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

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Motivation

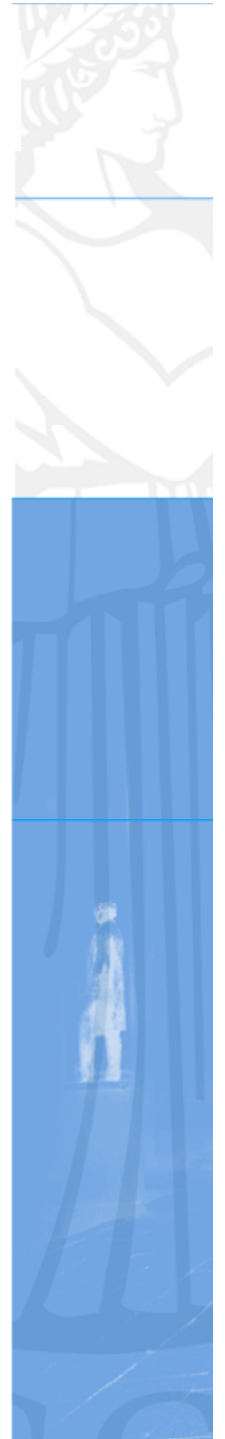
The global urgency for social and technological changes (and related political changes) for poverty reduction, climate adaptation and a clean energy future





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*

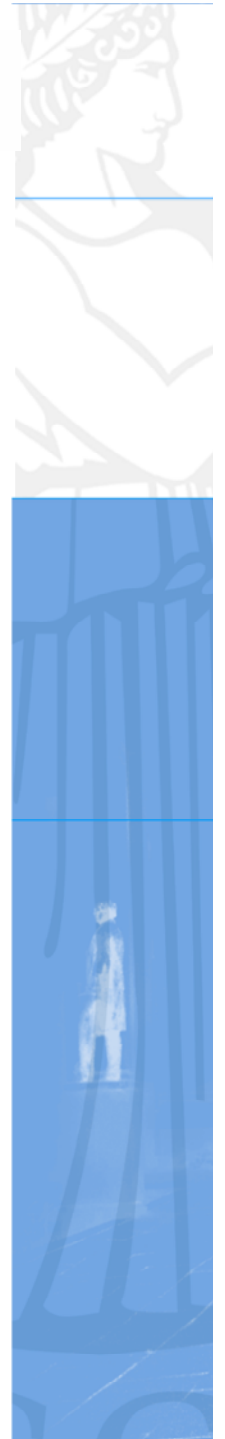
- The examples in West Bengal seem to be successful
- We want to learn from there, on how to implement and organise it in viable ways in other places
- We want to develop models that can work in Kenya and other parts of Africa
- This will be both a learning process and a demonstration project relevant 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?**

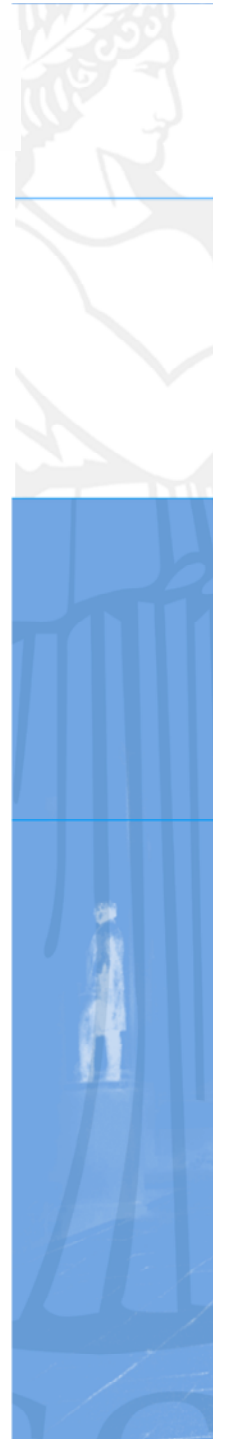
**Not "how can we make people use these
technologies", but how can more people get
access to and benefit from these technologies"**





