

Knowledge Infrastructure for Development

The beginning of a Public-Civil/University-Private (PUP) Partnership

Milind Sohoni

Centre for Technology Alternatives for Rural Areas, CSE
IIT-Bombay



www.ctara.iitb.ac.in

www.cse.iitb.ac.in/~sohoni

Outline

- The CAPART problem as posed.
 - ▶ Support. Act. People's action. Rural technology.
 - ▶ Development Research Institutes
- The Development Agenda.
- Governance and people deficit-new knowledge and new job definitions.
- CTARA-knowledge products, agents and engagement.
- CAPART design: The 3-way engagement-state-VO-university.
 - ▶ *convergence* with other programs
- Elephants in the room.

CAPART's brief

Vision and Mission

- Play a dynamic and catalytic role with the various governmental agencies and NGOs, influence public policy and contribute its share towards the many-sided development of Rural India.
- Work in close coordination with the rural NGOs and empower them.

Operational Steps:

- encourage and promote people's action and voluntary efforts
- be the nodal center for rural technologies, conduit for appropriate technologies for govt. as well as voluntary agencies
- supply technology to small manufacturers, private, cooperative and state.
- strengthen existing institutions of research and develop or set up institutions, for largely rural interests
- to carry out research studies on the use of appropriate technology and to offer fellowships and prizes

Problem before CAPART (IRMA and other reviews)

- Improve development outcomes.
- Provide strategic inputs, not volume nor dependency.
- Cross departmental boundaries. Become a knowledge player.
- Promote rural technology. Strengthen people's action!
- Manage historical linkages with VO/NGO. Ensure feasibility within current organizational space.
- Explore new mechanisms and new partnerships. Preserve regional focus.

Development Research Institutes.

Provisioning for Development

Maharashtra's Development Demands
Water, Public Transport, SME, Energy



Outcomes. Value

Need for Knowledge, New Practices, New Research
New Job Profiles, Avenues for Professionals.



The role of University, Higher Education and Civil Society
Knowledge Structures. Key Areas.
Trust. Role Models. Formality. Engagement



Mechanisms for a Partnership
Knowledge and how to pay for it.
Incentive Structures

Basic Well-being, Resources and Livelihoods



- Basic issues of water, food, health and *living!*
- Severe stress in natural resources. *Fodder, Firewood.*



The Data

Year-round drinking water availability.

| Year | Rural | Urban |
|------------------------------|------------|-------|
| 2012 per 1000 (69th NSSO) | 858 | 896 |
| Maharashtra | 745 | 931 |
| 2008 | 862 | 911 |

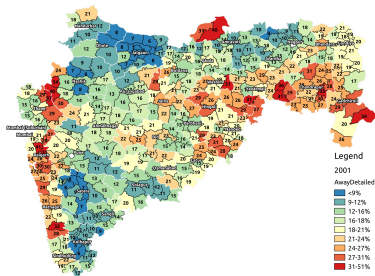


Also affecting livelihoods...

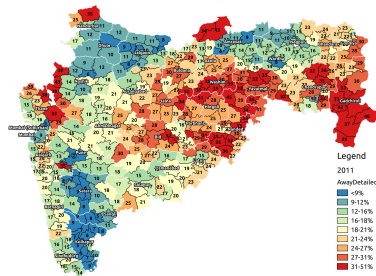
similarly about Milk, Electricity, Cooking Fuel.

