Avoiding utility failure

Dr Christopher Haw
Powering Africa with clean, affordable energy.
Our drivers...

Renewables have zero emissions when operating

Renewables are the cheapest new source of energy
Introduction to SOLA Future Energy
About SOLA Future Energy

**SOLA Group Key Facts**

<table>
<thead>
<tr>
<th>Offices</th>
<th>Cape Town, Johannesburg, Windhoek, Durban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>42</td>
</tr>
<tr>
<td>Inception</td>
<td>2008</td>
</tr>
<tr>
<td>Accreditations</td>
<td>7EP CIDB grading; ISO 9001:2015</td>
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**Business Unit Track Record (2018)**

<table>
<thead>
<tr>
<th>PPA</th>
<th>265MW developed</th>
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<tbody>
<tr>
<td>EPC</td>
<td>29MW built [49 projects]</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>23MW operated [43 projects]</td>
</tr>
<tr>
<td>Storage</td>
<td>1.6MWhs [3 projects]</td>
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Global Energy Trends

Figure 6.8 - Global average annual capacity additions and retirements by technology in the New Policies Scenario, 2017-2040

Source: World Energy Outlook 2017
Solar PV is 25% of all new capacity additions in Africa

Source: IEA World Energy Outlook 2017
Utility Scale Solar PV costs 2018 (Africa)

Average power generation costs are $50-80/MWh in most regions today, and most increase over time in the New Policies Scenario.
Traditional Electricity Generation
Shift in Energy User Behaviour Patterns

Source: IRENA Corporate Sourcing of Renewables: Market and Industry Trends 2018
Global Energy Trends

Source: IRENA Corporate Sourcing of Renewables: Market and Industry Trends 2018
Analysis primarily on large listed, multinational corporates
How is this power being procured

Self Generation has limitations:
• Disruption
• Not suited for cities
• Structural issues

Source: IRENA Corporate Sourcing of Renewables: Market and Industry Trends 2018
Utilities and regulators have a choice

Current Position

Choice
- Resist self generation & IPPs
- Support self generation and IPPs

Requires
- Heavy handed regulation and policing mechanisms
- Energy market reform that allows direct contracting

Results in
- Higher tariffs, grid defection, lower economic growth
- Efficient energy market, future-proofed utilities, higher GDP
Traditional Utility Model

Source: Functioning of Power Exchanges Akhilesh Awasthy
Introducing a power exchange...

**Electricity Market**

- **Production Function**
  - Generation

- **Transportation Function**
  - Transmission
  - Distribution

  **Natural Monopolies**

- **Merchant Function**
  - Wholesaling (Supply)
  - Retailing (Demand)

**Step-1:** Introduce competition in **Supply side** so as to decrease electricity prices. (Demand side competition doesn’t result in reduction of prices unless production is competitive)

**Step-2:** Introduce competition in **Demand Side** so as to pass the gains in supply side directly to consumers
Pre-requisites of a competitive market...

- **Unbundling of utilities**
  - Separation of Generation, Transmission and Distribution/retail

- **Multi buyer model**
  - Choice for consumer’s to buy from any generator or retailer
  - Choice for generator to sell to any buyer

- **System Operator**
  - To maintain grid security
  - To create platform for demand/supply scheduling

- **Open Access**
  - Unrestricted access to grid

- **Autonomous Regulator**
  - Overlooking the working of the market
  - To regulate the charges levied by Transportation monopoly

We need to start **now** because changes in legislation take time!

Source: Functioning of Power Exchanges Akhilesh Awasthy
Prominent deregulated markets with energy exchanges

<table>
<thead>
<tr>
<th>Country</th>
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</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>Russia</td>
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<tr>
<td>India</td>
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<td>Netherlands</td>
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<tr>
<td>USA</td>
<td>Singapore</td>
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<td>France</td>
<td>Cayman Islands</td>
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How can the municipalities benefit?

Charge for the facilitation of this...

but...

set the price right to encourage network usage rather than defection
What can utilities do?

- Avoid competing on Generation (fast moving highly competitive environment)
- Support reform of energy markets to provide better signals for customers and generators around demand and supply
- Focus on maintaining the infrastructure required for this market to work:
  - Transmission lines, substations, busbars, meters.
  - System control centre including creation of an energy exchange
- Charge for these services on a COST + regulated margin basis.
- Invest in digitization of energy market: demand response, smart meters, distributed generation and flexible energy price.
We need to work together to fix our planet!
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Beach Road | Granger Bay | 8005

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