

Towards improved Block-level planning and practices

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Multi-stakeholder engagement meeting

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Technology and Development Solutions Cell (TDSC)

IIT Bombay

Contents

- About TDSC
- Development challenges
 - *Diagnosis and a prescription*
- Mokhada block level planning
 - *Water stress assessment*
 - *Work-in progress towards planning protocols*
- Way forward

Introductory note

What are we going to speak about ...

- A better way of

“planning for infrastructure and development services

through coordinated effort of Govt, CSR/NGOs, Academia

in the interest of people, at large

- An on-going attempt in Mohkada, Taluka

About TDSC

Technology and Development Solutions Cell (TDSC)

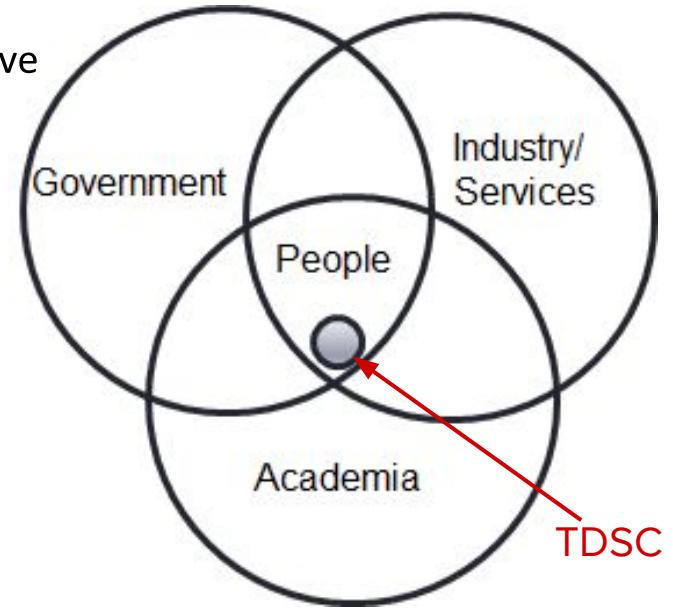
Mission: Professional support for the development sector to serve the bottom 80% of the populace

Mandate

- Demand driven engagement with *people, NGOs, govt.*
- Formalization of knowledge and processes
- Training and outreach
- Incubate budding development professionals

Structure

- A cell at IIT Bombay composed of ~10 engineers + 3 faculty members (since 2013)



Services of TDSC

- Assessment/Audit of development programs
 - Agriculture/Watershed: JSA- *Palghar, Amravati*
 - Rural water supply: PWS audit- *Thane, Palghar*
 - Rural roads, civil amenities: Thakkar Bappa Yojana-*Palghar*
- Technical support to NGOs/CSRs/Govt.
 - *Rejuvenation of diversion based irrigation, Yuva Mitra, Sinnar*
 - *Mokhada block level planning, Aroehan, Jawhar*
 - Tembha PWS design, Tata Trust, *Tembha*
- Training and outreach
 - Jalyukta Shivar assessment training to 17 colleges
 - Piped water systems assessment training to 15 colleges
- Improvement in government process (Govt. circular)
 - Improved guideline for JSA assessment.
 - Recommended empanelment of colleges for JSA/RWS audit



Development Challenges

A diagnosis

Causes, factors, issues

Limitations posed by nature

- Undulating terrain (*very less flat crop land*)
- Extremely high rainfall (*soil erosion, leaching*)
- Poor aquifer system (*low porous basalt*)
- Remote habitations (*access to market, services*)
- Scattered and low population density

Functioning State/Govt's dept.

- Political negligence, *vote counts*
- Manpower deficit, *punishment posting*
- Legacy issues, old job definitions
- Poor incentive structures

CSR/ NGOs response: *Good! Lot of money put in, but*

- Too much sector specific/oriented
- Piecemeal, isolated efforts
- Sceptical towards government machinery
- Compartmentalization, *no sharing across NGOs*
- In general, good work but *poor documentation*

