Knowledge Infrastructure for Maharashtra

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

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The basic argument

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

⇓

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

⇓

The role of University and Higher Education
Knowledge Structures. Key Areas.

⇓

Mechanisms for a Partnership

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.

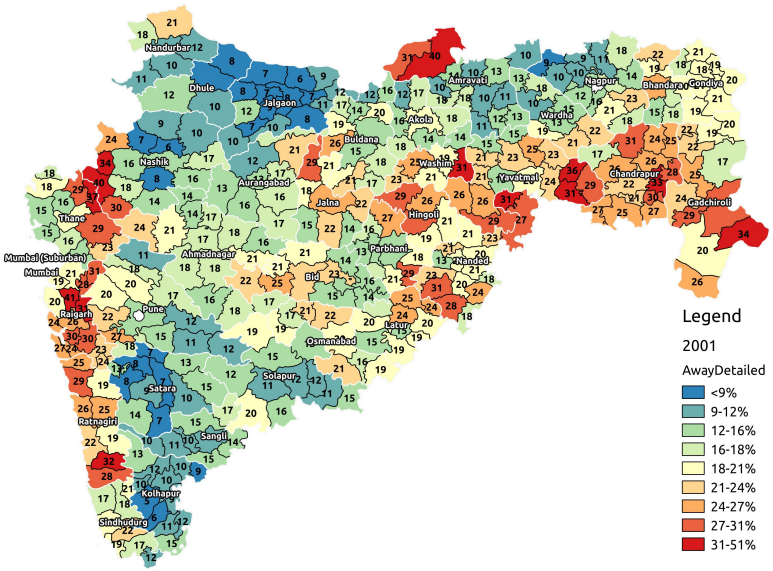
Year	Rural	Urban
2012 per 1000	858	896
(69th NSSO)	858	896
Maharashtra	**745**	931
2008	862	911

Also affecting livelihoods...

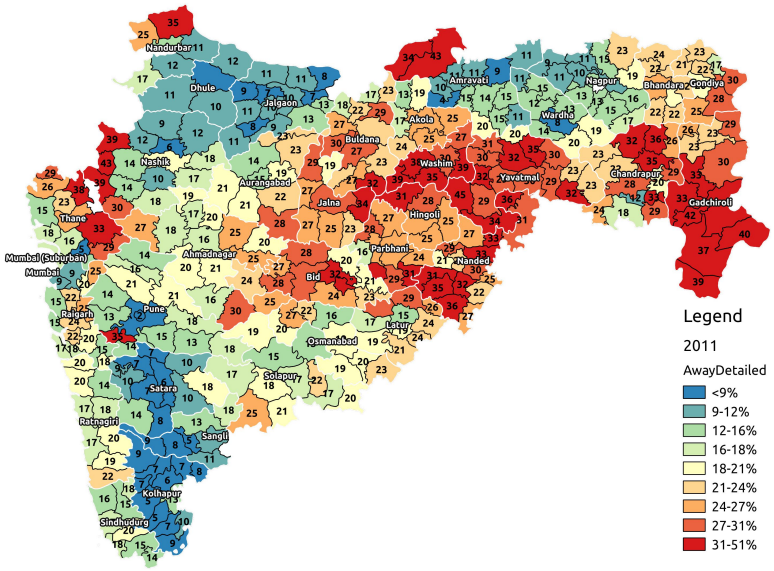
similarly about Milk, Electricity, Cooking Fuel.

