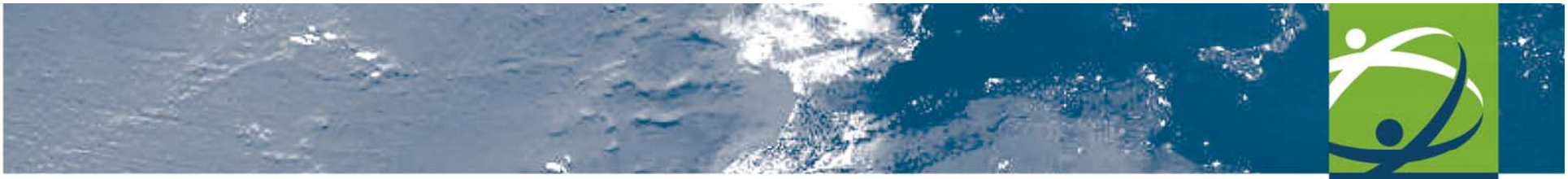


Solar Water Heater Case Study – Lwandle and Kuyasa, Cape Town

Steve Thorne of SouthSouthNorth Africa

Berlin 21st/22nd Sept 2010

contents

- Technology receptivity and ownership.
- Case study Lwandle - a story of technology receptivity.
- Case study Kuyasa – a story of climate entry point for clean energy development.
- Suppressed energy service demand and carbon.
- National Sustainable Settlements Facility.
- Decabonising communities.

Key aim

- To generate sustainability in projects through focusing on ownership of technologies through building informed choice on top of indigenous knowledge.
- Introduction of clean energy access at the time of access to modern energy services.

background

- Lwandle are municipal hostels near Cape Town;
- Lwandle residents request privacy, water borne sewerage and hot water;
- Ablution facilities are communal, semi-communal and private;
- 15th January 1997 meet with Steve Thorne of Energy Transformations cc to discuss technologies for 341 shower facilities.

Towards a framework in technology receptivity

- 8 steps to achieve ownership of the technology piloted in Lwandle
- That engenders bottom-up informed decision making.

Exercising choice and ownership – technology receptivity

1. Develop a shared vision
2. Identify opportunities for knowledge exchange
3. Establish a facilitation team (PDT)
4. Set learning objectives and plan how to achieve learning objectives
5. Demonstrate the technologies
6. Identify interested early adopters (who may become champions)
7. Receive and respond to hardware, software, and orgware technology innovations
8. Ensure technologies are maintained in good running order

Step 1: Developing a shared vision

- Requested warm water on demand at the least-cost

Step 2: opportunities for knowledge exchange

- 9 meetings held with stakeholders in 1997 including costing workshops.