Rural Maharashtra: 2001 and 2011

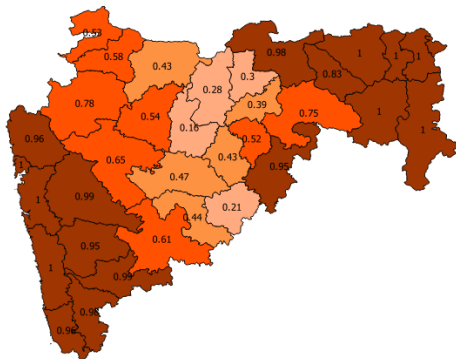
Percentage of Rural Households with Primary Source more than 500m away (2001)



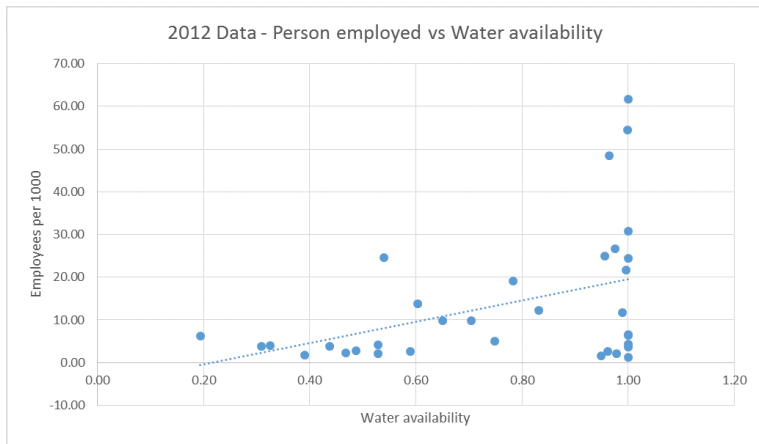
Percentage of Rural Households with Primary Source more than 500m away (2011)



Urban Drinking Water



Drinking Water and formal sector jobs



Transport and health also very important. [Also see Kelkar Committee report.](#)

Analysis-The Governance Gap

- **Under-staffing.** 2 RWS engineers, 0.5 field geologist per taluka.
 - ▶ delays, poor monitoring, no time for assessments.
 - ▶ **No expansion possible for current job description.**
- **Poor Data, Outdated procedures.** Example: Design of multi-village schemes, watershed treatment. Regional planning.
 - ▶ **MEETRA, MERI, Yashada, GSDA.** **State Statistical Board**
- **No new business models or space for professionals.** Disinterest of the private sector.
- **No identified institution for research, design, innovation, evaluation, assessment.**



Severe Knowledge Shortage.

Analysis-The Governance Gap

- **Under-staffing.** 2 RWS engineers, 0.5 field geologist per taluka.
 - ▶ delays, poor monitoring, no time for assessments.
 - ▶ **No expansion possible for current job description.**
- **Poor Data, Outdated procedures.** Example: Design of multi-village schemes, watershed treatment. Regional planning.
 - ▶ **MEETRA, MERI, Yashada, GSDA.** **State Statistical Board**
- **No new business models or space for professionals.** Disinterest of the private sector.
- **No identified institution for research, design, innovation, evaluation, assessment.**



Severe Knowledge Shortage.

Basic Question : *What are knowledge products?* **Who will generate?**
Who will deliver?

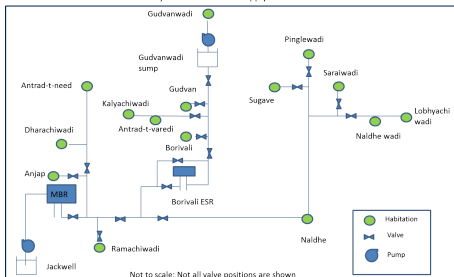
Knowledge Structures-Examples from CTARA