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





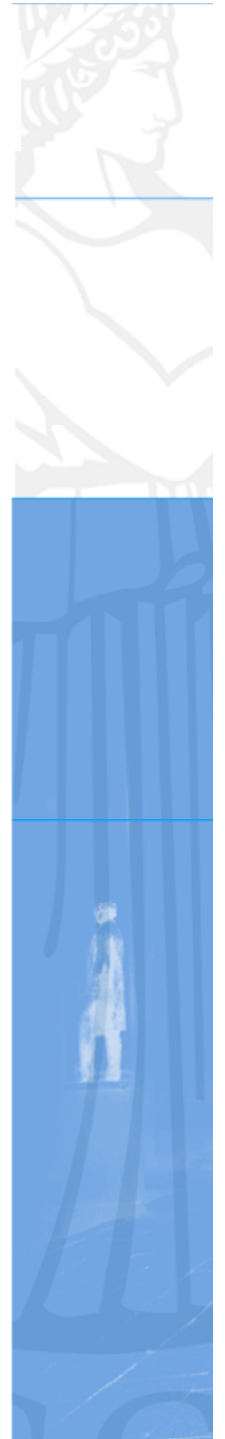
The research partners (page 1)

- 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 Rohrer, Inter University Centre of Technology, Work and Culture, Austria
- Dr. Charles Kirubi, Independent academic consultant, Energy and resources management, Kenya



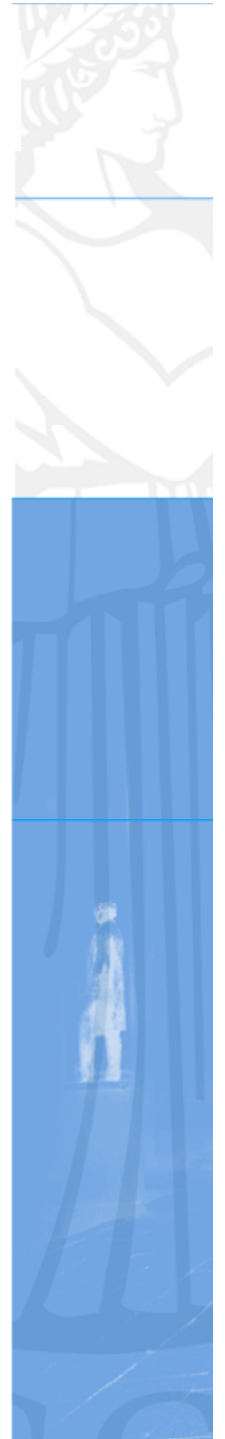
The research partners (page 2)

- 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 Ulrud (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





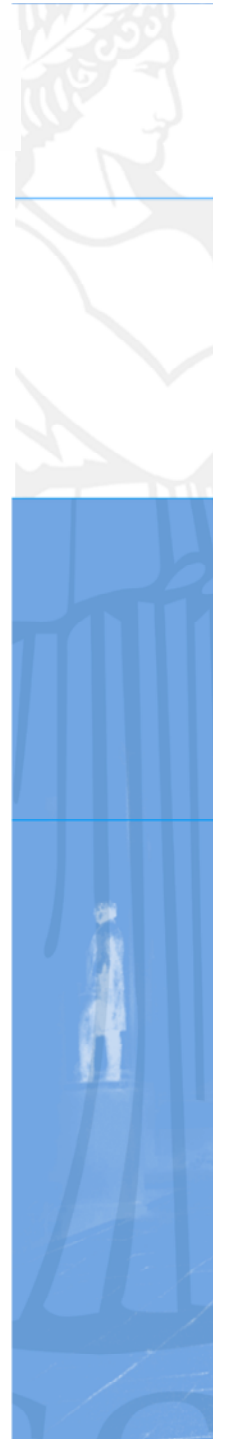
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Research on factors at different levels

