InsightS from NAMA development in Peru

Developing an Enabling Environment and A financial Mechanism to foster technology uptake
Overview

• The situation for biomass waste in Peru
• Barriers that hinder biomass from developing
• The scope of the NAMA
• Building an enabling environment for biomass waste to energy
• Building a financial mechanism to foster biomass waste to energy
Situation biomass waste Peru

- Large hydro likely to decline and likely no addition potential
- High electricity forecasted, low electricity access
- Thermoelectric generation depend on imported fuels
- Need to move to RE
Situation biomass Waste Peru

- Large potential of biomass waste in Chile due to agricultural activities
### Peru – Existing instruments

<table>
<thead>
<tr>
<th>Technology</th>
<th>Year</th>
<th>Volumes auctioned (GWh/year)</th>
<th>Volumes contracted (GWh/year)</th>
<th>Success rate (%)</th>
<th>Average contract price (USD/MWh)</th>
<th>Ceiling price (USD/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small hydro</td>
<td>2009/2010</td>
<td>500</td>
<td>160</td>
<td>32%</td>
<td>60.2</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>(first call)</td>
<td></td>
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<tr>
<td></td>
<td>2009/2010</td>
<td></td>
<td>18 MW</td>
<td>5%</td>
<td>64</td>
<td>-</td>
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<tr>
<td></td>
<td>(second call)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>681</td>
<td>681</td>
<td>Almost 100%</td>
<td>53.2 (-11%)</td>
<td>-</td>
</tr>
<tr>
<td>Solar PV</td>
<td>2009/2010</td>
<td>181</td>
<td>173</td>
<td>96%</td>
<td>221.1</td>
<td>269</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>43</td>
<td>43</td>
<td>100%</td>
<td>119.9 (-46%)</td>
<td>-</td>
</tr>
<tr>
<td>Wind</td>
<td>2009/2010</td>
<td>320</td>
<td>571</td>
<td>178%</td>
<td>80.4</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>429</td>
<td>473</td>
<td>100%</td>
<td>69.0 (-14%)</td>
<td>-</td>
</tr>
<tr>
<td>Biomass and waste</td>
<td>2009/2010</td>
<td>813</td>
<td>143</td>
<td>17.6%</td>
<td>63.5</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>828</td>
<td>14</td>
<td>2%</td>
<td>99</td>
<td>-</td>
</tr>
</tbody>
</table>

Existing tender process with limited success
Identified Barriers to Biomass development

• Financial
  • Bank risk premium due to lack of experience with biomass waste to energy projects
  • Informal biomass markets

• Knowledge/ capacity
  • Lack of knowledge in agricultural sector on benefits
  • Lack of capacity in private sector to develop projects
  • Lack of capacity in government to setup framework condition

• legal/ regulatory
  • Delays in project authorization
Scope of the NAMA
Building An Enabling environment
Building a financial mechanism

Project Finance

- Income
  - Auction/PPA
- Equity
- Loan

Public bank
NAMA Funding

Prefeasibility studies

Guarantee Fund

Private bank
Financial Mechanism - Functioning

Weighted Average Cost of Capital (WACC)

Opportunity cost / rate of return equity

Share of equity

Cost of debt – private financing

Share private dept financing

Cost of debt – public financing

Share public dept financing

Guarantee fund

Portfolio loss allocation

Fund capitalization

Legend

- Calculated
- Scenario assumption
- General assumption
Financial mechanism- Options FOR financing
Financial mechanism – impact
Recommendations

• Enabling environments need to be build around frameworks in the country - however building on international best practice experience is essential.

• The proper design of a financial mechanisms can contribute towards making projects more feasible. It is crucial to find the right balance between public and private finance.

• Interventions need to be combined as they also ultimately depend on each other.