The Solar Transitions Project and the interest in the transfer of lessons from India

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Motivation

The global urgency for social and technological changes (and related political changes) for poverty reduction, climate adaptation and a clean energy future
Why village scale solar systems?

- Provoked by criticism towards solar cell systems to fit only for small, insignificant energy supply

- A belief that the way we are using solar energy today is just a small beginning

- Some challenges and limitations exist for the individual household systems

- Curiousness to explore different ways of using solar
Need for more knowledge on *how*

- The examples in West Bengal seem to be successful
- We want to learn from there, on how to implement and organise it in viable ways in other places
- We want to develop models that can work in Kenya and other parts of Africa
- This will be both a learning process and a demonstration project relevant for Kenya and other similar contexts
- Combination of a village scale system and individual building systems is likely to be the result, including solar charging stations, solar water pumping and portable solar lanterns
Village scale solar systems: Transfer of social and technological innovations between India and Kenya - Solar Transitions

How can the use of new renewable energy technology be implemented and organised in ways that

- Embed the technology in local communities and cultures
- Make the energy supply useful in practice, to solve central problem that people have
- Create functioning systems for operation and maintenance locally
- Improve opportunities for income generation and a good quality of life, and facilitate climate adaptation
- Give more people access to the technology
- Overcome vested interests, political and institutional barriers for change
And how can learning on such issues happen across geographical contexts?

Not ”how can we make people use these technologies”, but how can more people get access to and benefit from these technologies”
The "human diversity" in the group will be useful

- Researchers and practitioners
- Social scientists and technology implementers
- Human geography, anthropology, sociology, engineering science, energy and resources management, physics, participatory technology development, development cooperation
- India, Kenya, Austria, Norway (and USA)
A good mix
The research partners  

- Senior Consultant Charles Muchunku, Camco, Kenya
- Dr. Benard Muok, African Centre for Technology Studies (ACTS), Kenya
- Dir. Akanksha Chaurey, TERI, India
- Researcher Debajit Palit, TERI, India
- Ass. Prof. Harald Rohracher, Inter University Centre of Technology, Work and Culture, Austria
- Dr. Charles Kirubi, Independent academic consultant, Energy and resources management, Kenya
The research partners (page 2)

- Dir. Anjali Saini, Integrated Energy Solutions, Kenya
- Program coordinator Paul Mbole, Norwegian Church Aid, East Africa, Kenya
- Advisor Therese Vangstad, Norwegian Church Aid, East Africa Kenya
- Prof. Karen O'Brien (chair), University of Oslo, Norway
- PhD candidate Kirsten Ulsrud (coordinator/leader), University of Oslo, Norway
- Dr. Siri E. H. Eriksen, University of Oslo, Norway
- Dr. Tanja Winther, SUM, University of Oslo, Norway
- Special adviser Jonas Sandgren, SWECO Norge AS, Norway
- Master students: Kaja Andersen and Maren Olene Kloster, SUM, Ragnhild Vognild, human geography, soon also two Kenyan master students.
Attitudes, values and methods reflected in the project

- Important to think practical, embed technologies in local contexts and adapt the technology to the needs of the users

- Necessary to look at practical experiences on the ground, study them, and see what can be interesting to bring home from there

- Pilot projects can influence the social structures and contribute to the creation of new institutions and continued change

- Action research and qualitative methods are important in order to understand relevant issues in depth

- Need for a bottom up approach, combined with the understanding of relevant framework conditions and barriers at different geographical levels
The role of social scientists in creating change

• The introduction of new technologies requires new ways of organising the society

• Social scientists can contribute by studying and monitoring ongoing changes, and point out important factors and dilemmas

• Resources (money and time) put into research can at the same time contribute to the urgent transformation of society
Solar cell technology well known in Kenya; - interest to develop new models for implementation and use
Water tank (Kenya) filled by solar pump
Research on factors at different levels

• A: The practical details and the social organisation of the power supply

• B: The socio-economic impacts and people’s interests and needs

• C: The implementation strategies

• D: The relevant support mechanisms and barriers at the state and national levels
A: The practical and organisational factors

Questions such as:

• How should one calculate the capacity of solar power generation that needs to be installed on average per family in a village scale system?

• How should later extension of the system be facilitated?

• What type of local participation is useful, and which tasks should be the responsibility of other experts?

• In which ways should the tariffs be decided, and how should they be collected?

• What are the challenges regarding metering and smart meters/prepaid electricity?
B: The socio-economic impacts

Questions such as:

• What are people’s perceptions of the power supply?
• How do the systems work for them in practice and influence their quality of life, their livelihoods and incomes, and why?
• How should energy supply be implemented in order to become as useful for people as possible?
• How can energy supply contribute to adaptation to climatic extremes and changes?
• Are individual household systems/lanterns sometimes a better option than village scale systems even if settlement patterns allow for mini-grids?
C: The implementation strategies

Questions such as:

• Which types of actors should be involved in an implementation process for village scale solar systems?
• Who should have the different types of responsibilities for maintenance and operation?
• How can women be included, and how should training be organised?
• How can and should financing for investment costs be provided?
• What kinds of civil works are necessary before installation of panels, batteries, etc.?
• What should be the contribution from the community (land? manual work? Investments in equipment?)
D: The framework conditions

Questions such as:

• What are the main challenges in the national energy sector and how is solar power mostly seen in this bigger picture?

• Are village scale solar power plants implemented in many places in the country, and why/why not?

• Are there plans for integrating mini-grids in the national electricity grid if and when it comes?

• Which support systems for renewable energy technologies are currently most helpful? What are the most important barriers/hindrances?

• Which international developments influence the opportunities for use of solar power at the local level?
The most challenging part – to bring about practical changes

- Where could financing come from?
  - For demonstration project(s) in Kenya
  - For further replication in India and Kenya

- We are looking for funding opportunities for a pilot project and ideas about how to manage the economical challenges

- There is also need for a project developer and/or energy service company in order to make a practical project on village scale solar power become a reality

- The practical activities in Kenya depend not only on the interest locally in a village, but on the interest of stakeholders in Kenya who can take the lead and long term responsibility.
Conclusion

• The Solar Transitions project is a research project and a learning process for the further development of how solar power supply can be implemented and used
• Existing solutions are a basis for continued learning about what kinds of socio-technical changes society needs and wants
• Indian knowledge and experience is a valuable source of information
• We are excited to be here and have the opportunity to learn from experienced experts!