Rural Maharashtra: 2001 and 2011

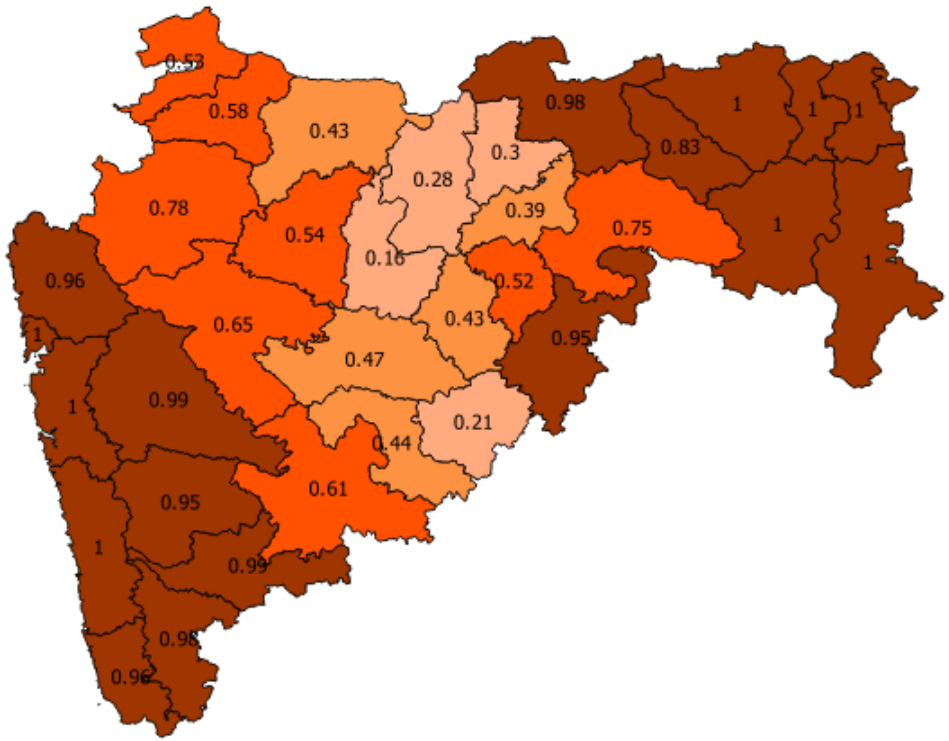
Percentage of Rural Households with Primary Source more than 500m away (2001)



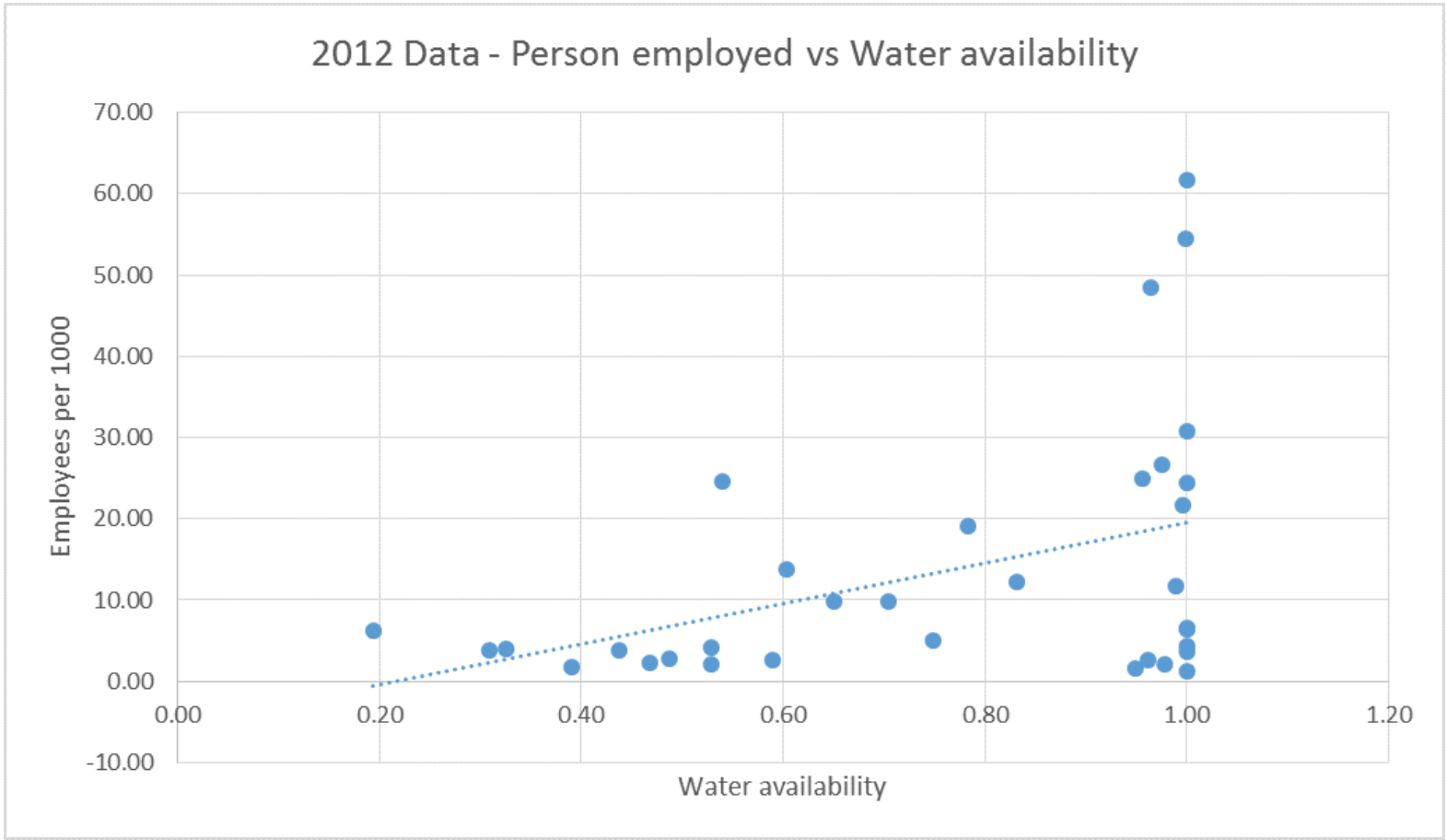
Percentage of Rural Households with Primary Source more than 500m away (2011)