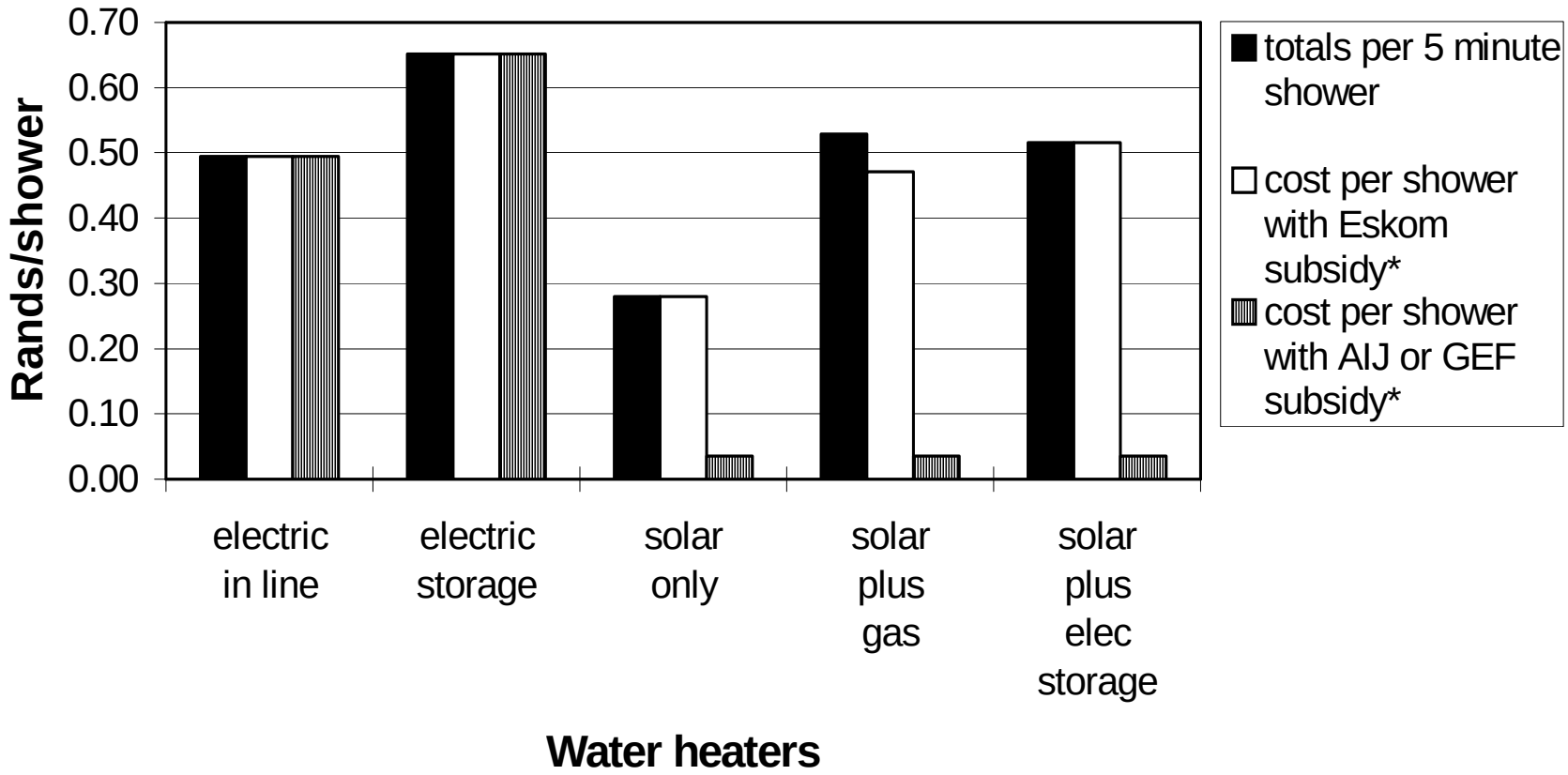
Step 3: Establish facilitation team

- Initially a large group, then energy advisors group (of energy advisors).
- Project development team established advised by community energy advisors.

Step 4: Set learning objectives and plan how to achieve them

- Technology menu and comparisons.
- See other systems.
- Set up pilot.
- Learn how to calculate costs and compare these.

costs of showers for users



Step 5: Demonstrate the technologies

- specifications decided upon and performance contract developed together;
- tenders received and evaluated;
- specifications revised;
- supplier for pilot selected and SWHs installed and commissioned; and
- in-line electric and paraffin heaters (in ablution blocks) installed and commissioned.

Step 6: Identify interested early adopters (who may become champions)

- The pilot “flats” became the early adopters and verified SWH technology choices.

Conclusions of technology scan

- storage geyser - cost recovery open to abuse;
- paraffin in-line - health and safety and “smell” problems;
- electric in-line - high running cost to user and supplier;
- gas in-line – un-competitive cost;
- solar - high initial costs offset by low running cost;
- solar with LPG back-up - high initial cost but year round hot water access;
- solar with electrical back-up - as above but no Eskom support, electrical demand co-incident with National and Helderberg peak (and as per electric storage).