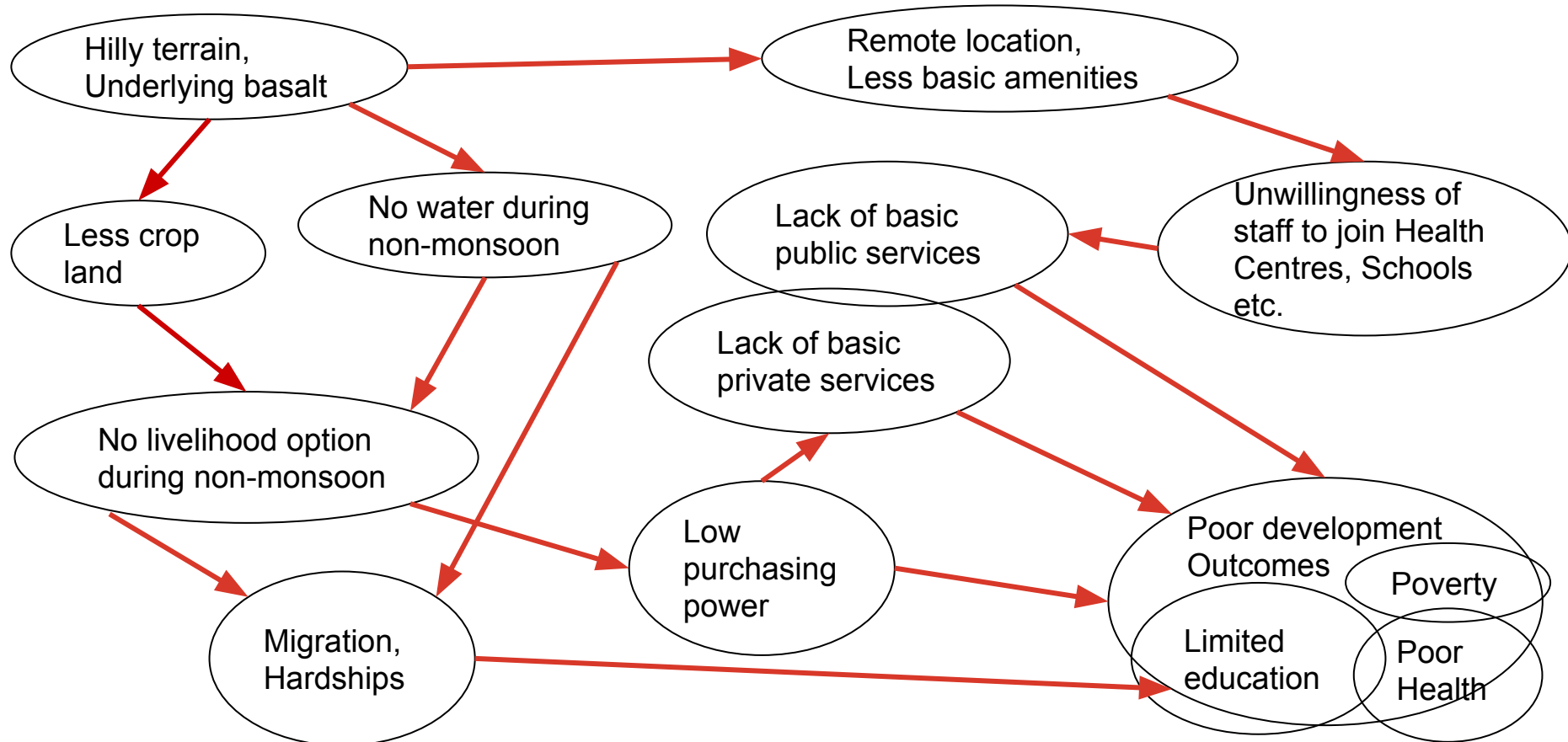
Special attention required for scheduled areas

- Historically, left out/marginalised.
- Traditionally, subsistence farming. Not very much enterprising like other farmers
- No real land holding. *Van patta*

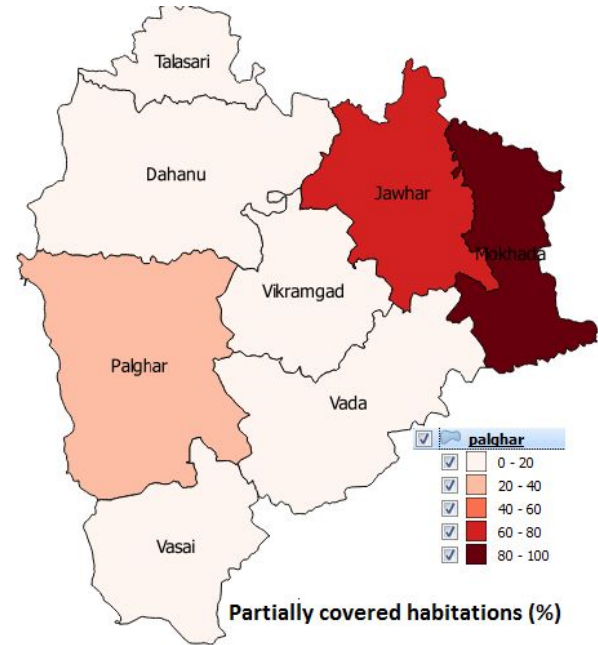
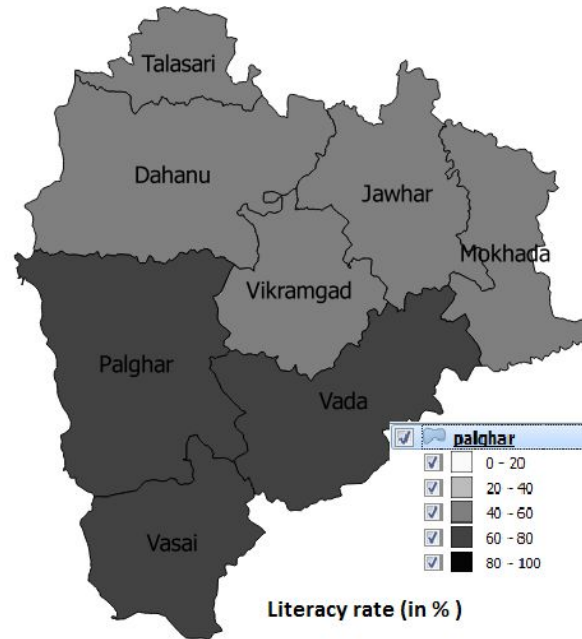
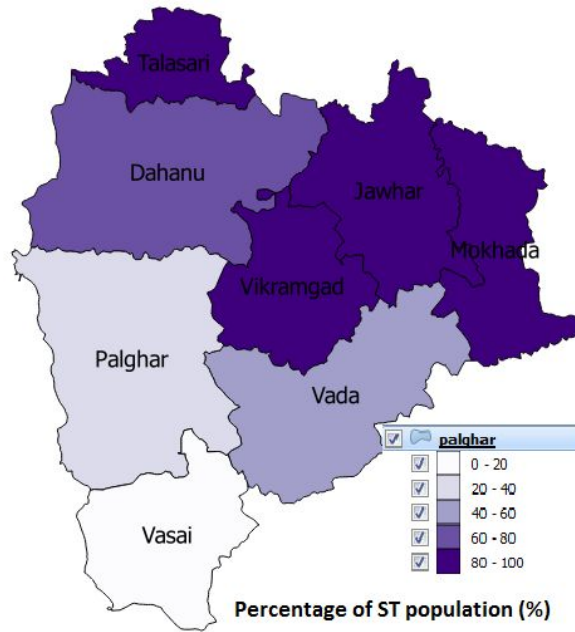
And most important, Academia (especially technical education)

