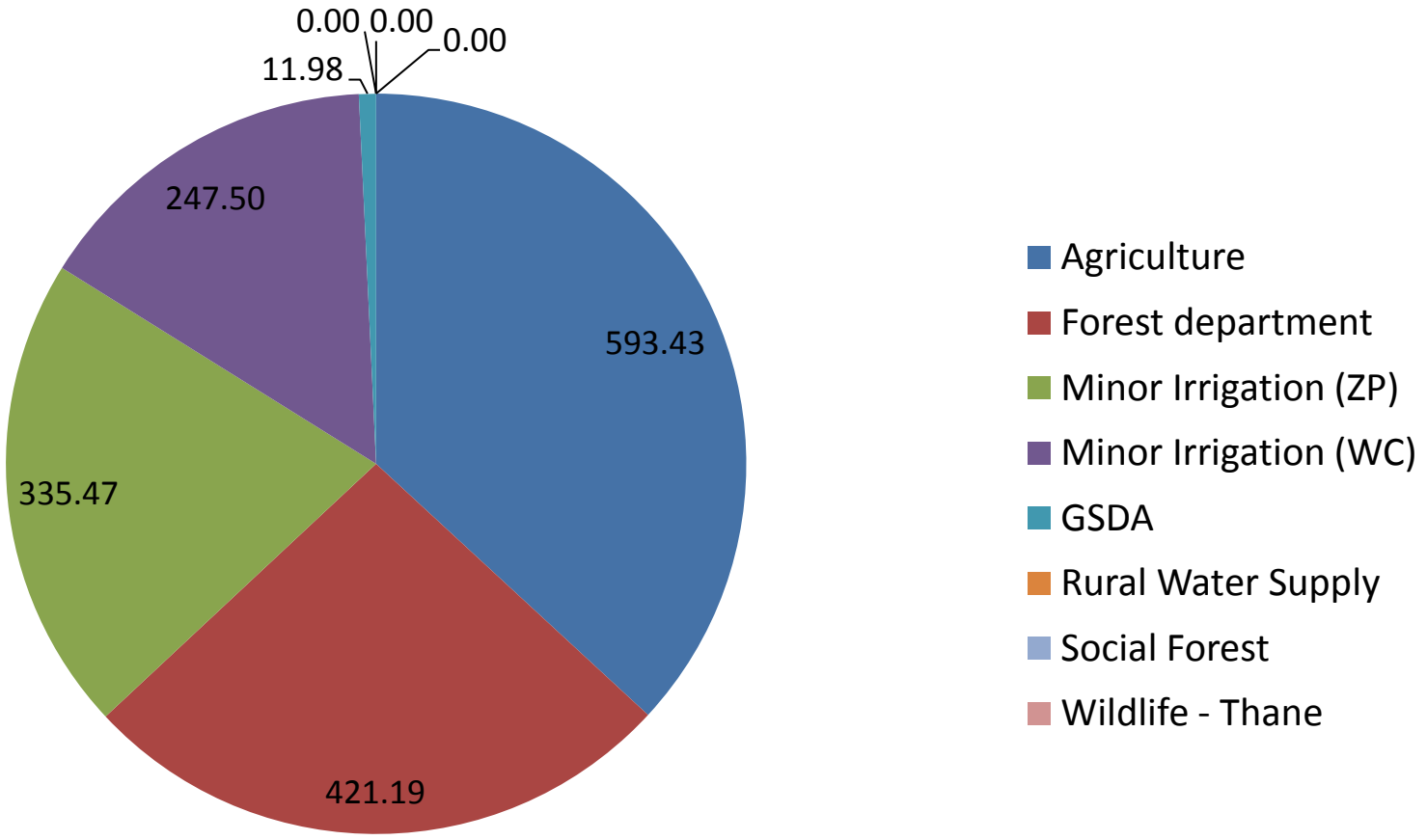
Summary – Palghar district

Department	Proposed in 2015-16		Completed works till May 2016		Assessed	
	Unit	Rs.(lakh)	Unit	Rs.(lakh)	Unit	Rs. (lakh)
Agriculture	1202	2888.61	534	665.99	492	593.43
Forest department	526	766.33	467	446.61	393	421.19
Minor Irrigation (ZP)	85	1042.61	45	566.06	34	335.47
Minor Irrigation (WC)	12	436.23	5	60.00	8	247.50
GSDA	7	30.10	7	20.98	3	11.98
Rural Water Supply	46	255.29	0	0.00	0	0.00
Social Forest	25	58.31	0	0.00	0	0.00
Wildlife - Thane	3	67.47	0	0.00	0	0.00
Total	**1906**	**5544.95**	**1058**	**1759.64**	**930**	**1609.57**