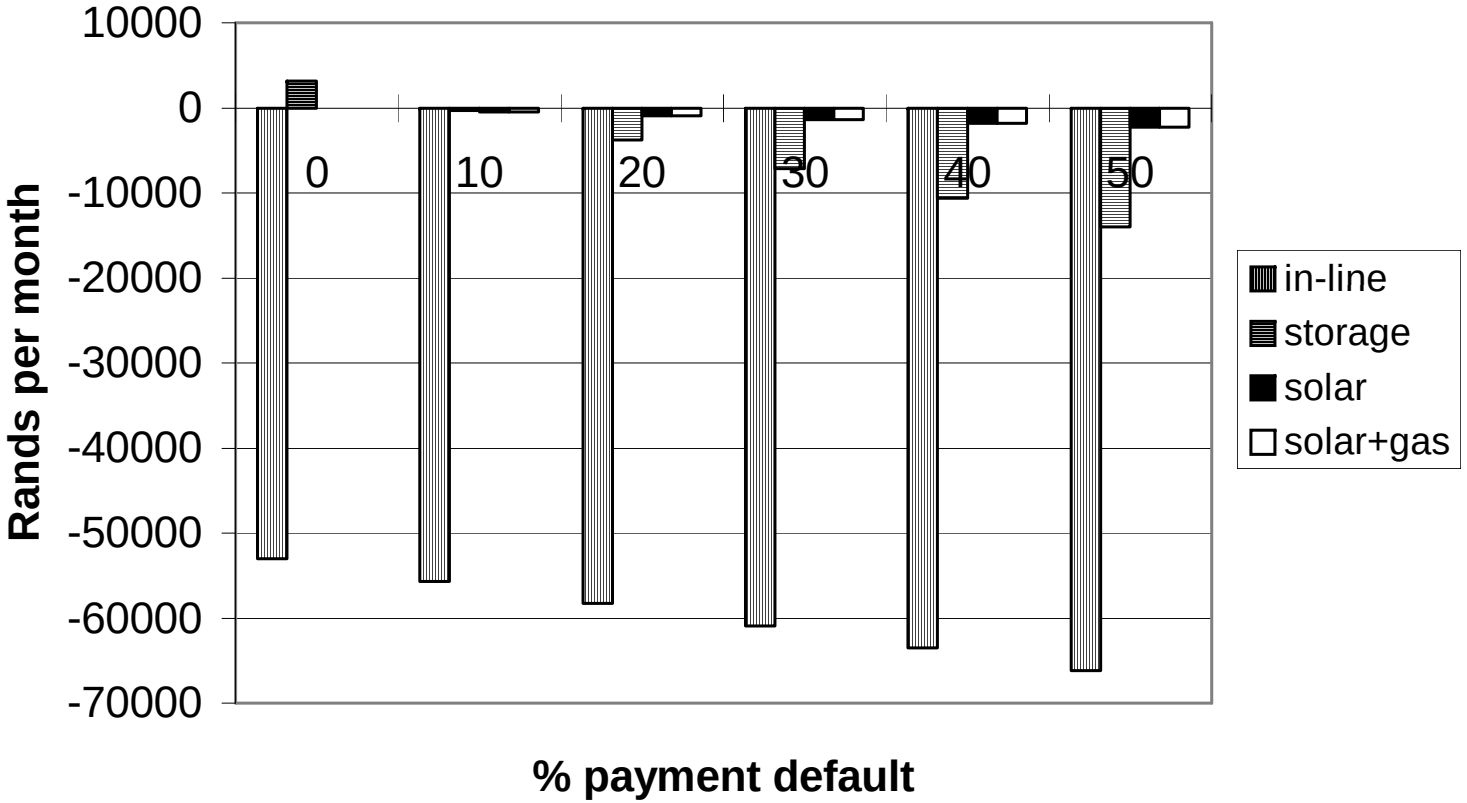
Final decisions

- meeting suggested:
  - no paraffin in semi-communal showers;
  - solar water heaters desired; and
  - pay-as-you-use hot water metering.

Step 7: Receive and respond to hardware, software, and orgware technology innovations

- plenty of sun - low running costs;
- proven technology;
- lower cost to end-users;
- less chance of payment default;
- lower cost to Helderberg than electrical in-line and/or storage heaters (see later);
- cleaner than paraffin;
- potential contributions from funders;
- first in South Africa.