- Minimal explicit engagement with the development agenda for the bottom 80%
- Missed opportunity as a *trustworthy* partner to the State/people

The (non)development cycle



The regional imbalance



Development Challenges

A prescription

Key ingredients of prescription

- **Perspective planning:** *long term, 5-10-15 years*
- **Capacity Building:** Investment in **people**, at two levels
 - At habitation/village level: Capacity building
 - At taluka/block level: More professionalization, technical/research/analysis/planning support

for Improved block-level (regional) planning

- Integrated, coordinated, responsive
- *This may sound as platitude but needs to be reworked again*
- *May not be the panacea or silver bullet, but should be tried afresh*
- *Develop this as **proof-of-concept***

Improved Block level planning

→ *Integrated*

- ◆ In space: all villages/habitations, an integrated plan
- ◆ In sectors: different sectors; water, agriculture, livelihood, health etc.
- ◆ In time: across, 3-5-7 years. Timebound but flexible, **no mad-rush to march end.**

→ *Coordinated*

- ◆ Among different NGOs/CSR
- ◆ With the State's effort

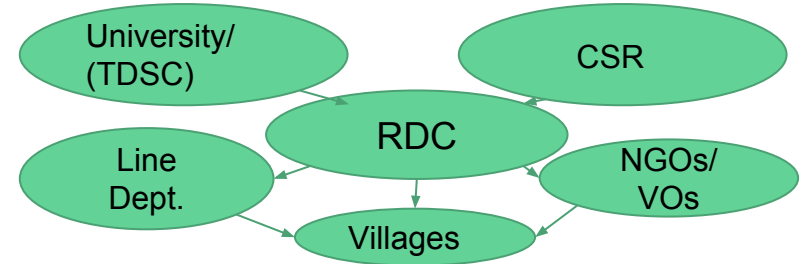
→ *Responsive*

- ◆ To the demand of people
- ◆ Accountable to the people
- ◆ **Monitoring** mechanism woven with people participation

From prescription to practice: Regional Development Centre (RDC)

Regional Development Centre

- 3-4 engineers, social science graduates, *suitably trained*
- Supported by **network of NGO volunteers**
- To **supplement** the current CSR/NGO effort



Roles/Activities

Roles	Suggested activities
Status and need assessment	Design and execute periodic assessments. Identify priority, stress areas, Prepare shelf of works for the block. Prepare village level asset registry .
Liaison with CSR/NGOs and line departments	Enable cross learning/information sharing among NGOs Identify and plan for capacity shortage at village level institutions, <i>Anganwadi, Asha</i>
Technical support for implementation	Technical, process cases studies and templates for civil, electrical, mechanical, livelihood Use of tools (GIS etc.) for natural resource management, <i>identify location thereof</i>
Monitoring and reporting	Identification of suitable indicators and schedule for monitoring and reporting
Outreach and training	Information about new government schemes, civil rights. Training- <i>livelihood etc.</i>

Sample RDC outputs

Assessment and Monitoring

What is the groundwater status and regime of Mokhada block?

What is the surface water storage potential of the main drainage lines?

Design

How to develop a protocol for improved STEM delivery in ashramshalas?

Design/build GIS application to track and monitor rural infrastructure

Is there a shelf of works related to renewable energy interventions in the block?

What are end-to-end details of market connected livelihood options?

What is the cost-benefit analysis of setting up micro-irrigation project?

Preparation of a detailed project report for chain of CNBs along a drainage line

Training and outreach

Content development and Training for village level resources monitoring, maintenance operations etc.

Mokhada Block level planning

Project ASHA

Aroehan-Siemens-TDSC

1. Block-level understanding of stress and requirements
2. In-depth study, case studies and solution templates for specific problems

Water stress assessment of Mokhada Block

- **Mokhada and water availability**

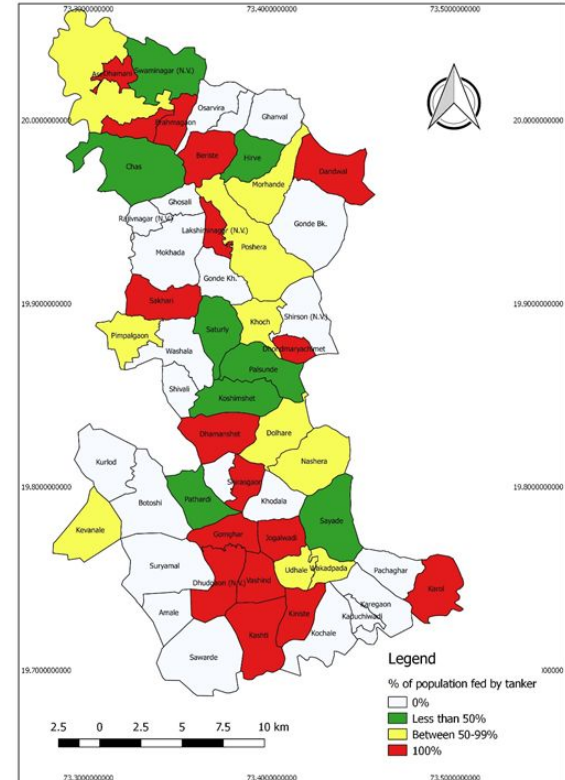
- High rainfall (2500 mm avg), *but goes dry after winter*
- Hilly terrain, **No aquifer system** (poor basaltic strata)
- General watershed management principles **do not apply**
- Negligible groundwater recharge, no water table
- Baseflow, surface storage, point locations are *important*