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. Example: 2 rural water supply engineers and less than one 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- Poor Data, Outdated procedures.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. Very little collaboration with institutions of learning and very little relevant research.

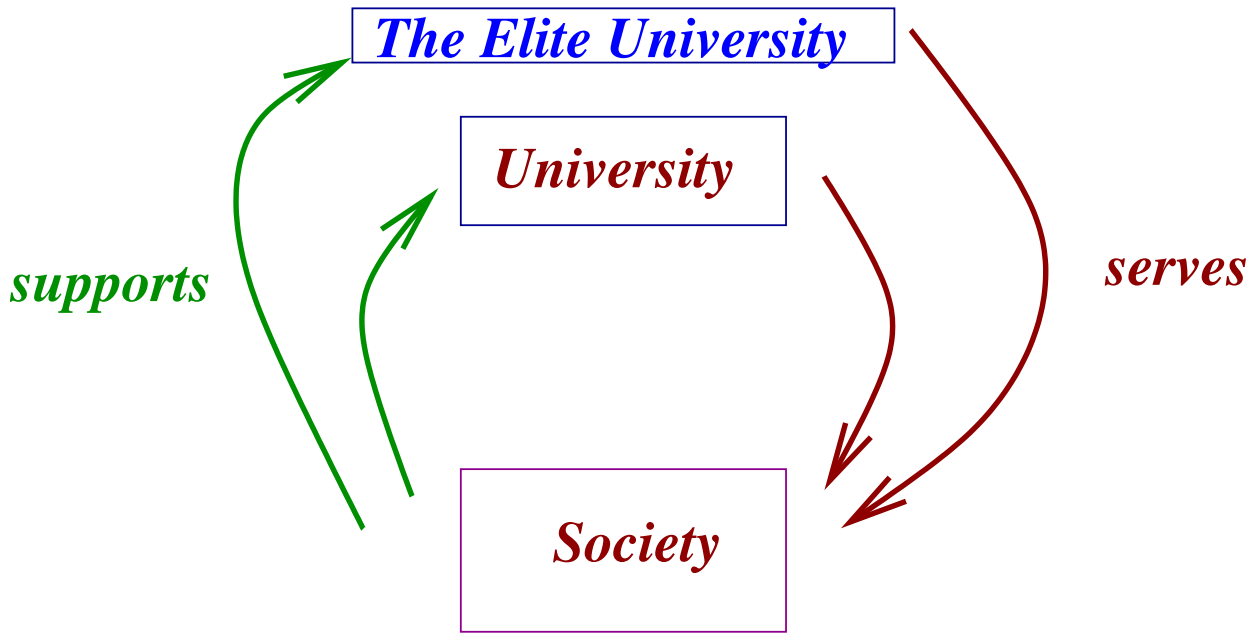
Basic Question : How do we generate and transmit new knowledge products? *What are knowledge products?*