Costs of showers to Helderberg municipality



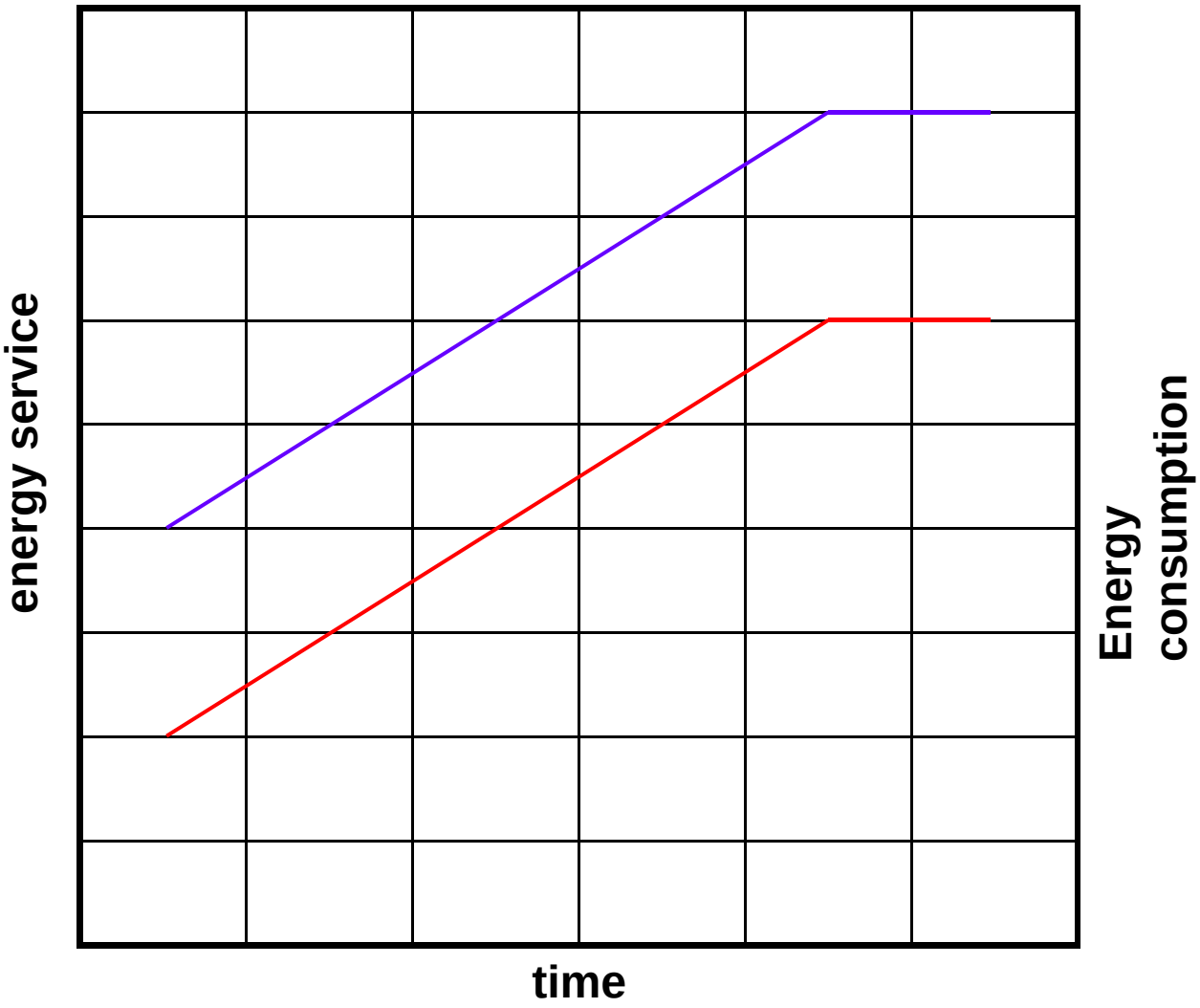
Step 9: Ensure technologies are maintained in good running order