An exercise was done to-

- understand issues related to drinking water stress
- recommend for interventions for the reduction in stress
- categories villages/habitations in order to *prioritize* efforts

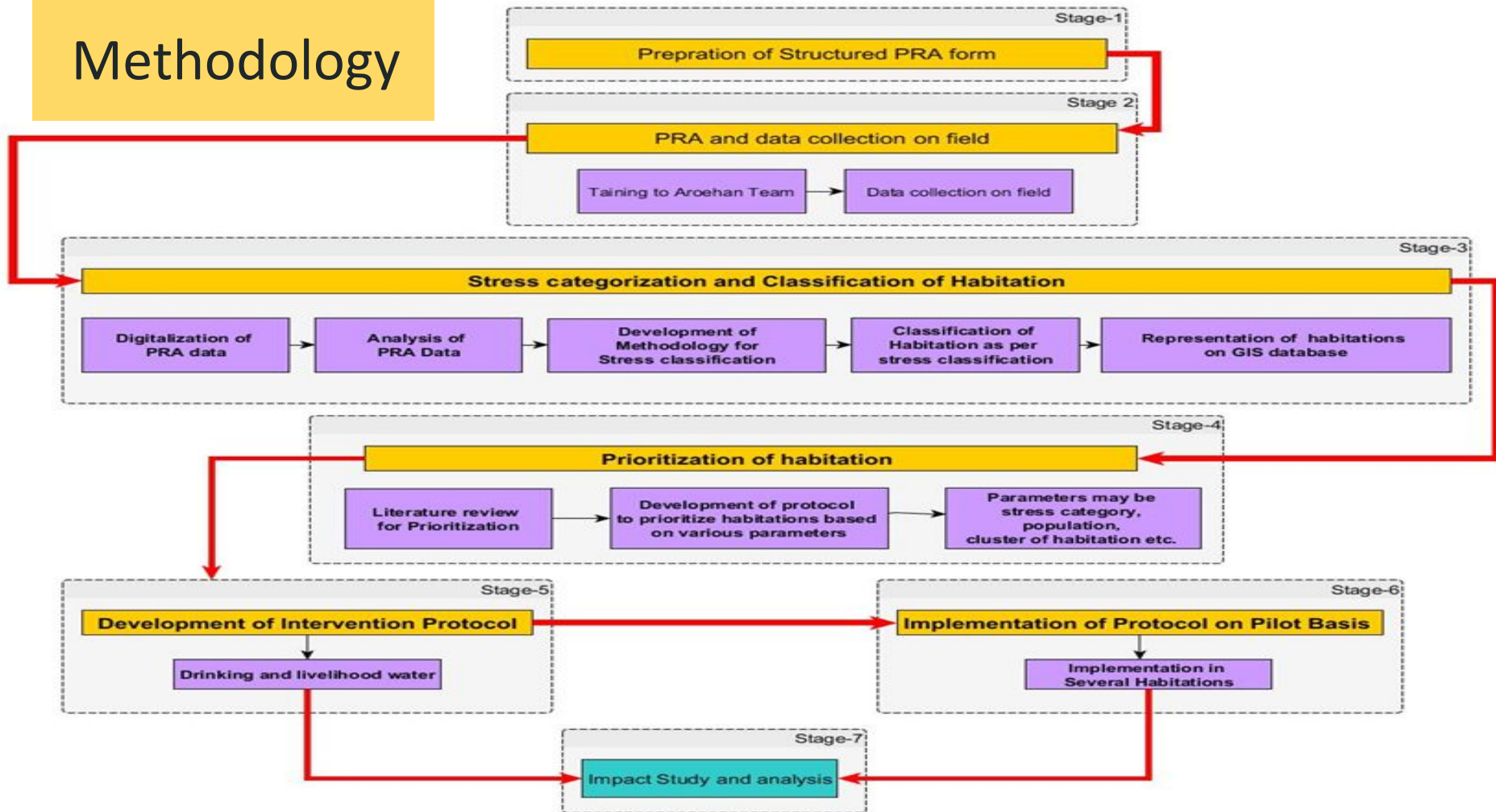
Methodology

- A mix of tools e.g. PRA, structured questionnaire/interview schedules, GPS/GIS etc.
- Stress categories based on **availability, accessibility and quality**



