

The CTARA Technology and Development Supervised Learning

www.ctara.iitb.ac.in/SL.html



Outline

- Our mandate and knowledge generation
- An example-the Karjat pipeline project
- The Technology and Development Supervised Learning
 - ▶ Administering the TDSL

Mandate

- Nehru, *sentries of our country...*
- The IIT Review Committee of 1986: *extension activities* and *rural development*

<http://www.education.nic.in/cd50years/f/G/J/0G0J0E01.htm>

<http://www.education.nic.in/cd50years/f/G/BookG.htm>

- Increasing importance of primary experience, inter-disciplinarity and system-thinking
- **Development as an urgent need.**
 - ▶ malnutrition, drinking water, infrastructure, and so on
 - ▶ corruption, iniquity, social inequality, and so on
- Belief that this is within the purview of an institute such as IIT-Bombay
 - ▶ Knowledge generation for the direct benefit of society
- Influence of our engg. methodology to other colleges in India

A new paradigm at CTARA

- **The bottom 80%** : beneath the market and the state-an ideal laboratory!
 - **Core issues**: food, water, energy, livelihoods, public health- simple principles and great returns!
 - **Delivery**: designs, implementations, studies to a concrete beneficiary-the creation of knowledge! .
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- **For good engineering**-with development as a side-effect.
 - **HBS** : " start with the proximate customer" or
 - **Sam Pitroda**: " engg. as if the common indian mattered ..."

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A New Contract: **Engagement and the Engineering cycle**

Anjap-Sugwe drinking water scheme ● *Malvan taluka transport plan* ● *Second crops in Dimbhe* ● *Waste management in Guhagar*

An Example-The Karjat Project



- **Disha Kendra**: A popular NGO in Karjat-Khalapur area, led by Nancy Gaikwad.
- **January 2010**: approached CTARA with problem of widespread drinking water collapse in North Karjat taluka.
- **Their strategy** : RTI and *dharnas* at taluka office.

Our Plan

- Question 1: Is there adequate groundwater at all?
 - ▶ GSDA, our own tests. (Sanjiv, Vishal)

- Question 2: Are there administrative problems?
 - ▶ lack of information, improper yield tests, etc.

- Question 3: What is to be done?
 - ▶ Groundwater recharge structures?
 - ▶ Surface water supply? (Abhishek, Vikram and Janhvi)

The Karjat Pipeline feasibility study

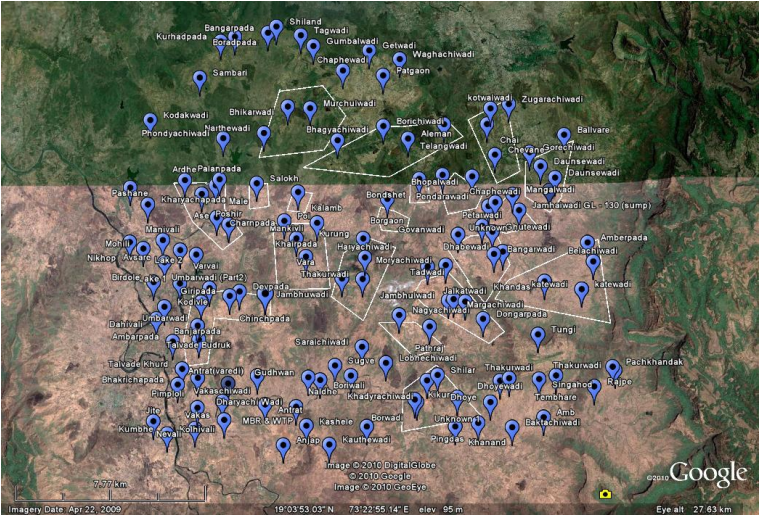
Study Objective

Is it possible to have a wide-area rural pipeline scheme for the area?-a basic techno-economic feasibility study.

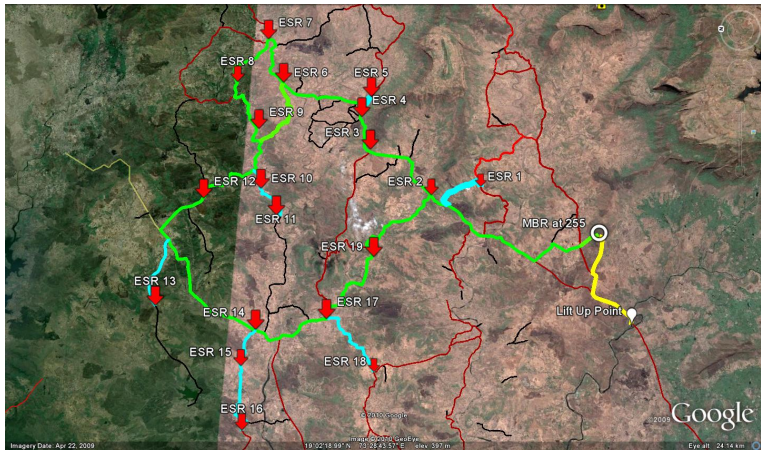
- use MJP norms *exactly* as far a possible.
- See if capital costs and energy costs fit within norms.

