The transition to low-carbon energy technologies in Africa: research to understand and inform energy policies and investment decisions

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Research to understand and inform energy policies and investment decisions

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Building Bi-regional Partnerships for Global Challenges

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James Haselip
UNEP DTU Partnership
Kigali, 21 July 2016

UNEP DTU PARTNERSHIP

- A Centre within DTU Management Engineering
- A tripartite agreement between UNEP, DK Min. of Foreign Affairs (Danida) and Risø – now DTU
- Working on issues of energy, climate change and sustainable development in developing countries

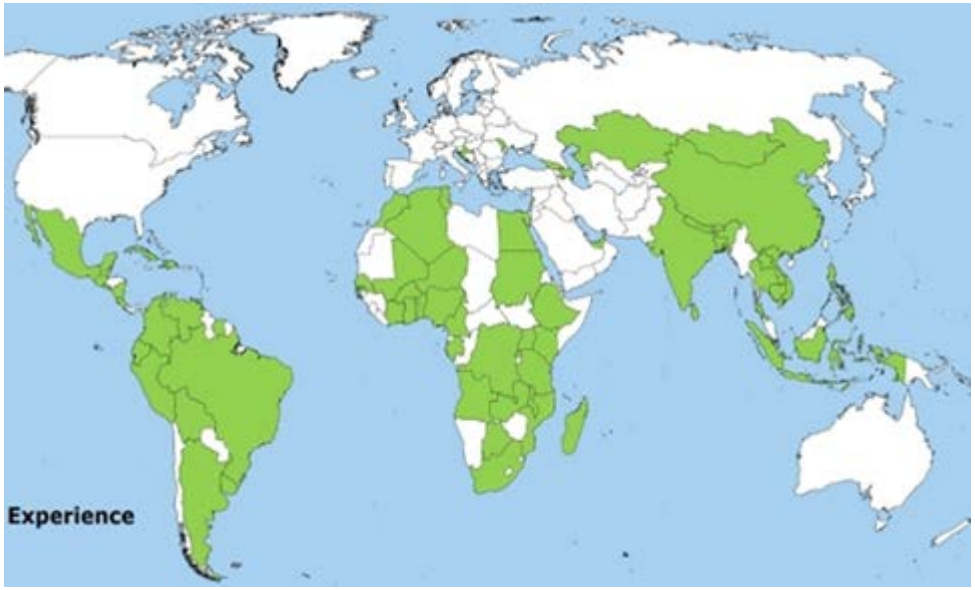
UDP Programmes

Cleaner Energy Development	• Facilitating cleaner energy technology transfer • Improve access to cleaner and efficient energy technologies • Analytical support for overcoming political and institutional barriers
Low Carbon Development	• Piloting new approaches within low carbon planning – LCDS, NAMAs • Enhancing a more equitable regional CDM project distribution • Facilitating a more efficient carbon market
Climate Resilient Development	• New approaches for assessing cc vulnerability and adaptation • Capacity building for integrating adaptation in policies and planning. • Expanding understanding of cc impacts and response options
Copenhagen Centre on Energy Efficiency	• becoming an international knowledge centre for collaboration and exchange of know-how on EE • support the SE4All initiative: Double the global rate of improvement in energy efficiency

UDP – what we do

- Typical large multi-country projects:
  - Economics of CC mitigation studies (1990s)
  - Capacity Development for CDM
  - Global Network on Energy for Sustainable Development
  - Facilitating Implementation and Readiness for Mitigation (FIRM)
  - Support for Nationally Appropriate Mitigation Actions (NAMAs)
  - Technology Needs Assessment (2010 -)
  - INDC preparation (2014)
  - Initiative for Climate Action Transparency (ICAT)

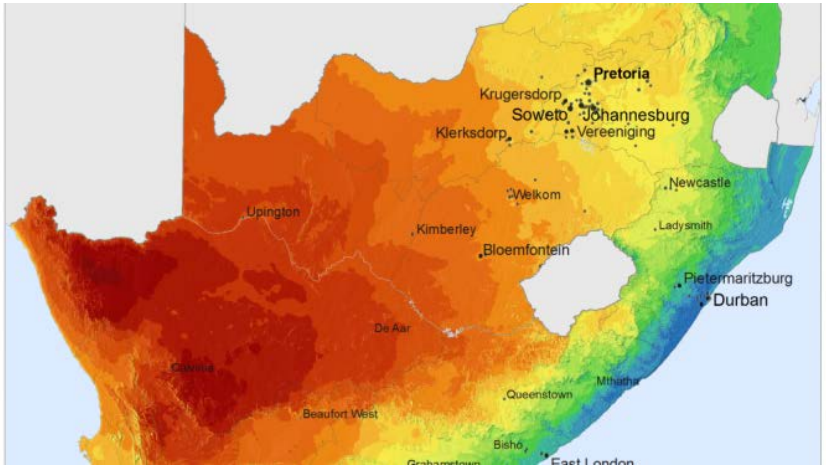
How do we work?



- Methodology development
- Capacity building
- Collaboration, mostly working with Gov.
- Network of centres, mostly in the south
- Increasing focus on role of technologies (UNFCCC)

The transition to low-carbon energy technologies

- Need for applied research to *understand and inform* energy policies and investment decisions
- What are the key issues, questions, priority areas?
- Investigating state-market-donor relations (political science)



Investigating state-market-donor relations

- Policy making as a political process: involves multiplicity of actors with competing interests. Decisions are therefore taken as a result of some ideas and interests winning over others…so…
  - Need to analyse the politics, actors and institutions involved to understand how change occurs
  - Why do only some policies and narratives gain traction while some others fail to?
  - What is the relative role and importance of ideas vs. interests?