Drinking water stress: *tanker-fed villages*

Methodology



Parameters for stress categorization

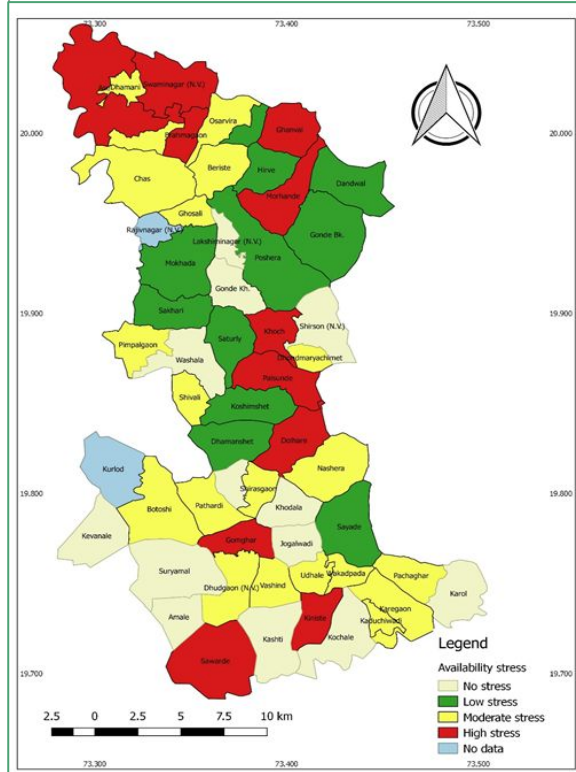
Information from PRA	Principal features	Category
Availability		
12 month availability of water	Throughout the year	Low
Not available in April & May	10 Month	Moderate
Available for few months after monsoon	Less than 10 months	High
Accessibility		
Plain terrain, Pakka road	Good	Low
Moderate slope, Pakka road/ paulvat Plain terrain, paulvat	Fair	Moderate
Steep slope, Pakka road/pavulvat/ dangerous road Pain terrain, dangerous road Moderate slope, dangerous road	Tough	High
Quality		
Good	Good	Low
Bad or Non-potable	Bad	Moderate

Importance within parameters

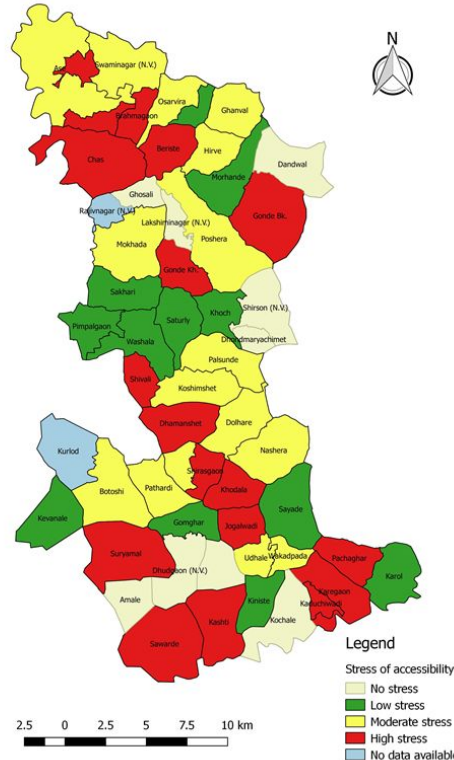
Availability > Accessibility > Quality

Block level drinking water stress indicators

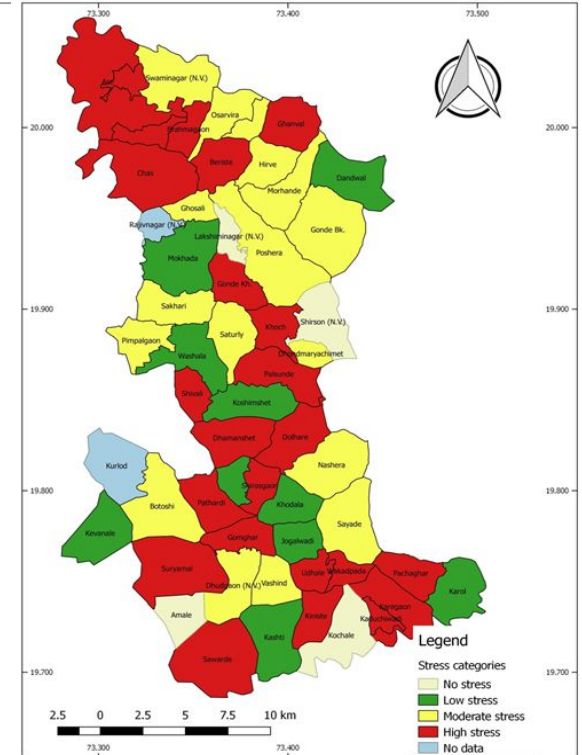
Availability



Accessibility



Overall



Case Studies

Solar powered drinking water pumping systems

- For remote villages with no grid power and good solar conditions
Solar PV water system may be a good solution
 - Reduction in accessibility stress
 - High capital cost, but promising for small remote habitations
- Scope of work
A document explaining design procedure of Solar PV water pumping system