Palghar district - Fund Allotment



Palghar district - Assessment Summary



Nyahale Khurd						22	42.56
						Not OK	2
Interven	Proposed in 2015-16		Completed works till Dec		ssessme	Assessed	
	Unit	Rs.(lak	Unit	Rs.(lak		Unit	Rs. (lakh)
Agriculture department							
CCT							
Terracing	12	26.05	8	20.01	OK	8	20.01
Juni bhaat sheti							
Horticulture							
Drip / sprinkler irrigation							
Tree plantation along bunds							
CNB	2	43.35					
ENB	6	28.72	1	2.93	OK	1	2.93
Divergent bund							
Farm pond	18	19.65	1	0.81	OK	1	0.81
LBS	13	17.68	9	12.58	1 not OK	9	12.58
CNB repair	7	14.76	3	6.23	1 Not OK, 2	3	6.23
ENB repair							
Desilting							
Total	**58**	**150.21**	**22**	**42.56**		**22**	**42.56**
Forest department							
Vanikaran	1	6.7	1	3.78	Not visited		
Tree plantation							
CCT							
Forest ponds							
CNB							
LBS							
Gabion bu	1	2.88					
Water source level							
Forest bunds desilting							
Total	**2**	**9.58**	**1**	**3.78**		**0**	**0.00**
Minor Irrigation (ZP)							
Village ponds							
Recharge ponds							

Snapshot of village level assessment data

(sample village: Nyahale khurd, Jawhar taluka)

Jawhar						336	113.82
						Not ok	6
Intervent	Proposed in 2015-16		Completed works till Dec		Assessmer	Assessed	
	Unit	Rs.(lak	Unit	Rs.(lak		Unit	Rs. (lakh)
Agriculture department							
CCT							
Terracing	70	96.9	40	45.2	OK	40	45.20
Juni bhaat sheti							
Horticulture							
Drip / sprinkler irrigation							
Tree plantation along bunds							
CNB	11	209.72	1	9.32	Not visited		
ENB	11	54.38	1	2.93	OK	1	2.93
Divergent bund							
Farm ponds	75	75.37	2	1.62	OK	2	1.62
LBS	48	67.33	14	14.2	1 not OK, 10 C	11	13.36
CNB repair	11	23.1	3	6.23	2 OK, 1 not O	3	6.23
ENB repair							
Desilting							
Total	**226**	**526.80**	**61**	**79.50**		**57**	**69.34**
Forest department							
Vanikaran /	3	10.2	3	5.07	Not visited		
Tree plantation							
CCT	10	57.57	2	0.77	1 OK, 1 not vis	1	0.41
Forest pond	5	15.35					
CNB							
LBS	274	40.77	268	27.93	2 not OK	274	40.77
Gabion bun	1	2.88					
Water source level							
Forest bund	5	0.5	5	0.5	1 not OK, 1 OK	2	0.20
Total	**298**	**127.27**	**278**	**34.27**		**277**	**41.38**
Minor Irrigation (ZP)							
Village ponds							
Taluka total	**546**	**717.12**	**344**	**120.40**		**336**	**113.82**

Snapshot of taluka level assessment data

(sample taluka – Jawhar)

Overall Results – department-wise count of Not OK works

Work	Agriculture	Forest	MI ZP	Total
CNB repair	1			1
ENB	1/1			2
LBS	1	2		3
Horticulture	1			1
Pukka Bund		1	1/1	3
Pukka Bund repair			1/1	2
Forest Bund desilting		3		3
Forest Pond		1		1
Farm Pond	9/1			10
CCT		1		1
CCT Deepening		6		6
Total	15	14	4	33
% of Total assessed works	3%	3.5%	11.5%	3.5%

West wing – **RED**, East wing - **GREEN**

Audit Survey Inefficiencies

- Scheduling - unavailability of different department officials at the same time
  - led to multiple visits to the same village
  - inability to interview villagers -big picture was unclear
- Unavailability of estimates at the time of actual survey
- Inability to assess impact of interventions built after monsoon as they had no water

Observations - List A (Good practices)

- Documentation of works by Krushi Sahayak was exemplary in *Dolhara, Mokhada*
- *LBS in Dolhara* was praiseworthy
- All assessed structures in *Vasai taluka* were good, none were faulty, especially *farm ponds* were effective (farmers invested in plastic sheets)
- *Terracing* was effective in Mokhada, Jawhar and Vikramgad talukas, with few exceptions
- *Fruit tree plantation* was effective *in Chas, Kiniste, Nilmati* villages of Mokhada
- *SSB* can be effective for recharging of DW well but needs to be carefully designed to avoid water logging – *Khoch, Mokhada*
- *CNBs adjoining DW well* can be effective in retaining water in the well – *Beriste MI (ZP) bund*

