Towards improving drinking water provisioning of Parbhani city

Case Study – Urban Water

TEQIP-IITB Water Workshop - September 12, 2014
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TDSC

- Technology and Development Solutions Cell
- Formed: January 2014
- Deliver solutions and consultancy outputs for development projects

TDSC Objectives

- Address professional service requirements of regional bodies like municipal corporations and GPs
- Develop consultancy model for the bottom 80% that ***engages young engineers***
- Formulate development protocols and case studies for dissemination to regional colleges
- Provide a launching pad for entrepreneurial careers in the development sector

TDSC Engagement with PMC

- 2013: MOU signed between TDSC/IITB and Parbhani Municipal Corporation (PMC)

- 2014: TDSC formally engaged by PMC to produce a "status report and analysis of existing and proposed water supply schemes in Parbhani"

Parbhani Water Supply Status

- Population: 315,000
- 64,000 households – 1/3 have direct connections, rest use stand pumps, bore wells
- **Residents receive water once in 7-10 days**
- Design supply: 18 MLD (theoretically 50-60 lpcd)
- **BUT**: previous audit estimates supply at **20 lpcd**
- **Energy bills exceed 20 lakh/month - 2.5 cr/year**

  → **800 kWh/ML vs 400 kWh/ML benchmark**

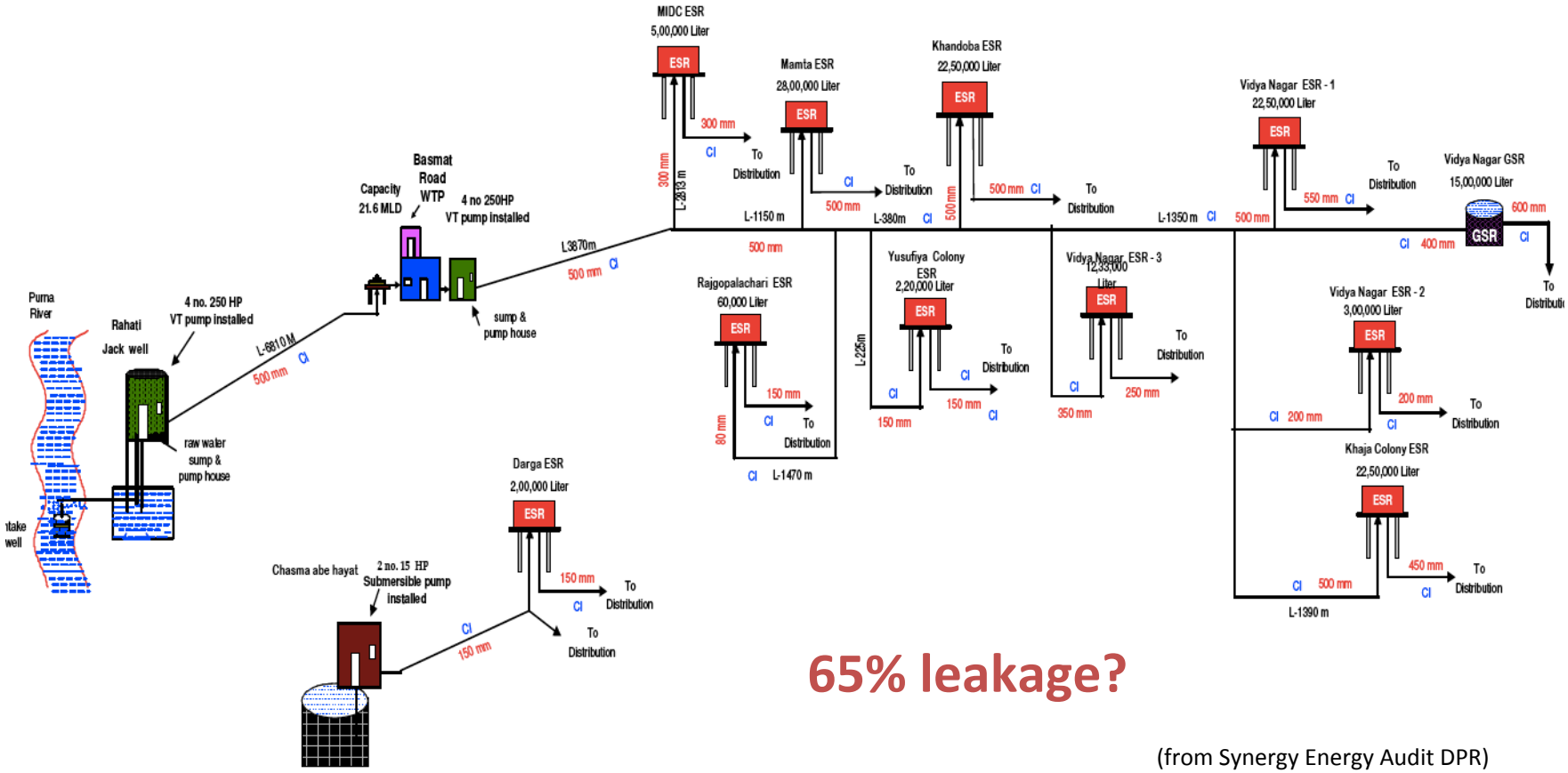
Problem statement

PMC Commissioner has two questions:

1. Where is the water going?
2. How do we reduce pumping energy and repair costs?

Understanding the Existing Scheme

Source → WTP → 10 ESR/GSRs → Zones → Connections



65% leakage?

(from Synergy Energy Audit DPR)