Water Supply

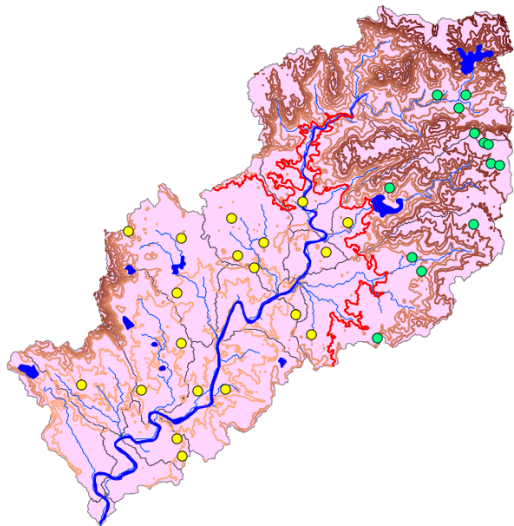
- **Monitoring and Execution:** Actual performance of programs. Taluka and district-level assessments of NRDWP. Assisting GPs and ULBs during execution. Testing. Organizing information, material and financial flows.
- **Evaluation and Assessment:** Evaluation of Groundwater quality, design of WTPs. Assessment of MSNA for Parbhani.
- **Planning and Designs:** Economic models, GIS, Optimization frameworks. Jalyukta shivar. Irrigation and Water-use efficiency.
- **Failure Analysis:** Failed rural regional schemes. Failed bandharas. Testing.
- **Feasibility Analysis and Innovative designs:** New watershed programs. Simulation and Modeling of GW. Bulk-water grids. Better Meters.

Anjap-Sugave Multi-village scheme analysis, 2011

Schematic of infrastructure currently used for seasonal supply



Regional Planning for villages in Shahpur



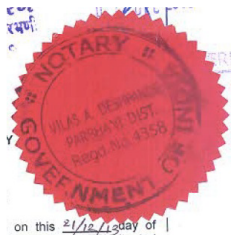
PUP Model: Parbhani Urban WS

MOU with Parbhani Municipal Corporation

- Energy and water losses.
- Overall system performance.
- Assisting in absorption of MSNA.

Research

Groundwater-Sanitation connection.



Watershed Planning for villages in Mokhada

- CSR consulting for Siemens and Aroehan.
- Livelihood, drinking and water for second-crop.
- 10-15 habitations, careful need assessment.
- Concrete structures, watershed treatment, well repairs
- Energy systems.



Also see:

www.gise.cse.iitb.ac.in/gsda

<http://www.gise.cse.iitb.ac.in/upload/thanedb.html>

www.ctara.iitb.ac.in/water/

The areas of interest

- **SME and Informal/Self-Employed Enterprises.** Benefits of technology, increasing efficiency and productivity, linkages, standards, branding and market access.
- **City and District Administration.** Improving planning, transport, infrastructure, logistics, optimization.
- **Core Sectors.** Water supply and sanitation, Electricity grid, Solar, Food, supply chains.

Processes at Ganapaty Factory in Pen



Solar-steam based *Istry* in Parbhani



Optimizing Irrigation in Shahpur, Thane



Our mechanisms

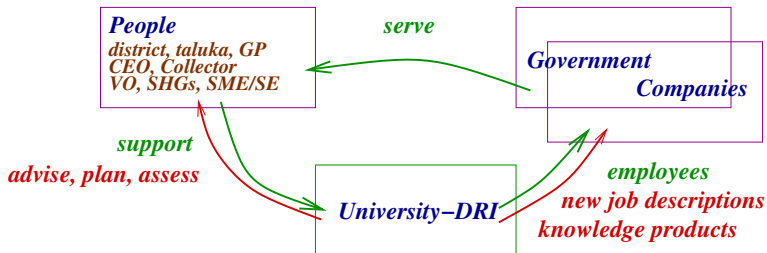
- **TDSC** Solutions and consultancy cell.
 - ▶ Launching future development consultants and innovators.
 - ▶ Parbhani, Tembha, Mokhada, **Palghar, Thane**. Payment model.
- **MoRD Fellowships**
 - ▶ **Professional development research**. Strategic engagement for CTARA and Gol.
 - ▶ NRLM, PMGSY, NREGA and others such as **chulhas**.
- **UBA**: MHRD program. **Technology PUSH model**. Support to regional academic institutions.
- **RuTAG**: Development support to NGOs.
 - ▶ The technology delivery model through NGOS.
 - ▶ Fisheries, Food processing, livelihoods. Supporting innovators.
- **Supported by clear academic programs and coordination roles.**
- **Focus on pushing out Development Professionals.**