Observations - List A (Bad practices)

- Improper site selection
  - Farm pond in shallow hard rock area – *Galtare, Wada*
  - Terracing on slopes with less soil thickness – *Malghar, Jawhar*
  - Deep CCT on flat lands – *Dolharpada, Talasari*
  - Desilting activity in bund without gates – *Ujjaini, Wada*
  - Farm pond on sloping land – *Raitale, Jawhar*
  - CNB on steep slopes – *Beriste, Mokhada*
- Quality of work
  - CNB repair works were found low quality in many cases
  - No disposal of silt in case of ponds and CNBs – some cases in *Jawhar and Mokhada*
  - **Big boulders in new CNB - Raitale, Jawhar**
- Low involvement of villagers while preparing village plans

Broad issues

- Major problem areas in Palghar district
  1. Drinking water scarcity
  2. Very less area under irrigation
  3. Reducing forest cover
  4. Increased migration

- At village or habitation level, these problems need to be tackled in integrated and coordinated manner

- JYS is certainly a positive step towards tackling these issues, but it needs to go a long way to realise the benefits

Broad issues - from List B

- **Need to focus on drinking water issue**
  - RWS works like well repair, deepening, water supply scheme repair, source-strengthening works etc. are absent
  - GSDA works like SSBs are very less inspite of their effectiveness
  - Habitation level drinking water issues missed
- **Selection of villages needs to be done more carefully**
  - Villages need to be prioritized based on problem areas, *i) drinking water scarcity, ii) less area under irrigation, iii) forest cover, iv) demand for labour work*
- **Purpose of interventions not clear in many cases**
  - CNBs should be constructed with definite purpose (DW or Agriculture)
  - List of beneficiaries in case of works for increasing irrigated area should be maintained
  - Works like LBS, CCT, ENBs should be done upstream of CNBs (ridge to valley)
- **Lack of coordination between departments**
  - RWS unaware of JSA objectives and its role, role of Gram Sewak is important
  - Forest department budget not proportional to forest area in selected JSA villages
  - Different departments, different hierarchies
- **Public awareness missing**
  - JSA plans not approved in Gram Sabha in many villages
  - Demand for terracing, well repair unmet due to lack of consultation
  - Heavy use of JCB in spite of large demand for labour work under MGNREGA

Short term suggestions

- RWS and GSDA budgets should be increased
- Habitation level drinking water survey
  - i) Number of dry months of primary well, ii) distance to wells in dry season, iii) PWS status
  - Meeting to be held in each habitation for demand of DW related works like well repair, PWS repair, new PWS etc.
  - Above activities can be carried out by **Gram Sewak** and reported to RWS or BDO

  This will help in tackling drinking water scarcity
- Forest cover data per village should be considered while selecting villages
  - Involvement of **Forest Guard** during preparation of JSA plan for villages with significant forest cover

  This will help in increasing stream flows, reducing soil erosion
- List of beneficiaries and purpose to be maintained while planning
  - Drinking water / increasing area under irrigation / reducing soil erosion / creating employment under NREGA

  This will help in targeting beneficiaries correctly
- All earth work should be done under MGNREGA
  - **Rozgar Sewak** should be consulted for demand of work

  This will help in creating employment and reducing migration
- Subsidies for plastic sheets in farm ponds is essential

Another suggestion

Big boulders in ongoing CNB in Raitale (Jawhar)