- **Abhishek Sinha, Vikram Vijay**: two dual-degree Civil. Engg. students, **Janhvi Doshi**, 4th year B.S., summer intern from Rice University.
- 3 months of field work: May-July 2010. Report-writing 1-2 months.
- Rs. 1 lakh budget.

Hamlets and clusters



Overall map



Lots of nice optimization problems, use of simulators, GIS and so on.

Key Findings¹

	200 LPCD	40 LPCD
Daily Demand	19.47 MLD	3.90 MLD
Net Investment	Rs. 57.21 crores	Rs. 17.19 crores
Cost per person	Rs. 7051	Rs. 2119

- Energy costs of Rs. 4.51 per cubic meter, at Rs. 5 per unit and 75% pump efficiency.
 - ▶ This may reduce further from better choice of lift-up point, agreement between MJP, Irrigation and Tata Power.
- O&M costs and establishment costs to be added.

Pipeline water supply for North Karjat (pop. 51,000 in 70 hamlets) is techno-economically feasible.

¹www.cse.iitb.ac.in/~sohoni/karjatfinal.doc

Post-report

- Report submitted to Disha Kendra for dissemination.
 - ▶ Key **knowledge input** to serve as rallying point.
- Report submitted to Karjat MLA, Shri. Suresh Lad.
- And to MJP office and Minor Irrigation office in Karjat.

Towards implementation:

- Report *adopted* by GPs.
- Formal expression of demand (scarcity) submitted to ZP and MJP.

New Research

- Single vs. Multi village schemes and institutional issues
- **IIT as consultant to rural bodies**

Outline

- **TD390 Study:**
 - ▶ Introduction to field work, multi-stakeholder projects and study .
 - ▶ identification and formulation of problem
 - ▶ bring formal analysis to the problem
 - ▶ a feedback loop and a report
- **TD490 Analysis**
 - ▶ Knowledge generation for a specific situation.
 - ▶ independent inter-disciplinary inputs required
 - ▶ formulating the key steps in the study and carrying it out
 - ▶ stake-holder interactions
 - ▶ drawing conclusions and report and presentation
- **TD491 Design**
 - ▶ Knowledge application with a creative component.
 - ▶ clear objective, stake-holder participation and deliverable

Various design steps

- 1 What is the question and what is the expected deliverable
 - ▶ Guide input crucial here, see, e.g., www.cse.iitb.ac.in/~karjat/mvs.doc
 - ▶ background note, stakeholders, outline of the report
- 2 What is the narrative
 - ▶ should be done after key field visits
 - ▶ secondary data and literature, legal framework, govt. programs and documentation
- 3 What is the methodology-basic steps, their objectives and their design
 - ▶ basic tools, protocols and questionnaires, interviews, GIS, software, simulations, designs
- 4 What is the schedule
 - ▶ timelines, meetings, budgets and so on
- 5 What will be closure
 - ▶ reports, presentations++, outcomes, key stake-holder reporting

Basis for Grades

Submit document by Feb. 21st which addresses all issues, esp. items 1,3 above.

A few tips

- Are all the stake-holders counted?
 - ▶ Women? Even big companies, govt. agencies can be approached
- Re-examine your prejudices.
 - ▶ Govt. is corrupt. Politicians and contractor nexus.
 - ▶ many issues a matter of poor design
- Deal carefully with vested interests.
 - ▶ Use academic front, do not take positions. This is a study.
- We are engineers first and then social reformers.
 - ▶ Social mores as constraints for design. Keep a healthy distance.
 - ▶ See that you do not perpetuate inequity, vested interests and so on.
- Knowledge is the key output
 - ▶ Protocols and methods, devices. Honesty and hard work.
- Your learning and your creativity of primary importance
 - ▶ We are not consultants. Research can always be continued.

Finally: **We at IIT are wise and have contacts! Talk to us.**

Thanks!