Knowledge Structures-Examples from CTARA

Water Supply

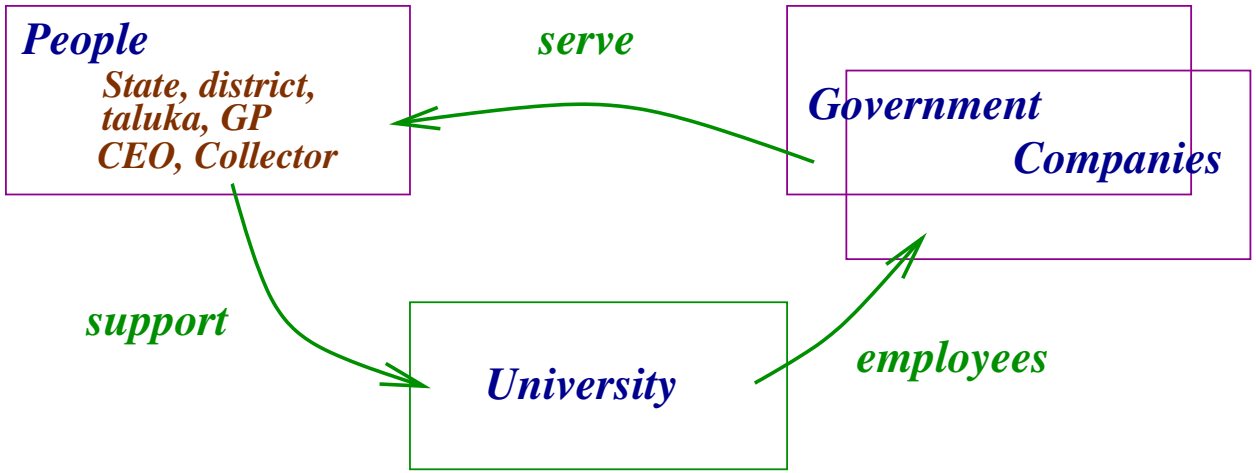
- Monitoring and Execution: Actual performance of programs. Taluka and district-level assessments of NRDWP. Assisting GPs and ULBs during execution. Testing. Organizing information, material and financial flows.
- Evaluation and Assessment: Evaluation of Groundwater quality, design of WTPs. Assessment 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.

Society and the University-*a virtuous loop*



- The University
  - repository of knowledge and practices
  - training agents who deliver value
- The Elite University
  - thought leadership, the arts, long-term research, *destiny*
  - *symbolic of what a society values!*

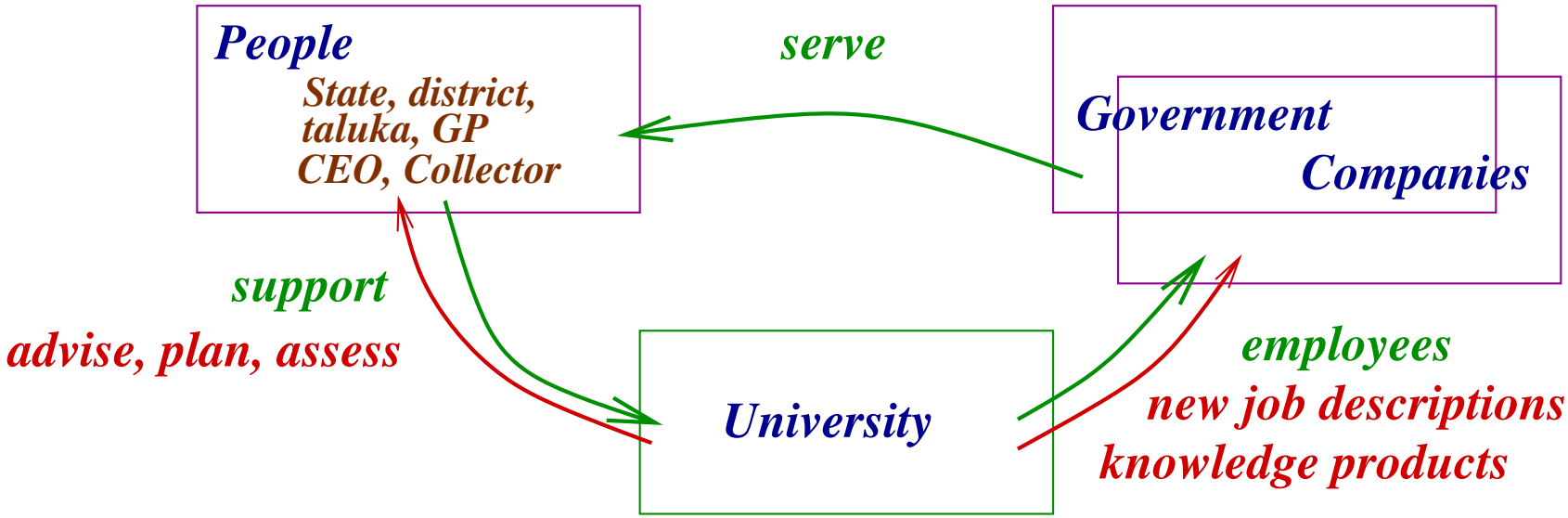
The Indian University



- Training role: Employees for traditional Industry and State.
- Disconnect between research and reality.
- Focus on placement and packages. IT dominance.