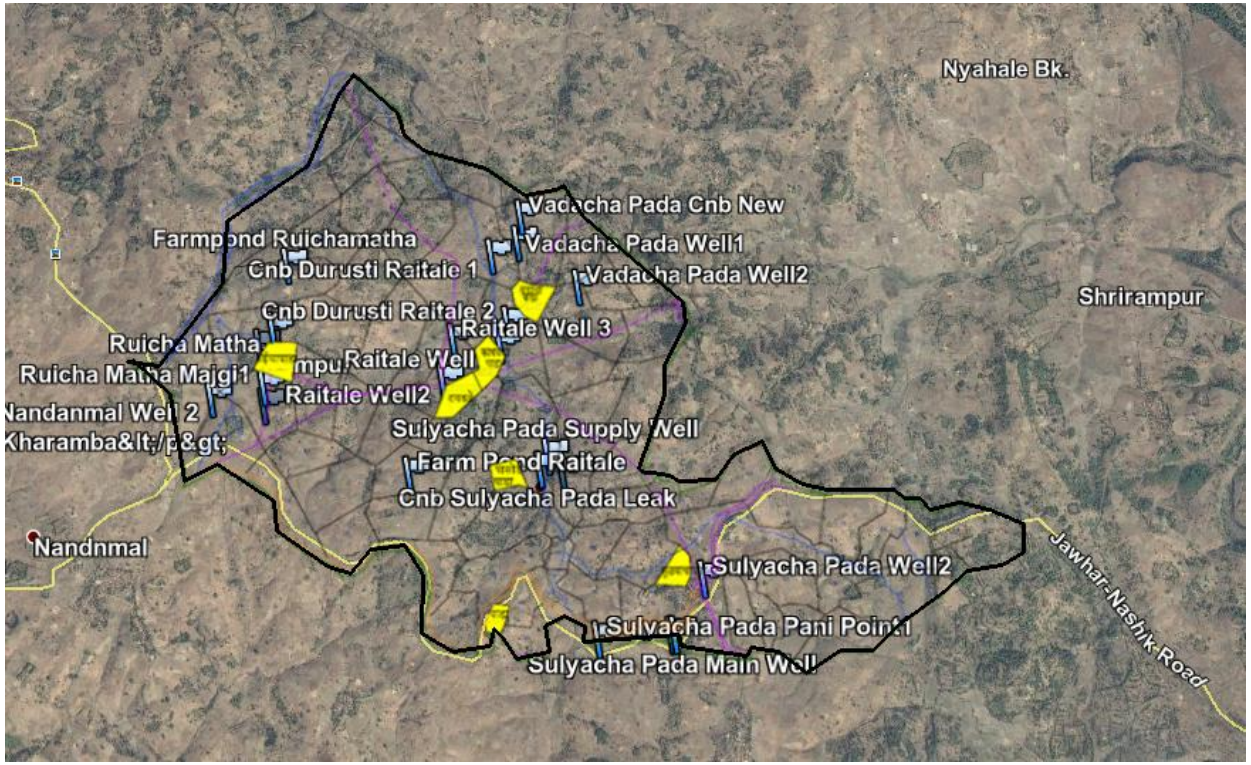
Continuous monitoring
of major structures is essential

Medium-long term suggestions

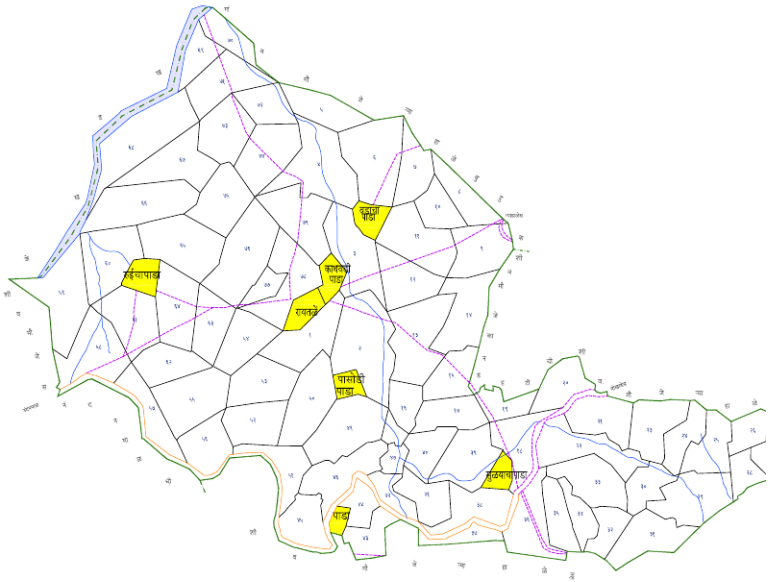
- Use of various maps (soil, slope, land-use) and GIS for planning
  - Marking forest area, irrigated area, rainfed area in the village
  - Dividing village into different zones according to soil thickness and slope
- Improving water balance estimation
  - Monitoring one well per habitation at frequent intervals
  - Rough estimate for groundwater balance
- Deciding target area to be brought under irrigation and computing water requirement before planning interventions

