Eastern Cape - The Home of Renewable Energy Manufacturing?
Positioning the Eastern Cape

<table>
<thead>
<tr>
<th>Wind (Eskom Applications)</th>
<th>3 594 Planned Turbines</th>
<th>8 312 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind (Eskom Quotes)</td>
<td>1 701 Turbines (est)</td>
<td>4 253 MW</td>
</tr>
<tr>
<td>Approved REFIT 1</td>
<td>188 Turbines (est)</td>
<td>469.7 MW</td>
</tr>
</tbody>
</table>
Positioning the Eastern Cape

Solar (Eskom Quotes) | 1 980 000 Planned PV Panels (est) | 495 MW
Positioning the Eastern Cape

Biogas
2 Planned Turbines
30 MW
What to Manufacture

• Solar, wind, biomass, biogas, others?
• Full manufacturing, components or assembly?
• Immediate demand, anticipated and future demands?
• Volumes?
• Competitiveness of products?
• Ability to manufacture (skills)?
Which RE Technology to Focus on? (Immediate Needs)

**Solar**
- PV module manufacturing
- Module assembly
- Racking systems
- Glass
- Aluminium Framing
- PC Boards
- Module backing

**Wind**
- Towers
- Blades
- Drive shaft
- Gearbox
- Generators
- Hydraulic breaking systems
- Pitch and yaw controls

**Biogas**
- Plastic rotational moulding products
- Piping (plastic and copper)
- Accessories i.e. biogas stoves, toilet systems, heaters, etc
Common Components for all Technologies

**Inverters**
- Currently fully imported

**Transformers**
- Only two local suppliers with limited capacity

**Other**
- Substation upgrades
- Electrical wiring
- Battery storage
- Control and switching gear
- Metering
- Combiner boxes
Ancillary Items that add to Local Content

**Consulting**
- Environmental impact studies
- Socio-economic studies
- Engineering services
- Electrical services
- Legal

**Physical Site**
- Physical buildings
- Security services
- Construction
- Fencing
- Roads and Access

**O & M**
- Daily monitoring operations
- Cleaning team
- Maintenance crew
- R&D
- Training
What is the Demand and Volume?

Immediate Demand from REFIT

<table>
<thead>
<tr>
<th>Technology</th>
<th>Allocated MW</th>
<th>Required Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar PV</td>
<td>1 450</td>
<td>5 800 000</td>
</tr>
<tr>
<td>Wind</td>
<td>1 850</td>
<td>740</td>
</tr>
<tr>
<td>Biogas</td>
<td>12.5</td>
<td>1</td>
</tr>
</tbody>
</table>