Research Papers since 2010			
Water Supply	87	Neural Networks	2467
Public Transport	25	Fuzzy Logic	759

The New Institution



New jobs!

- Energy expert. Drinking Water consultant.
- District Public Transport Manager. Taluka-level planner.
- New research. New definition of rigour!
- Research which is accessible by society!.

The Way Ahead

Three Questions:

- How to we design the new role of Higher Education?
- How do we incentivize and help them move to this new role? What other entities need to be modified?
- How do we measure progress and evaluate this?

- What are the short, medium and long-term action items?

TEQIP meeting-12 September 2014

Objectives : Water sector as a research area.

- Activities, case-studies, problems and solutions, curricula for development.

Highlights

- Participation from 17 colleges, TISS, Collector, Osmanabad, Unicef, WSSD, Meetra.
- Mechanisms of TDSL, TDSC for regional problems.
- Standard Templates: Rural DW security, water quality, MSNA as research areas.

The design

- The Apex Body at DTE
  - Definition of the program
  - Selection of institutions
  - Funding through TEQIP and other sources
- The institution-Phase I
  - academic space for development and field projects
  - networking with agencies and amongst ourselves
  - TDSC+TDSL: coordinating cell within institution Access to institute facility, faculty time, coordination staff, funding
  - How will it be sustainable?
- Various Knowledge types
  - Case-studies and Research Projects
  - Internships and fellowships
  - Who initiates, who provides liaison, who pays
- Strategic analysis

The areas of the future

- SME and Informal Enterprises. Bringing the benefits of technology, increasing efficiency, improving market access.
- City and District Administration. Improving planning, transport, infrastructure, logistics, optimization.
- Core Sectors. Water supply and sanitation, Electricity grid, Solar, Food, supply chains.

This would in turn create the demand for new instruments, gadgets, machines, tools for analysis and design, simulators $\Rightarrow$ better engineering, better efficiency, better value

Examples

From	Problem	Type	Sector	Funds
GP, Collector	JYS	CS, RP	Agri.	DPC
GP	Village Plan	CS	RDD	RDD
MLA	Power Quality	RP	MSEDCL	MERC
DPC	GIS planning	RP, IP	DPC	DPC
ULB	MSNA	all	ULB	ULB
ULB	SWM Plan	ULB	ULB	
MLA	Water Budget	RP	Irrigation	MERI

- Various types-design, feasibility study, failure analysis, assessment.
- Various models of payment-1%, 30K p.m.
- Funds: received by institute and routed to TDSC

CTARA

- Academic and research programs. Journals.
- Coordination role, eventually circulating.
  - standardizing case-studies, writing articles, lobbying, data
- Research Areas-*Paired Projects* (needs faculty approval)
  - *simultaneous launch* of similar projects
  - joint training in the summer
  - collaboration through-out the year
- Coordination Costs: TEQIP?

This year

Through TDSC

- Hostel stay for student, joint workshops, joint work with TDSC and students

Areas

- Parbhani-MSNA, Solid-waste management. Summer Internship +Thesis.
- Mokhada-Watershed planning. Summer Internship.
- Jal Yukta Shivar-Summer Internship + Thesis.
- Taluka Water Balance-Summer Internship + Thesis.
- Urban+Large Village groundwater and sanitation Sangli and Aurangabad?

CTARA at IIT Bombay

- Set up in 1985. Since 2007, Masters and Ph.D. in Technology and Development.
- Creating the Development Professional
  - inter-disciplinary training for engineers.
  - field-work, core sectors, people-centric.
  - Projects in *sadak, bijlee, pani*
- Project-based course for students, consultancy for development
  - `www.ctara.iitb.ac.in/tdsl`, `www.ctara.iitb.ac.in/tdsc`
- works with governments, cities, GPs, local bodies, citizen groups.

Thanks