Knowledge and Delivery

- Standard knowledge products with a focus on **outcomes**.
- Aligned with state functions and programs.
- Accessible to regional, local agencies, NGOs and common citizen.
- **Interesting and fruitful interactions with NGO world.** BAIF, Aroehan, Shashwat.
- **Open and transparent reporting.** Improvement in evidence-based discourse. Formalization of the informal.
- **Space for applied research in policy and practice.** **Development of long-term engagements.** MoU with Thane ZP.
- **Cross-disciplinary and multi-silo.** **The supply side as well as the demand side.**

University as the Development Research Institute

- a new model of university as a nurturer of *civil society*.
- new professions—entrepreneur, innovator, advisor, consultant, evaluator, coordinator
- need for value-positive loops for society to migrate
- **New knowledge, new mechanisms.**



Problem before CAPART

- Improve development outcomes.
- Provide strategic inputs, not volume nor dependency.
- Cross departmental boundaries. Become a knowledge player.
- Promote rural technology. Strengthen people's action!
- Manage historical linkages with VO/NGO. Ensure feasibility within current organizational space.
- Explore new mechanisms and new partnerships. Preserve regional focus.

Development Research Institutes.

Four Attributes

Any solution must provide for:

- **The Demand-side.** Presence and accessibility. Fidelity of posed problem.
- **The Knowledge side.** Ability to formalize problem. Access to professional resources. Ability to Design.
- **The Supply side.** Ability to translate design into actual solution. Provide support and hand-over skills. Ensure sustainability of solution.
- **Sustainability of the Agent.** Who will pay the change agent? How is the value created used to pay the agent?

Four Attributes

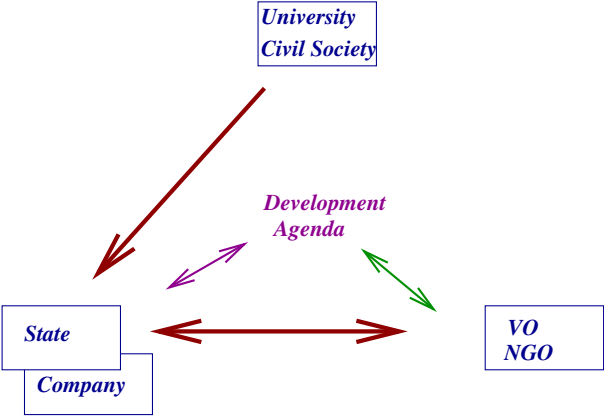
Any solution must provide for:

- **The Demand-side.** Presence and accessibility. Fidelity of posed problem.
- **The Knowledge side.** Ability to formalize problem. Access to professional resources. Ability to Design.
- **The Supply side.** Ability to translate design into actual solution. Provide support and hand-over skills. Ensure sustainability of solution.
- **Sustainability of the Agent.** Who will pay the change agent? How is the value created used to pay the agent?
- **How does the VO/NGO approach measure up? And the PMRDF/YP?**

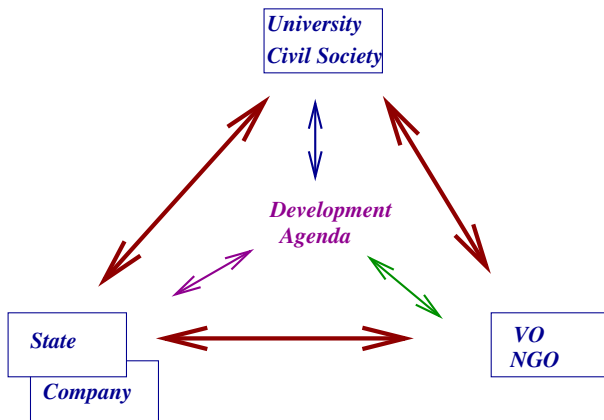
The Options

| Solution | Demand | Knowledge | Solution | Sustain. |
|-------------------------|------------------------|-----------|--------------------------|----------------------------|
| VO/NGO | Very Good Very Good | Patchy | Good but Informal | Perpetual Support |
| Govt. Dept. Research | Patchy | Good | Good | State role (shrinking?) |
| Old Univeristy | No | Good | No | Yes |
| New University | Partnership VO+PRI | Very Good | Partnership State+PRI | Novel |