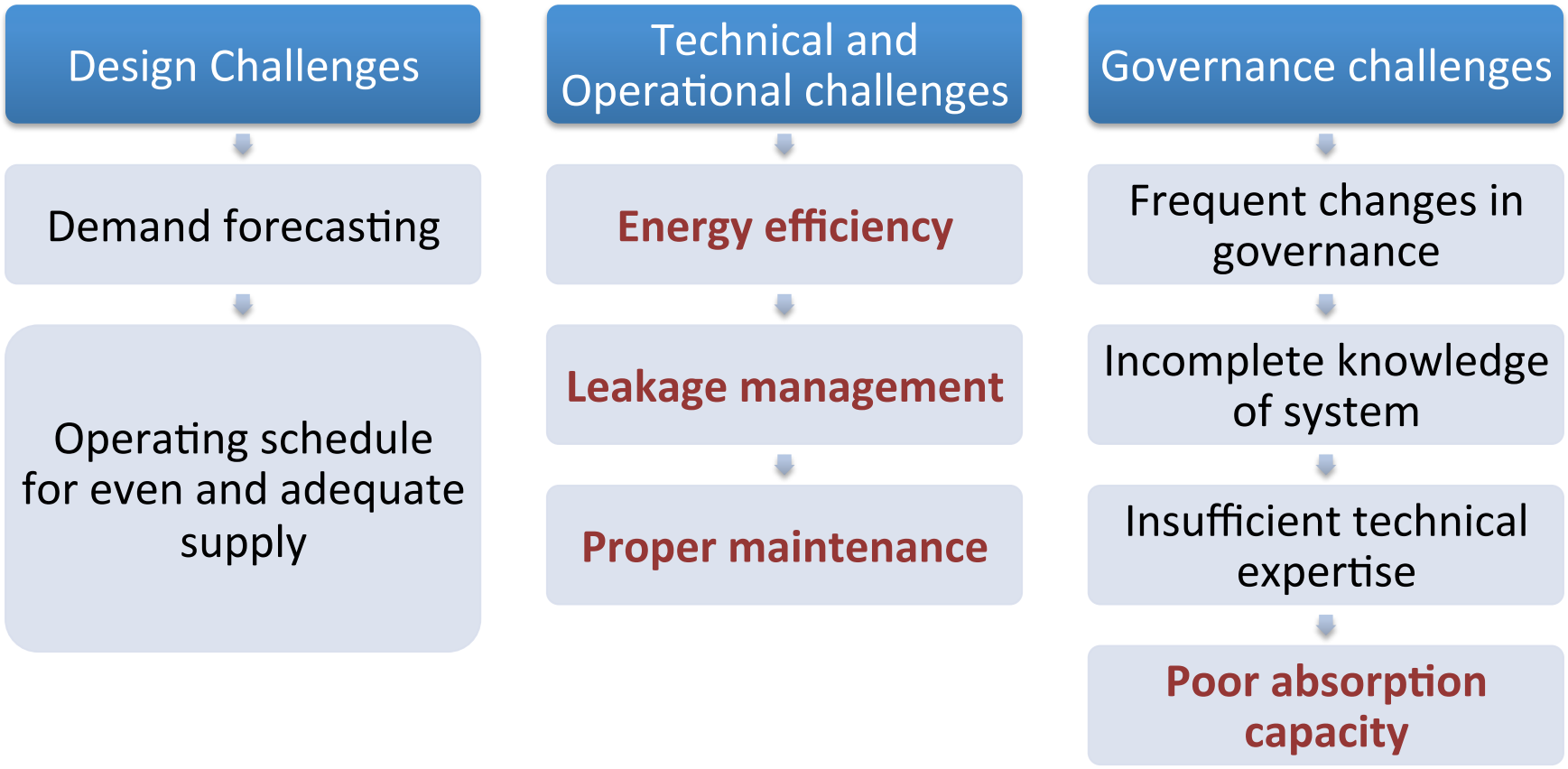
Pumping Systems

- Two pumping stations: Source and WTP
- Each station has three 250 HP pumps
- Operating at various pump combinations:
  - 1, 2, 3, 1&2, 1&3, 2&3
- **Two challenges to tackle:**
  - **Pump efficiency**
  - **Motor burnout**

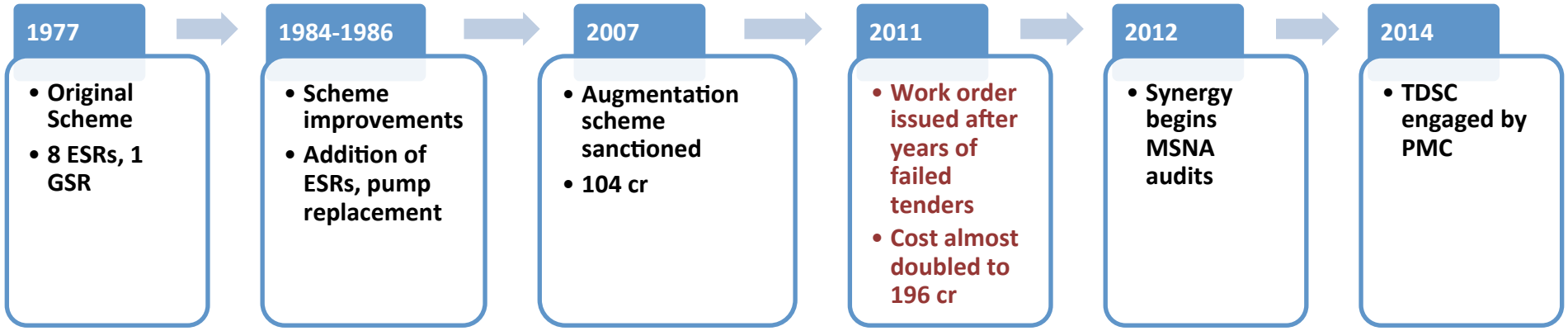
MSNA in Parbhani

- Maharashtra Sujal-Nirmal Abhiyaan (MSNA) programme for Urban Local Bodies to improve their water supply systems
- Primary output: knowledge
  - Water and energy audits, GIS, hydraulic modeling, consumer survey, metering
- Synergy (Thane) was contracted to conduct MSNA Phase I for Parbhani
- Output was delivered over a year ago – PMC have absorbed **very little**

Internal Challenges in Urban Water Supply



Parbhani Scheme Timeline



Key Deliverables

- Energy efficiency analysis
  - flow, energy, pressure head
- Pump operation and maintenance manuals for operators (in Marathi)
- Major leakages identification
- Key short, medium and long term recommendations with cost/benefit analysis
- MSNA output:
  - Assistance with MSNA output absorption
  - Verification of Synergy's assumptions, methodologies and recommendations

Coming up

- Flow readings
  - flow meters currently being installed
  - collect readings through the system → identify leakages

- Methods to prevent motor burn-out
  - Serious and expensive problem: water shortage exacerbated, efficiency reduced after re-winding, and high repair charges

THANK YOU