- 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

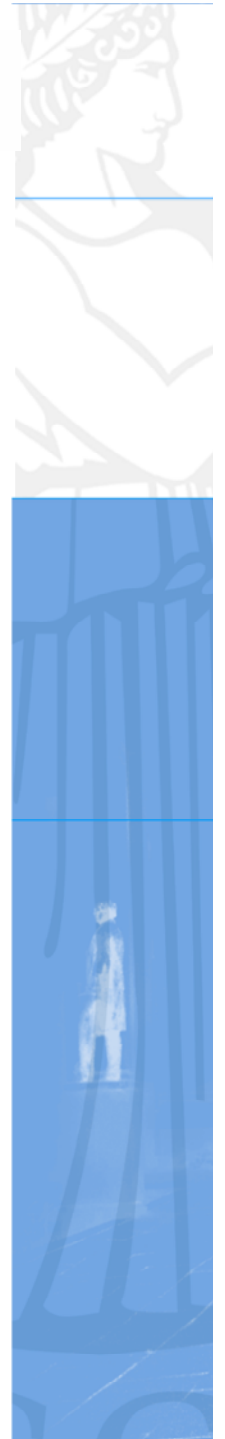




A: The practical and organisational factors

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:

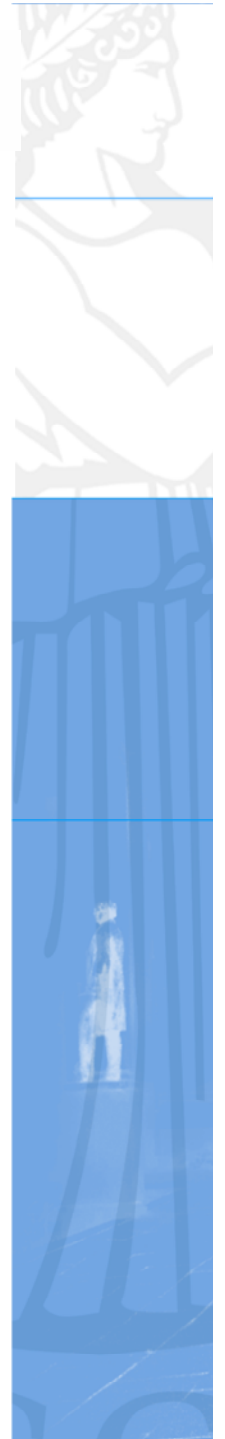
- What are people's perceptions of the power supply?
- How do the systems work for them in practice and influence their quality of life, their livelihoods and incomes, and why?
- How should energy supply be implemented in order to become as useful for people as possible?
- How can energy supply contribute 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?

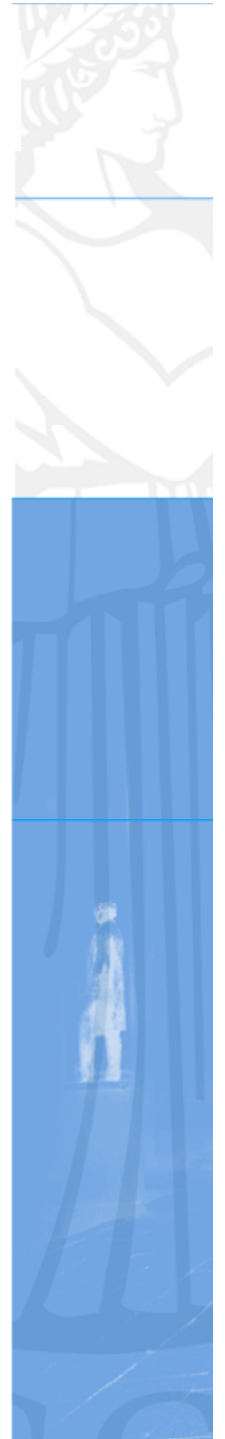


C: The implementation strategies

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!