The Rwamagana solar power plant

- The first large scale grid-connected PV plant in E. Africa (8.5 MW)
- Increased Rwanda's generation capacity by 6% (15,000 homes)
- From contract signing to connection in one year

From idea to reality

- Agahozo Shalom Youth Village (Anne Heyman)
- Energy Sector Forum in Kigali (Feb 2012)
- Project developer Gigawatt Global
- Secured 700K USD start-up grant from the Africa Clean Energy Finance Initiative (U.S. Power Africa) and by the Energy and Environment Partnership (European)
- IPP / PPA – gov. accepted paying high FIT rates, fixed for 25 years
- The electricity is sold to Rwanda Energy Group, the national utility
- REG managed supply tendering process
- Fully online by September 2014

Getting the money!

Scatec Solar and Norfund are the majority owners of the solar plant, with 70% and 20% respectively. Gigawatt Global has a 10% share.

The project was financed (75%) through long-term debt and 25% by equity investors. The solar plant had an investment cost of US$23.7m, financed by the following international consortium:

- FMO (Dutch development bank)
- EAIF (Emerging Africa Infrastructure Fund, a public private partnership)
- Norfund (Norwegian Investment Fund for Developing Countries)
- Scatec Solar (integrated independent solar power producer based in Norway)
- ACEF (Africa Clean Energy Finance Initiative, part of Power Africa initiative)
- EEP (Energy and Environment Partnership, funded by Finland, Austria, UK)

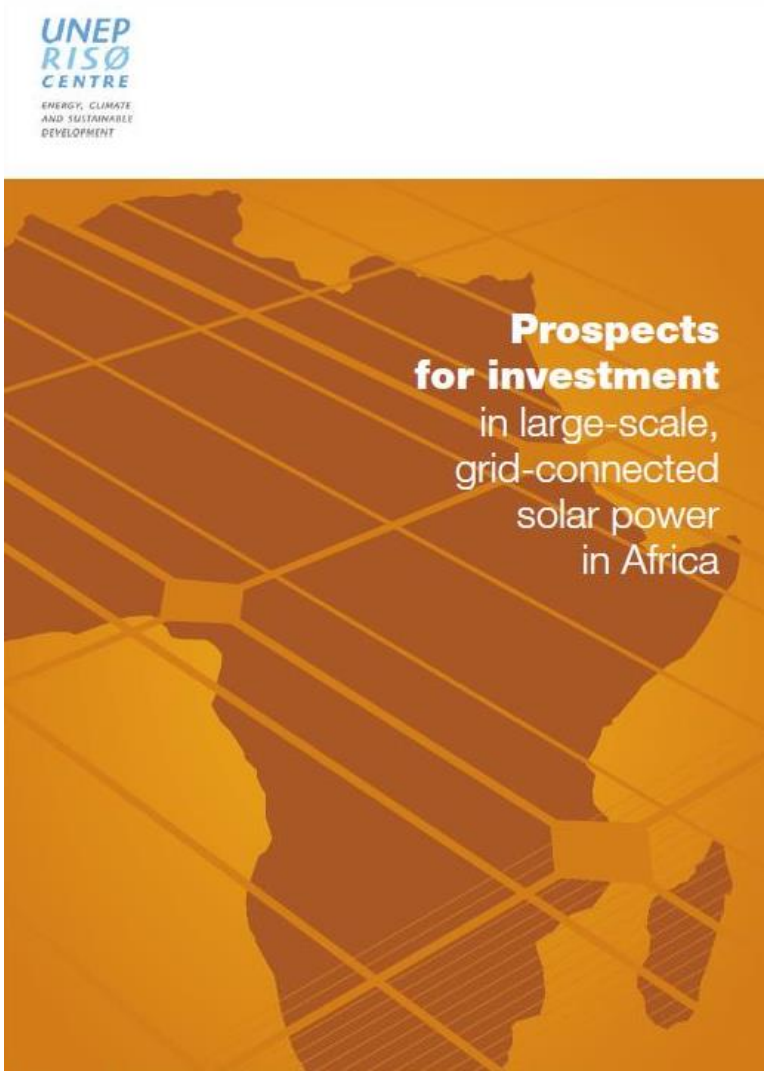
Securing finance – overcoming barriers

Willingness to invest due to:

(i) The project was novel and 'exciting' as the first utility scale PV in SSA outside of South Africa

(ii) Globally-competitive FIT rates

(iii) Rwanda seen as a relatively transparent, stable political and economic regime



Rwamagana solar: findings / conclusions

- State / market / donors all had a role to play
- Strong, clear gov. and donor support for high profile project
- Initiative (ideas) can come from anywhere, but drive is fundamental – project champion
- Importance of foreign expertise
- Global supply chains with unclear spill-over effects (short vs. long term)
- Energy markets are rarely 'free' and must be created and/or regulated to allow for investment in RETs – importance of clear conditions, incentives, rule of law to minimise risk

What does this mean for energy transitions research?

- What are the macro-level and the technical/economic changes affecting the transition to sustainable energy?
- What processes are take place in the policy formulations at national and subnational levels, and what are the discussions and narratives informing and driving them?
- What are the strategies employed by the interest groups to influence policy processes?
- Does public opinion or public perception influence or play a role in policy making?