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A CASE FOR CAPABILITY AND COLLABORATION BUILDING IN RENEWABLE ENERGY SECTOR

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Outline

- Introduction
- Stakeholders perception - Survey and Interviews
- Recommendations

Introduction

- Kenya is the fastest growing promoter of solar wind power in Africa – why because the renewable energy sources are increasingly becoming important as way of:
  - ensuring energy security
  - drive Kenya's development
  - diversify energy sources
  - create employment and income generating opportunities to the growing population of Kenya
- However, contribution of renewable energy sources to Kenya's installed generation capacity has remained insignificant.
- Many factors may be contributing to the slow uptake one of them being issues of capabilities and collaboration

IREK: Innovation and renewable electrification in Kenya

- The IREK project is a development research project on Innovation and Renewable Electrification in Kenya funded by the Danish Ministry of Foreign Affairs with research partners at Aalborg University (Denmark) and the African Centre for Technology Studies and Moi University (Kenya).
- IREK seeks to provide a better foundation for selecting and deploying available technologies in a way that increases inclusiveness and contributes to poverty reduction.

Motivation for the project

- South – South Technology transfer (foreign technologies and impact on local knowledge)
- See examples of projects below

IREK: Innovation and renewable electrification in Kenya

Rethinking Capabilities

- Capabilities can be defined as having the capacity (resources, skills/competences and knowledge) to carry out a task. These include technological capabilities (e.g. manufacturing, installing, operation and maintenance) and soft aspects of capabilities such as the ability to organise a project, planning, financial managements etc. Local capabilities signifies domestic (Kenyan) as opposed to global capabilities but can also refer to capabilities at the sub-national (county, village) level.
- Capability is not just about generation of technology, it is also about diffusion of products and knowledge.
- Within projects, new or modified technologies or knowledge will be generated but in the process, new capabilities will be gained through the use of technologies and knowledge developed by others.

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IREK
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History of construction project (post award and contract negotiations)

- 25th October 2014 construction starts
- Feb 2016 completion of 207km off-site roads and site village, offices, workshops
- March 2016 first turbine delivered and erected
- April 2016 on-site roads completed
- September 2016 Electrical networks completed (stage 1)
- October 2016 Completion of first 155 turbines (50-70mw)
- April 2017 Expected completion of internal electrical networks and sub-station
- July 2017 All 365 turbines/ 310mw online
- [First 90mw of power integrated to grid by June 2017?]

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LTWP

Project partners (deployment chain)

- KP&P Africa – holding company; owns 'LTWP ltd' a project company
- Aldwych International – construction and ops management
- Worley Parsons – consultant engineer (ED Review and Construction Mgt)
- Vestas – turbines EPC contractor
- RXPE – transmission system/ power control EPC contractor
- EGMF – site contractor (foundations)
- Civicon – site contractor (roads)
- Seco – site contractor (offices etc.)
- Seimens – site contractor (power lines)
- Bollore logistics – contractor specialised transport
- [Ketraco and Isolax – transmission lines]

Powerhive project

- Kisii
  - Powerhive first private utility to be granted ability to sell electricity in Kenya
  - Pilot project in Kisii since 2012, 4 villages – 300 connections; 1500 people
  - Plans to upscale to 200,000 connections
  - Actors: Powerhive and First Solar and local community
  - Using First Solar PV modules with Powerhive e-systems (US)

Local engineers at powerhive, O&M by community members, social innovation?

http://solarpv.tv/index.php/2016/08/11/powerhive-at-kisii-county-kenya-resilient-energy-infrastructure-for-off-grid-communities/

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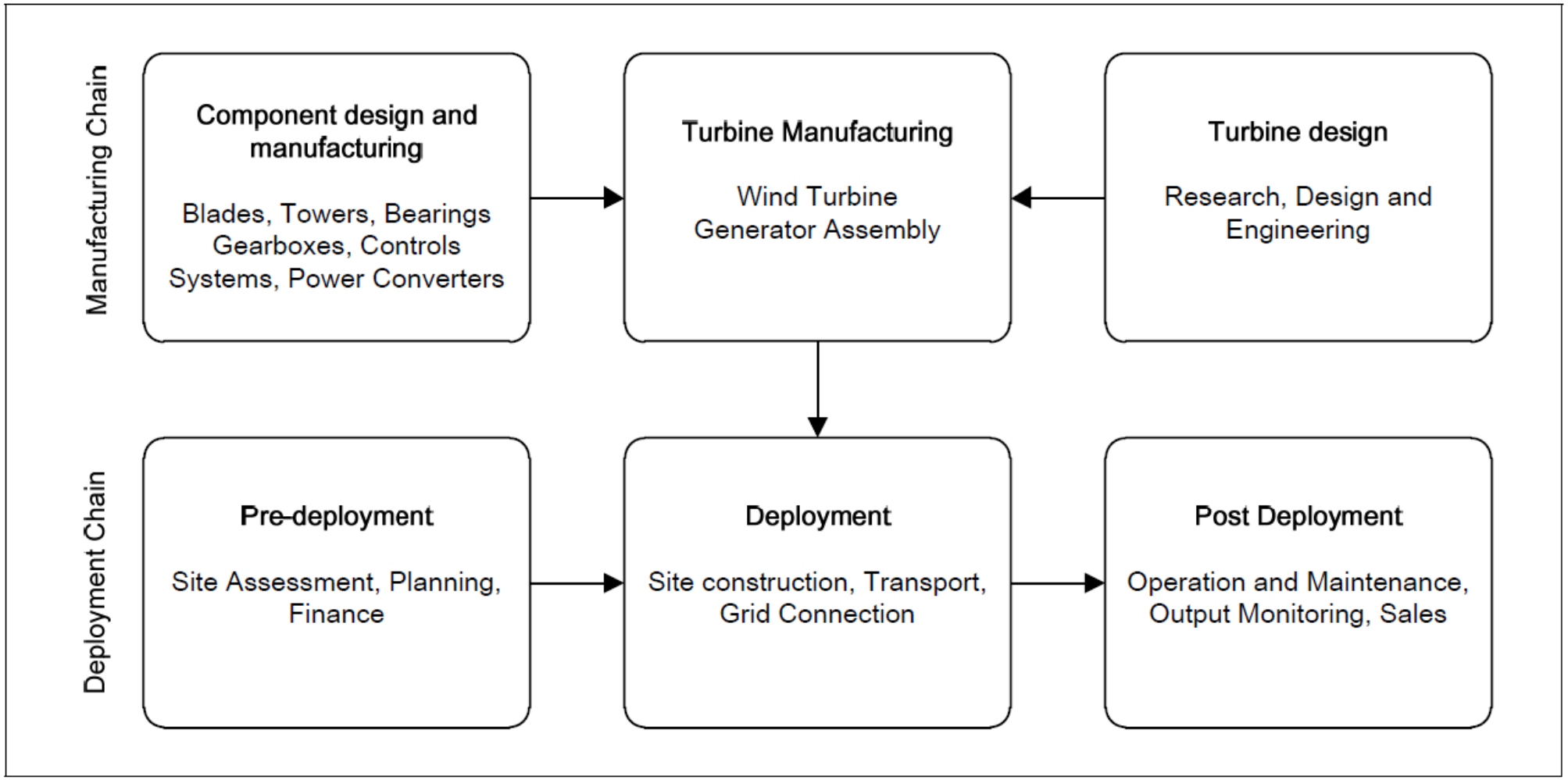
Thinking about domestic capabilities [2]