CEY 45864

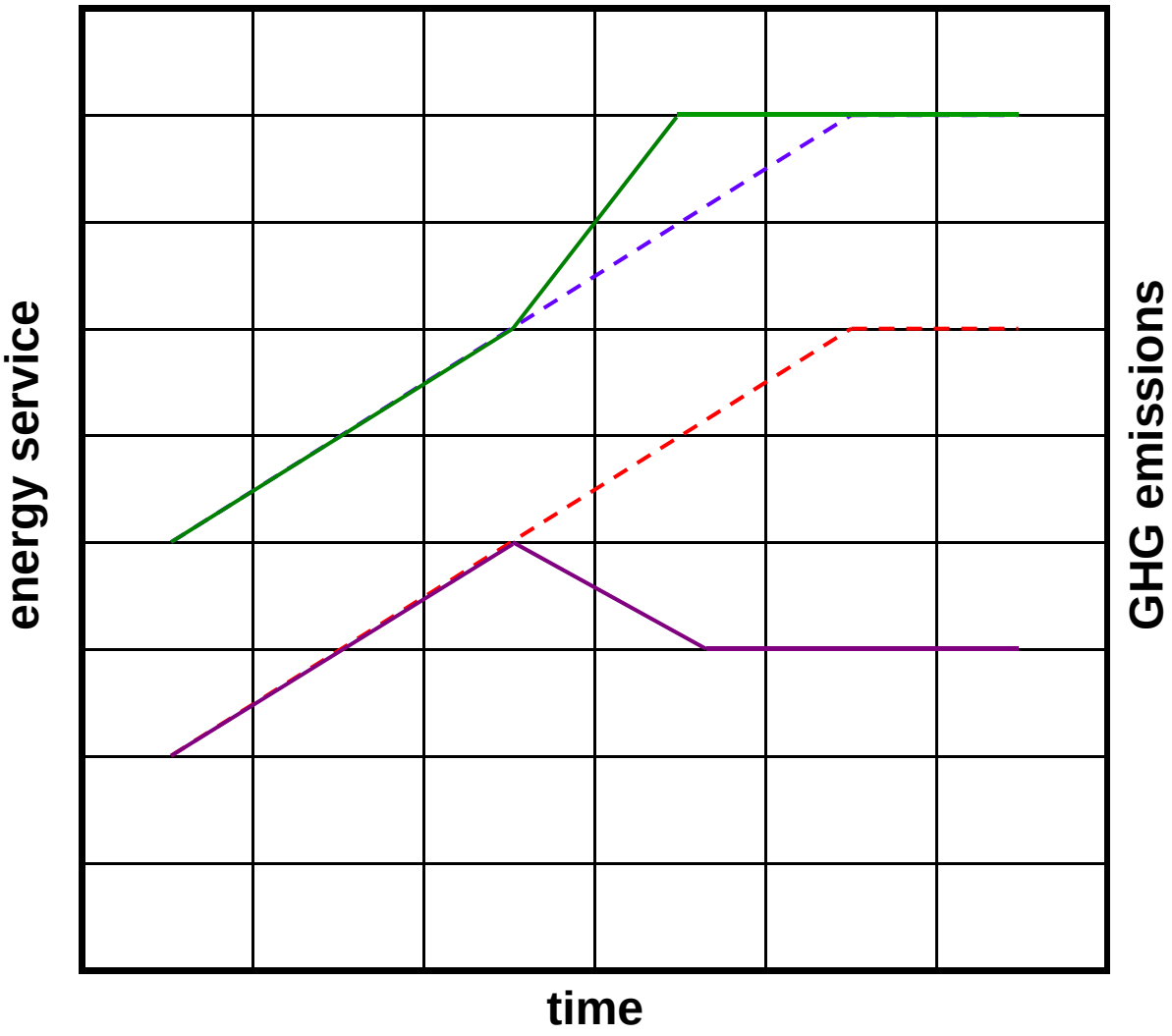
Suppressed demand

- Energy demand is constrained as a result of poverty or lack of infrastructure
- Suppressed demand can be included if proof of livelihoods improving can be shown
- Paragraph 46 of the Modalities and Procedures: “The baseline may include a scenario where future anthropogenic emissions by sources are projected to rise above current levels, due to the specific circumstances of the host Party.”
- Restated in the COP 15 outcomes: para 35 of “Further guidance related to the CDM.” Encourages the EB to further explore
- Precedent AMS ID and Kuyasa CDM project #0079