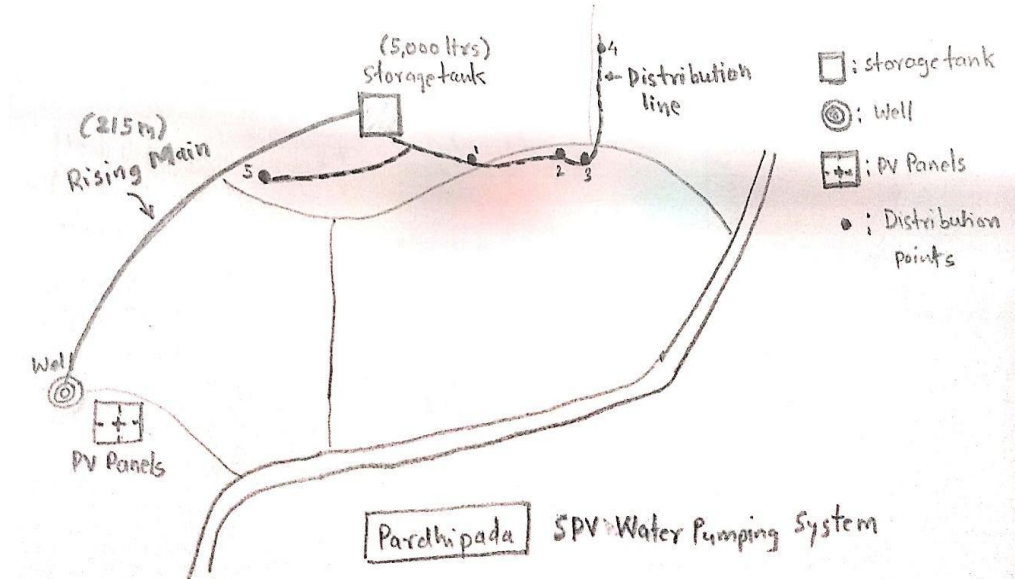
Case study of Solar PWS in Pardhipada (Aine village)

- Installed by Pragati Pratishthan in Jan, 2012
- Demand: 8000 litres/day (202 x 40 lpcd)
- Source: Dug well (12 months availability)
- Installed tank capacity: 5000 litres
- Pump capacity: 1 HP
- PV panel: 240 W (covered by wired mesh)
- Water supply
 - daily (non-monsoon)
 - on alternate days (rainy season)

- **Key takeaways**

Careful selection of source (*perennial*)

Quality pump and panels (*less maintenance*)



Design procedure of a solar water pumping system

Step 1: Demand estimation, water source selection and capacity verification

Step 2: Determine storage tank capacity

Step 3: Determine the *locations* and *elevation* of system components

Step 4: Pump selection (either submersible or surface mounted)

Step 5: Solar PV panel selection and array layout

Step 6: Distribution points of use and pipeline routes (network layout)

Step 7: Determine operating schedule, maintenance and monitoring tasks

Design document would provide technical details and guidelines for above steps.

Solar based micro irrigation

- Need
 - Only 2% of the total area **sown more than once**.
 - Access to energy and water?
 - Small land holding and poor economic condition
 - *Solar based micro-irrigation, may* be a promising option
 - High initial cost but low O&M cost.
 - Group farming and subsidy, to share the initial burden
 - Efforts have been taken towards this by few NGOs in the area.
- A standard operating procedure doc would be very useful

Tulyachapada solar based drip irrigation scheme

- Scheme details

- Source – Tulyachapada dam
- 10 system established for 10 groups
- Each group has 10-11 farmers with half acre land each
- Crop: Groundnut

- Cost

- Establishment cost of a system around 10 lakhs for 6 acres
- 40% of drip cost paid by government



Gram Panchayat Development Plan

- GPDP program under 14th Finance Commission
 - Resources available
 - Untied funds – FC grant, PESA, TSP, own resource
 - Convergence with central and state programs, district annual plan
 - Room and need for CSR to come in
- Maharashtra government adaptation
 - “Amcha Gaon Amcha Vikas”
 - Maharashtra GR and guideline dated 5th November 2015 by RDD

GPDP process and funds

- GPDP preparation should involve
 - demand identification by people with resources availability,
 - infrastructure status and gaps,
 - prioritization of important sectors and schemes
- Lot of money available
 - FC grant – (around 50 lakhs per GP), roughly same amount under PESA (tribal areas)
- Significant amount gets lapsed
 - FC grant; basic grant and performance grant
 - Performance grant based on proper planning and implementation

Observations: Aase GPDP plan, 2015-20

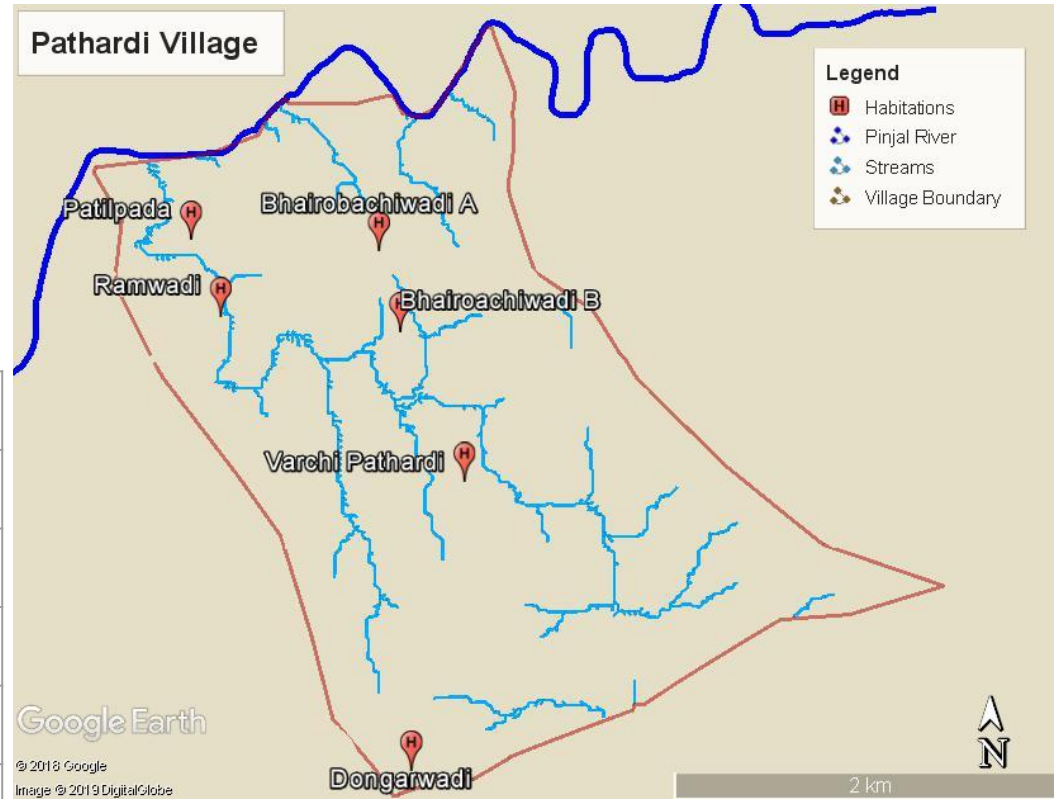
- Work plan
 - Yearly plan prepared but merely a list of activities. No justification or demand estimation.
 - Planning duration short and under bureaucratic pressure, delay in sanction
 - More emphasis of civil infrastructure, livelihood enhancement support neglected
- Technical support
 - No technical support in planning (Scope in the GR)
 - Only one time training, no hand holding thereafter
 - No capacity for estimate preparation etc. at village level