Domestic and Commercial Demand

<table>
<thead>
<tr>
<th>Technology</th>
<th>Domestic</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar PV</td>
<td>&gt;800 000 non-electrified houses</td>
<td>Not researched yet</td>
</tr>
<tr>
<td>Wind</td>
<td>&gt;800 000 non-electrified houses</td>
<td>Not researched yet</td>
</tr>
<tr>
<td>Biogas</td>
<td>More than 800 000 households without flush toilets</td>
<td>Not researched yet</td>
</tr>
<tr>
<td>Project</td>
<td>Bidder Name</td>
<td>Technology</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Dassiesklip Wind Energy Facility</td>
<td>Klipheuwel - Dassiefontein Wind Energy Facility (Proprietary) Limited</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>MetroWind Van Stadens Wind Farm</td>
<td>MetroWind (Pty) Ltd</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>Hopefield Wind Farm</td>
<td>Jimoya Energy (Pty) Ltd</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>Noblesfontein</td>
<td>Coria (PKF) Investments 28 (Proprietary) Limited</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>Red Cap Kouga Wind Farm - Oyster Bay</td>
<td>Red Cap Kouga Wind Farm (Pty) Ltd</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>Dorper Wind Farm</td>
<td>Dorper Wind Farm (Pty) Ltd</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>Jeffreys Bay</td>
<td>South Africa Mainstream Renewable Power Jeffreys Bay pty Limited</td>
<td>Onshore Wind</td>
</tr>
<tr>
<td>Cookhouse Wind Farm</td>
<td>African Clean Energy Developments</td>
<td>Onshore Wind</td>
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<tr>
<td>Khi Solar One</td>
<td>Khi Solar One Consortium</td>
<td>Solar CSP</td>
</tr>
<tr>
<td>KaXu Solar One</td>
<td>KaXu Solar One Consortium</td>
<td>Solar CSP</td>
</tr>
<tr>
<td>SlimSun Swartland Solar Park</td>
<td>SlimSun</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>RustMo1 Solar Farm</td>
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<td>Solar Photovoltaic</td>
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<tr>
<td>Mulilo Renewable Energy Solar PV De Aar</td>
<td>Gestamp Mullilo Consortium</td>
<td>Solar Photovoltaic</td>
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<tr>
<td>Konkoonsies Solar</td>
<td>Limarco 77 (Pty) Ltd</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>Aries Solar</td>
<td>Sevenstones 159 (Pty.) Ltd</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>Greefspan PV Power Plant</td>
<td>AE-AMD Independent Power Producer 1 (Pty) Ltd</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>Herbert PV Power Plant</td>
<td>AE-AMD Independent Power Producer 1 (Pty) Ltd</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>Witkop Solar Park</td>
<td>Core Energy (Pty) Ltd</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>Touwsrivier Project</td>
<td>CPV Power Plant No. 1</td>
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<tr>
<td>De Aar Solar PV</td>
<td>South Africa Mainstream Renewable Power De Aar PV (Pty) Ltd</td>
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<tr>
<td>Letatsi Power Company</td>
<td>Consortium consisting of Kensani Capital Investments (Pty) Ltd, SolarReserve South Africa (Pty) Ltd and Oakleaf Investment Holdings 80 (Pty) Ltd</td>
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<td>Kalkbult</td>
<td>Scatec Solar</td>
<td>Solar Photovoltaic</td>
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<tr>
<td>Kathu Solar Energy Facility</td>
<td>Lokian Trading &amp; Investments (Pty) Limited</td>
<td>Solar Photovoltaic</td>
</tr>
<tr>
<td>Solar Capital De Aar (Pty) Ltd</td>
<td>Solar Capital De Aar (Pty) Ltd</td>
<td>Solar Photovoltaic</td>
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</table>
What is the Demand and Volume?

SADC Demand for Renewable Technologies
• Mozambique targets (not dates specified)
  • 2 000MW from solar, wind and hydro each
  • Installation of 50 000 PV systems for lighting
  • Installation of 1 000 biodigesters
  • Installation 100 000 solar geysers
• Namibia
  • Non-hydro renewable capacity of 40MW by end of 2011
• Other SADC Countries with Renewable Goals
  • Botswana
  • DRC
  • Lesotho
  • Madagascar
  • Malawi
  • Mauritius
  • Seychelles
  • Swaziland
  • Tanzania
  • Zambia
  • Zimbabwe
How Could Manufacturing Start?

• Clustering Concept
  Suzhou Industrial Park Example
  • Initiate skills training and development
  • Increase R&D activity and encourage small assembly
  • Patent creation and attraction of venture capital
  • Growing nucleus of component suppliers
  • Economies of scale attract anchor OEM tenant
  • Competitors of tenant locate due to same suppliers
  • Deepening of R&D and increase in innovation
  • Continued attraction of OEMs
Who Should Manufacture and Where?

• JV Partners who could diversify into the RE sector must be identified
• Universities and skills centres to start the training process together with R&D
• IDZ’s can be utilised to create clusters as well as provide incentives
• Provincial co-operation to be encouraged until areas are sustainable and able to compete
• But, Coega is well positioned to export large goods such as towers and blades, whilst East London could focus more on solar PV because of location, developments in the area, and access to raw materials
Risks and Uncertainty

• Cost of business (electricity, labour, etc)
• Small local market (location to market)
• Licensing issues
• Lack of technology
• Lack of skills
• High global competition
How to go About This

• Potential Manufacturer Database
• Linking to existing manufacturing
• Start skilling up
• Increased dialogue with Provincial Energy Strategy and the Provincial Industrial Development Strategy 2012 (which has identified Green Industry as a key investment opportunity)
• Working with Universities, R&D and Innovation Platforms, i.e. the NMMU and ELIDZ Science & Technology Parks for incubation
• Start the cluster and create an attractive environment for investment
Thanks!