This will help in making planning process more robust

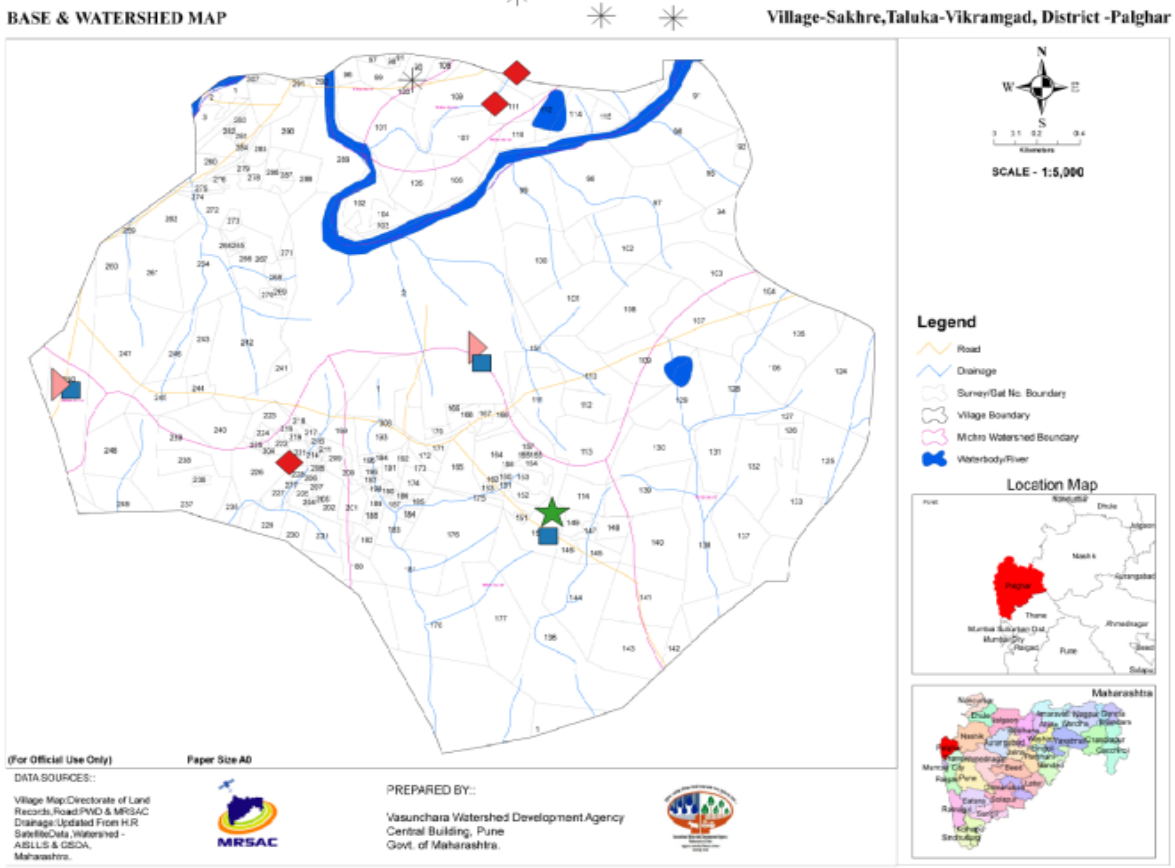
Raitale (Jawhar taluka) – GIS



Revenue map overlayed on Google Earth and all drinking water sources, streams and interventions marked



Geo-Reference Base Map



Legend

Agriculture

- cnb
- enb

Forest

- cct
- forest_pond
- lbs

Revised Methodology for future work

- Assessment will be done village-wise i.e. multiple visits to same village will be avoided. Schedule will be provided to nodal officer
- Separate schedule will be prepared for visits to all ongoing CNBs
- Estimates for all works will be obtained in advance
- JSA plans will be studied and analyzed
- Krushi Sahayak, Gram Sevak, Rozgar Sevak and Forest Guard should be present for the assessment and should be able to point all the interventions on the revenue map.
- A preliminary meeting will be held in each habitation of selected village
- Atleast one farmer / villager and beneficiaries (wherever applicable) will be assisting during audit survey

Separate document for detailed methodology will be provided

CCT / DCT (Good example)

Forest pond in Kharshet (Good example)

CNB adjoining to drinking water well Beriste (Good example)

CCT / DCT on flat land (Bad practice)

CCT Deepening(Dolharpada-Forest)
CCT was done in a flat area, where its purpose is wasted. Reason provided for doing so was that the mud excavated will be used for nursery's plantation

Inappropriate site selection

KT bund desilting by forest department in Ujjaini (Wada requires the gates of KT weir

Farm Pond incorrect site selection

(in hard rock)

Galtare farm pond gat no 220: soil eroded from the wall, hard strata

CNB (Ganjad- Dahanu)

Concrete has come out and reinforcement is visible

The hole was later patched by the department

Thank you