Why does project design & organisation matters for local capability building?

Dr. Rebecca Hanlin
Non-Resident Fellow, ACTS/Consultant Innovation and Development Specialist
Projects and sustainable industrialisation

• Increasing focus on (large scale) electrification infrastructure projects (increase energy access)

• Return to industrial policy and questions of sustainable industrialisation (SDG 9)

• Relevant academic theories:
  • Return of industrial policy – Rodrik et al
  • Rosenstein-Rodan: Large scale projects for industrialisation (big push)
  • Hirschman and mega projects as ‘trait making’ vs small projects as ‘trait taking’ and linkages work
  • Lall: inward looking firms make do vs more innovative export-oriented firms
  • Kaplinsky and inclusive innovation/sustainable futures

Study focus

Large and small
- Lake Turkana Wind Project
- Garissa Solar Park
- Kitonyoni solar project
- Mombasa SOS children’s village

Projects
- Design
- Build
- Operate
- Transfer

Technologies
- Chinese
- Danish
- German
- Kenyan

Main questions
- Does location in the project matter?
- Have the developed capabilities led to upgrading?
## What did we measure?

<table>
<thead>
<tr>
<th>Individual skills</th>
<th>Government minimum standards</th>
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<tbody>
<tr>
<td></td>
<td>Additional ‘on the job’ skills identified</td>
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<td>Training opportunities</td>
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<tr>
<td>Technological capabilities</td>
<td>New physical technologies (e.g. new piece of testing equipment) introduced into the firm that results in new business opportunities at any stage in the project cycle</td>
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<td>New knowledge introduced into the firm that results in new business opportunity at any stage in the project cycle (e.g. recruitment of a staff member with EPC experience or training of existing staff in how to install a specific new invertor design)</td>
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<td>Core competences</td>
<td>Function as an EPC (engineering, procurement and construction) contractor</td>
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<td>Evidence of ability to leverage new partnerships on the back of previous work</td>
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<td>Upgrading</td>
<td>Process upgrading (e.g. increased efficiency of installation process – speed/ manpower requirement)</td>
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<td>Product upgrading (e.g. from using Chinese to German inverters)</td>
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<td>Functional upgrading (e.g. move from being a contractor to doing full EPC)</td>
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<td>Chain upgrading (e.g. move from installing solar heaters to installing mini-grid systems)</td>
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Major findings

1. **Local companies benefitted in all projects but only business ‘unusual’ in small scale projects**
   - Kenya develops mini-grid EPC firms in 3 years
   - PM activity in all firms at large scale was ‘normal’ practice – but huge investment in kit relatively

2. **Job creation opportunities but (a) short term and (b) path dependency towards certain technologies reduces opportunities**
   - Solar PV dominance creates a specific skill set available
   - No need to only employ foreign engineers
   - Construction vs. O&M job opportunities

3. **Projects do present opportunities for trait making and scale up but not at large scale**
   - Functional upgrading has taken place
   - New partnerships and alliances
   - Lock in of local firms involved in large scale projects – little innovation
Project design and organization: implications

Project format makes a difference
• EPC vs EPCM for more local contractor involvement
• Not just install and ops

Needs new set of skills and capabilities
• In early stages of project (D stage)
• Project management skills

Source: http://renews.biz/105033/feet-up-for-vestas-in-kenya/
Take away points

Not just about energy access
• Projects can build critical base skills for country

Need a different conceptualisation of innovation
• Provide opportunities for innovation for firms in ‘build’ stage of large projects
• Learning from linkages (vs learning from importing or exporting)

Needs continued investment in education and training
• Training in different skill sets (PM)