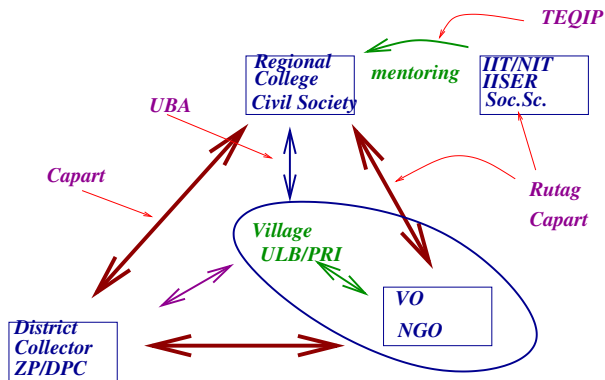
Before



The Proposal: *After*



The Proposal: *After*



Key Actions-I

- **Develop regional colleges and institutions.**
 - ▶ to respond to local needs, to support SMA-SE-informal sector through standard case-studies. **Palghar JSY evaluation.**
 - ▶ to set up mechanisms for interaction and funding between state, VO and PRI. **MoU with ZP, Thane.**
 - ▶ to research and study state programs and to bring all of this into formal academic structures

- **Perusade VOs and NGOs:**
 - ▶ develop interactions with regional institutions. **TDSC: Aroehan-Siemens CSR**
 - ▶ formulate problem statements, give liaison. **Rutag: Shashwat**
 - ▶ to regard state as a partner.

Key Actions-II

- To persuade the state:
 - ▶ enable VO+college to work on regional problems: data + liaison. CMO meeting+GR.
 - ▶ provide funding mechanisms such as DIF, DPC, M&E
- Persuade elite universities to work as Development Research Institutes (DRI) , i.e., research, coordinate, innovate, hand-hold and provide *trust*.

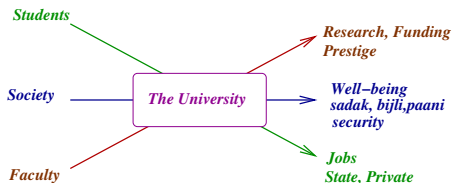
CAPART: The Unified Field Theory of Development

- Key agency to coordinate across ministries-demand-side as well as supply-side!.
- Maintain transparency, document case-studies, bring seed-funding, esp. from DST and other outcome-free sources.
- Identify problem areas, monitor development outcomes, seed and work through DRIs.

Elephants in the room



Current situation: *Poorly aligned incentives*



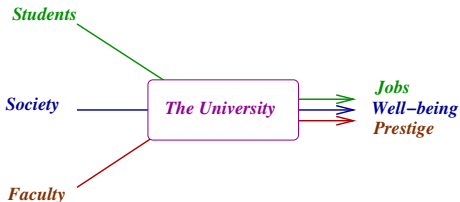
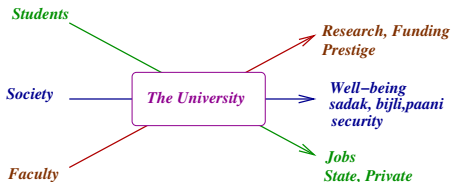
Elephants in the room



Development

The right intellectual
antidote of real-life
problems.

Current situation: *Poorly aligned incentives*



The road to MIT (or global rankings) goes through *Gudwanwadi!*