(Finally, GPDP no one's baby – feedback from ground implementers)

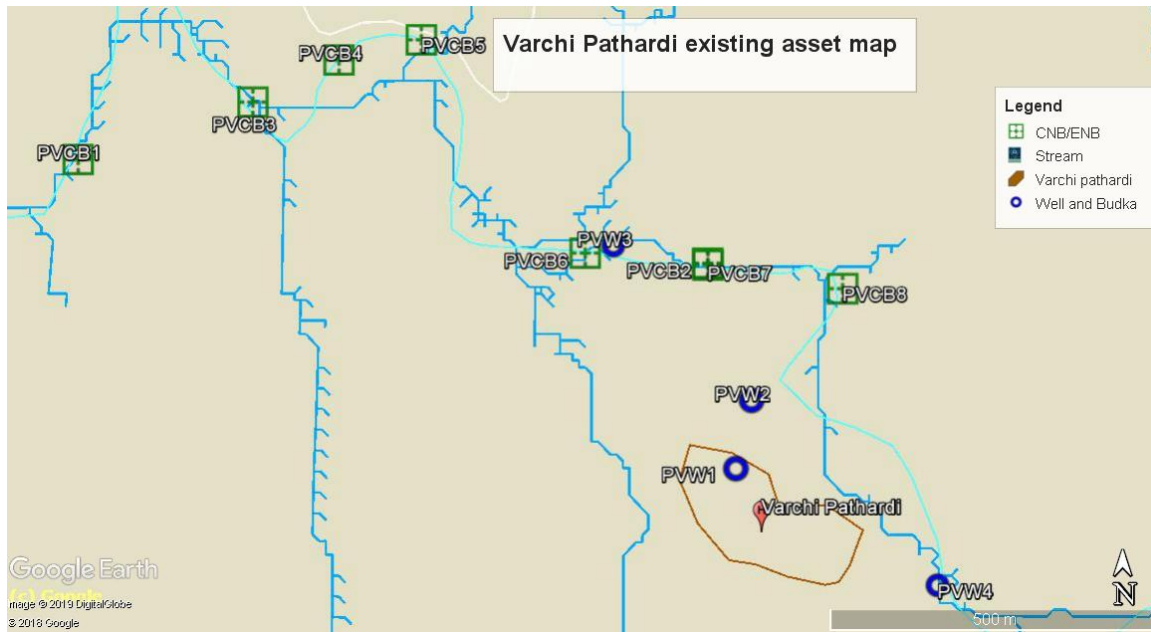
Pathardi village water status assessment

- 4 out of 5 habitations along one seasonal waterbody (nala)
- Drinking water sources are based on groundwater
- Potential Rabi agricultural area

Habitation name	Type of Stress
Patilpada/ Khalchi Pathardi	Accessibility
Ramwadi/ Naviwadi	No stress
Bhairabhachiwadi	Availability
Varchi Pathardi/ Pathardi	Availability and Quality
Dongarwadi	Availability



Water assets identification, geo-tagging & status mapping



Existing drinking and agriculture water assets of Varchi Pathardi Habitation

Note: Asset code is based on Village name+Habitation name+ Asset name+ Asset number

- Questionnaires were prepared to assess each asset
- GPS location, present physical status, water availability and household dependency on each asset was mapped



Status analysis and recommendations

Observations	Recommendations
Drinking water need is fulfilled by primary wells that are within 500m of Habitation and usually gets dried up in November	Priority should be given to primary wells for assuring availability of water for maximum time
Cement Nala Bunds lack required maintenance/desilting	CNB should be desilted quickly to make better use of its capacity. Proper vent operation should be ensured.
Lack of water and limited land holding leading to only one crop per year	Need to generate secondary source of livelihood

Watershed interventions (WI) planning protocol

How to plan, what to plan, where to plan the WI?