Figure 2.1 Basic wind industry value chain



Thinking about domestic capabilities

How to build capabilities for enhanced solar and wind technologies?

Reflections for practitioners:

When designing projects reflect on:

- What is the nature and extent of capabilities?
- Who has these capabilities?
- What relevant actors do not have these capabilities?
- What types of learning can we draw from these capabilities and how can this feedback be used to improve the system or project?

Thinking about domestic capabilities

How to build capabilities for enhanced solar and wind technologies?

Reflections for policy makers:

When designing policies, policy makers should reflect on:

- Building or enhancing capability of local actors.
- Building a strong local innovation system.
- Building an industrial manufacturing base
- Support development of relevant educational curriculum that promotes training at research, universities and technical and vocational colleges.

IREK key findings

- The issue isn't so much about appropriate technologies from Asia/China (or any country from the South) to Kenya or Europe/North to Kenya but it is about how any technology is taken up
- Even the most 'relevant' technologies developed abroad will need to go through a process of transformation in order to become both efficient and inclusive in the specific context of Kenya.
  - Here - building domestic capabilities is key
- 'small is beautiful'; that you get more domestic capabilities built with small scale projects than large scale (on-grid) projects.

POLICY AND PRACTICE RECOMMENDATIONS

Take home message…

1. Policy makers and other stakeholders including researchers should look into ways of building capabilities in technology equipment manufacturing and operations and maintenance capabilities.
2. The government should promote policies that enhance local capability building.
3. Stakeholders should support a platform for sharing knowledge and experiences.

Capability and collaboration issues: Gaps in the current policy

The Draft Energy Bill reflect generalised aspects of capability development and collaboration with an emphasis on human resource development. They allude to the fact that capability and collaboration are instrumental in widespread adoption and diffusion of renewables.

- *Overall the draft bill lack of clarity about capabilities building: Sometimes capacity and capabilities used interchangeably.*
- *The bill gives capability building and collaboration aspects a generalised approach despite the different capabilities needed for different subsectors (solar, wind etc).*
- *do not sufficiently reflect disaggregated and specific mechanisms of building local capability for equipment manufacturing, project development and investment, construction and installation, and operations and maintenance.*
- *What is required is deliberate translation of policy provisions into strategies and action plans that are supported by dedicated budgets.*

Findings from survey and interviews

- They do not sufficiently reflect on the role of key actors, such as donors, universities, research, and financial institutes in technological capability development.
- They do not highlight the key role played by imported technologies and foreign direct investments in technological capability development at local levels.
- There was consensus that building local capabilities takes time but that this has not been given attention through supportive policies/strategic plans.
- The issue of strengthening both local and international collaborations in the areas of financial and project management is not sufficiently addressed in existing policy documents.

Recommendations – Amendments/inclusion in the Bill

Clause 74 (2) to include an a clause reading:
(k) Promoting an evidence based localised training strategy linked to the Technical and Vocational Education Training at the counties level
Clause (e) to be revised to read:
Promoting relevant infrastructure and capabilities (instead of capacities) across the entire value chain including the manufacture, installation, maintenance and operation of basic renewable technologies such as bio-digesters, solar systems, wind systems and turbines;
Add another clause that strengthens clause (f). This new clause to read:

- promoting collaborations between local and international investors that enhance strategic efforts to build requisite local capabilities particularly within distribution, service and maintenance of these technologies.
- Review Clause (a) to read: formulating a strategy for coordinating research including foresight studies and generation of comprehensive information on capabilities for diffusion of green technologies.

Recommendations – Amendments/inclusion in the Bill

Clause 75 (4) the issues to provide advise on by the Renewable Energy Resource Advisory Committee to be expanded to include an additional clause (f):

...provide advise on:

..strategic efforts by local and international investors to build domestic or local capabilities particularly within distribution, service and maintenance of renewable technologies.

....the required capabilities at the local or domestic level for developing the last mile distribution channel and providing after-sales service across renewable energies value chain.

More information

Check out:

- www.acts-net.org
- www.irekproject.net

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