Energy services and energy consumption – business-as-usual



SUPPRESSED DEMAND INTERVENTIONS



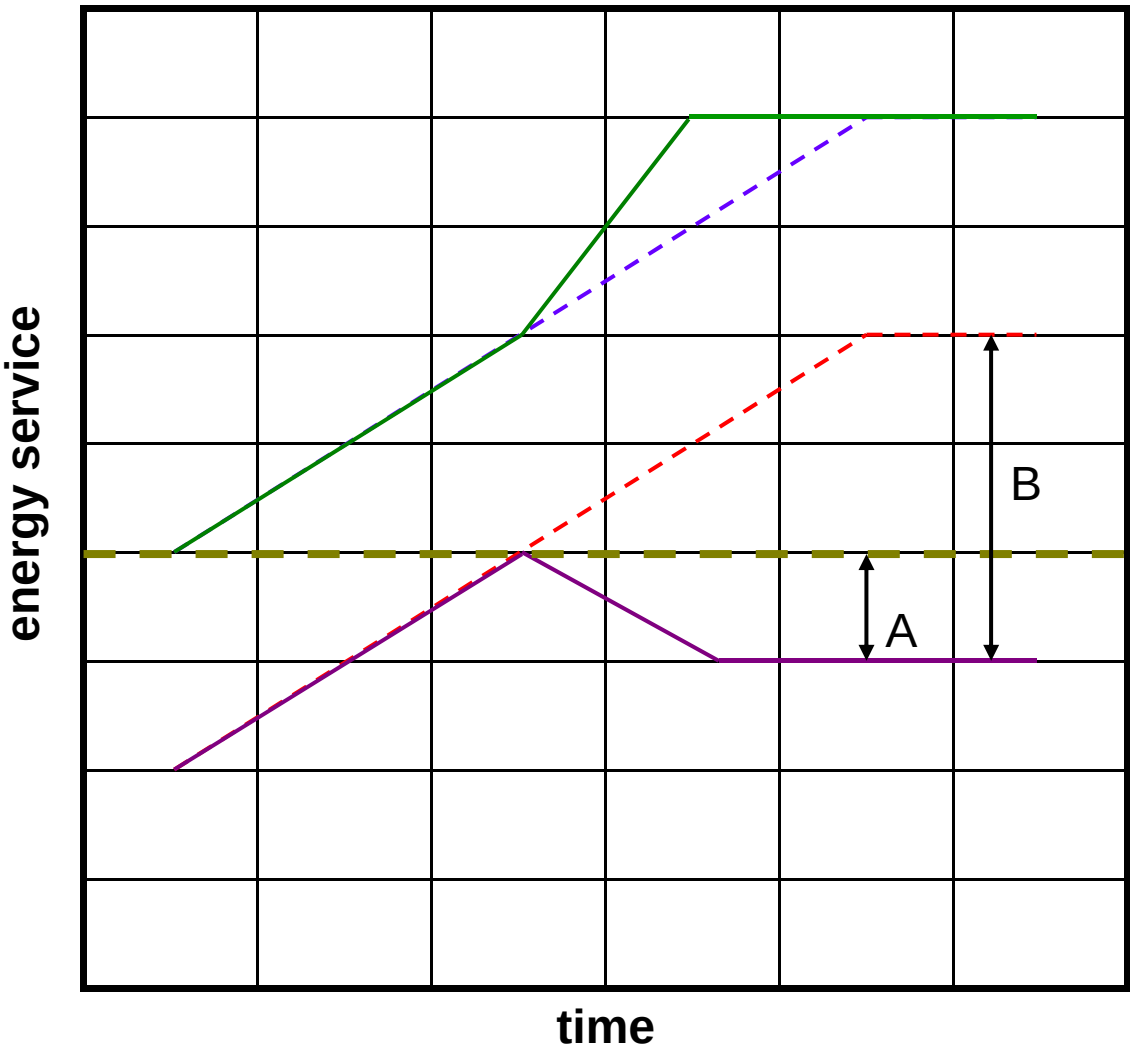
Energy Service

Baseline Emissions

Energy Service Intervention

Project emissions

Energy Services and Consumption that take Suppressed Demand for service into account