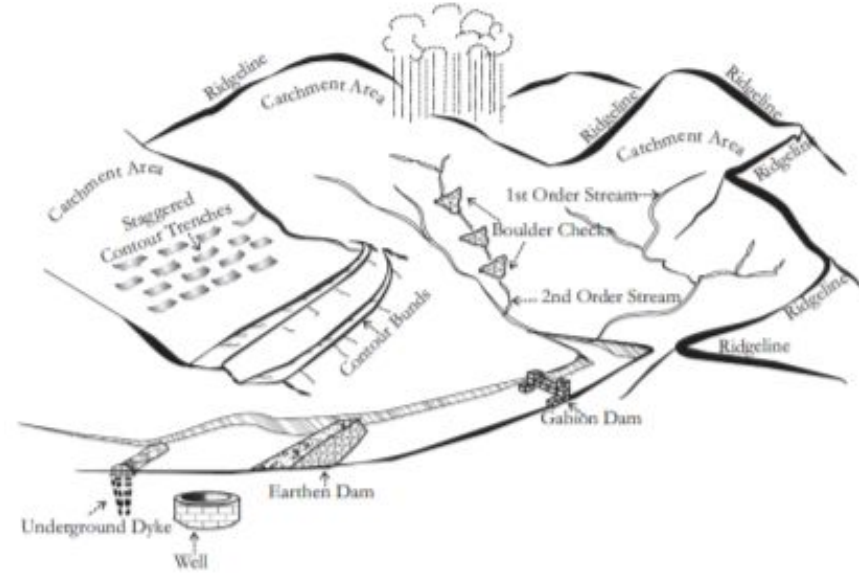
Protocol important because region has limitations

- traditional watershed planning
- water recharge and storage structures

Scope

- special intervention for source strengthening
- increase area under second crop

Handy protocol document useful to all



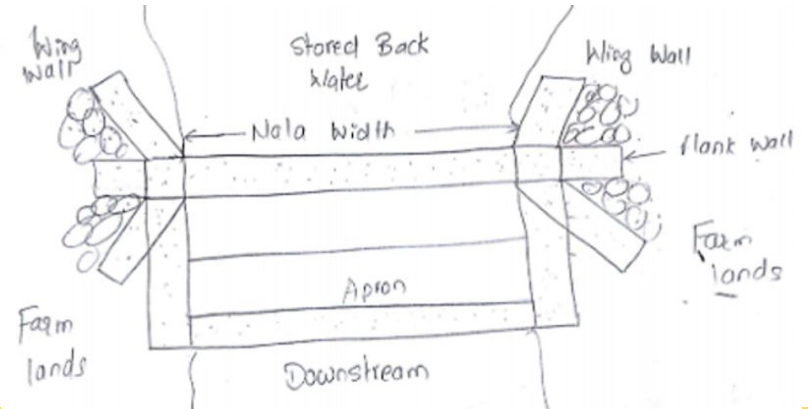
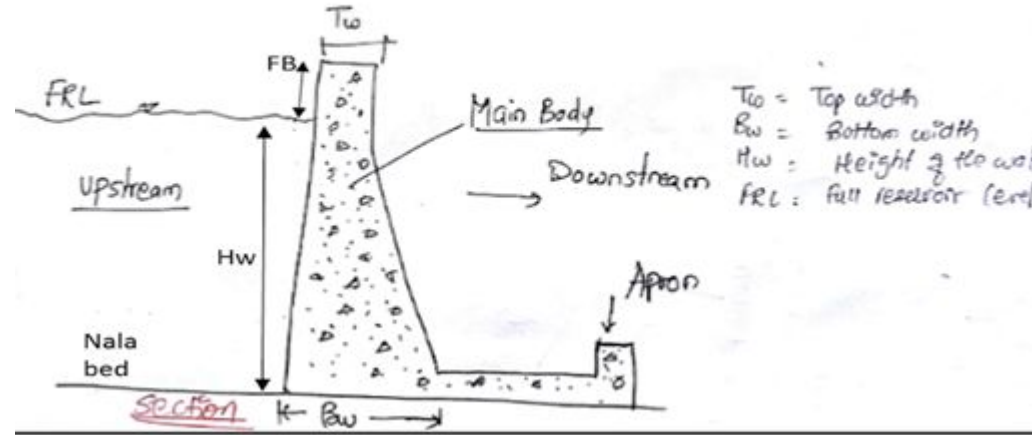
Source: SPS watershed manual (2006)

Steps of determining planning protocol

- Existing mapped interventions and their working condition
- Demand identification
- Planning for demand prioritization
- Intervention based on purpose -identification of beneficiaries, potential use
- Site selection procedures
- Some important steps - separate procedures useful for all
 - Nala slope measurement
 - Storage capacities
 - Increase in crop yield

Intervention planning protocol- Cement nala bund

- Definition
 - Cement concrete bund across the nala
 - Local names- pukka bund, weir, check dams
- Purpose of the bund
 - Recharge and source strengthening
 - Water storage
- Types
 - Standard overflow bund
 - With provision of opening - gated, vents
- Components
 - Main body, flank wall, wing wall, apron,
 - Vents, gates



Stepwise procedure to determine the CNB location

Step 1: Procuring the recharge priority map to understand location and characteristics of stream flows

Step 2: Identification and classification of streams

Step 3: Identification of existing assets within village boundary

Step 4: Verification of drainage map markings with intended purpose of storage

Step 5: Determining potential location of the bund

Step 6: Validating the tentative bund location based on design principles

Way Forward

Final pitch

- Coordinated effort by NGOs/CSR partners
 - Initiation and support for **Regional Development Centre**
 - A detailed concept note can be prepared with tasks, timelines and financials
- Complement State's efforts
 - Afterall it is the **elephant in the room**
 - GPDP (GP development plan): An important intervention opportunity
 - District administration actively soliciting third-party involvement
 - A webportal is in place, it should be helpful. <http://csrzppalghar.com/>
- Integrated block level planning through long-term investments in capacity, infrastructure and processes

Thank you

`http://www.ctara.iitb.ac.in/tdsc`

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