___ Energy Service

___ Baseline Carbon emissions

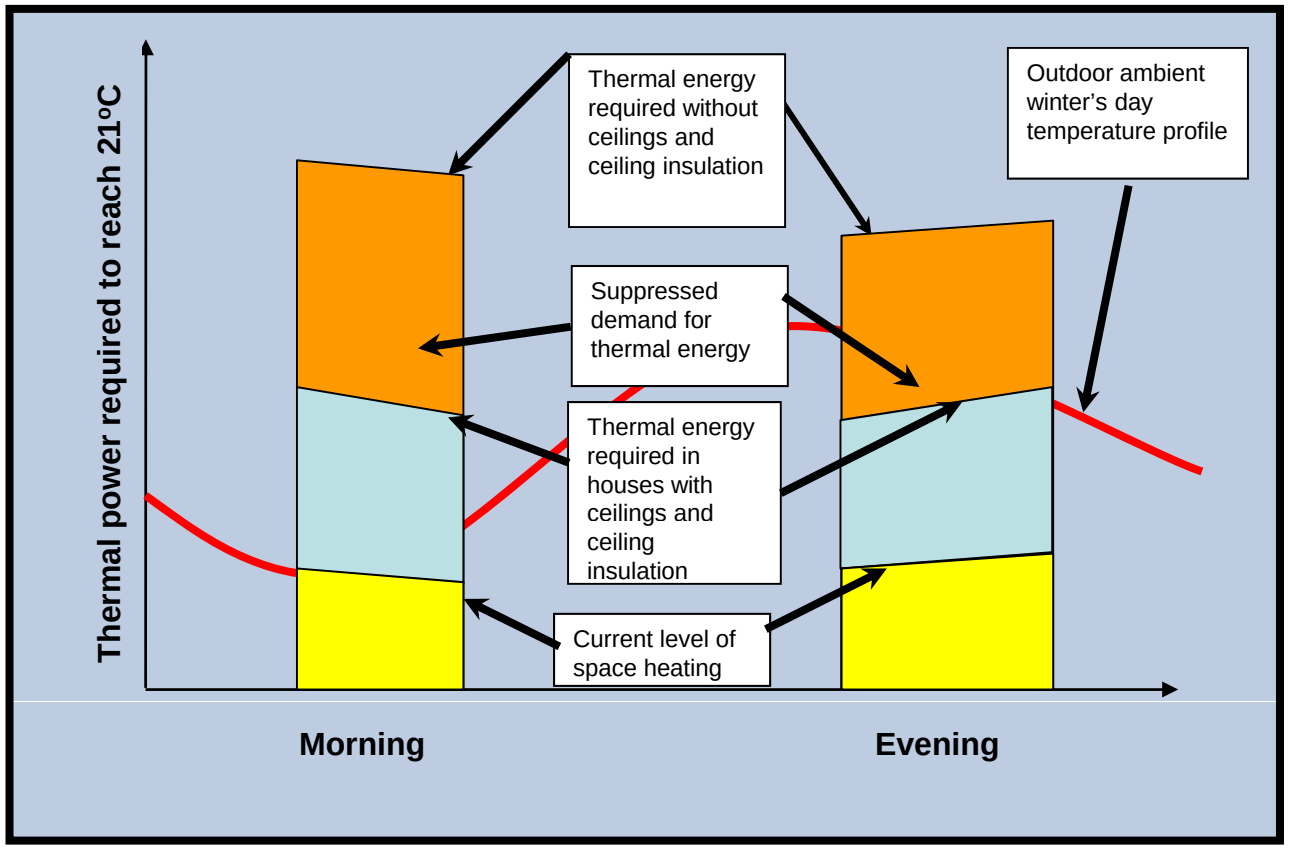
___ Energy Service intervention

___ Carbon emission after clean energy service intervention

A are Existing Emissions

B are Existing Emissions + Future Avoided Emissions

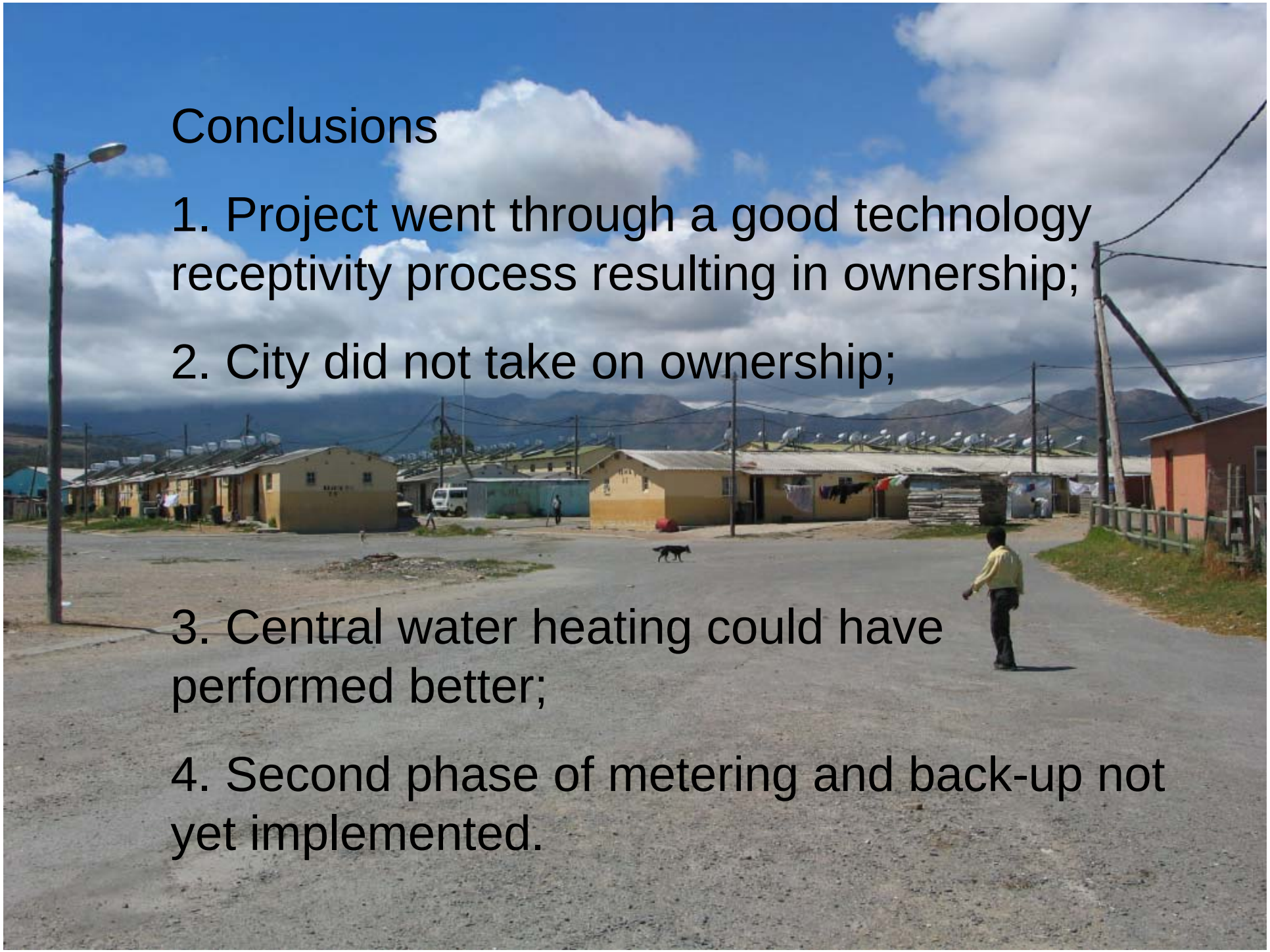
Suppressed Demand: An example of space heating in low income housing




ALL- Glass Evacuated Solar Collector Tubes

Role of civil society organs

- Ensure good process;
- Demystify technology;
- Ensure understandings of cost to inform decisions;
- Understand leverage of beneficiaries;
- Promote affirming demonstrations; and
- Drive replication.



Conclusions

1. Project went through a good technology receptivity process resulting in ownership;

2. City did not take on ownership;

3. Central water heating could have performed better;

4. Second phase of metering and back-up not yet implemented.