Innovative NAMA design in Chilean energy sector

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Objectives of presentation

1. State of the Chilean electricity market
2. Proposed NAMA Design
3. Proposed NAMA financing plan
4. Key Takeaways from NAMA Design
Section 1

State of the Chilean electricity market
State of the Chilean Electricity Market - 1

- Total installed capacity (2011)
  - 17 GW

- Total RE capacity
  - 0.76 GW (~4.5%)
State of the Chilean electricity market - 2

• 100% private owned, vertically and horizontally unbundled

• Price discovery in spot markets (which accounts for 90% of electricity supply) is entirely market-based i.e. no subsidies or price protection for any consumer

• Market-oriented nature also leads to high volatility e.g. in 2011, minimum price was ~$130/MWh and maximum was ~$300/MWh
Motivation to increase RE

- About 80% of fossil fuel used for electricity is imported and represents 50% of Chile’s imports.
- High marginal costs during peak times and seasons due to commodity prices of fossil fuels like diesel.
- Per capita emissions and carbon intensity of energy is much higher than regional and OECD average.
- Additional 800 MW needed annually till 2016 to meet economic growth objectives.
- Est. economically feasible RE potential of 3.3 – 5.8 GW (current capacity at 760 MW).
Existing Regulations affecting RE

- Small-scale plants (<20 MW) guaranteed access to transmission for free or at a discount
- Distributers to incorporate 5% of NCRE in their supply mix increasing to 10% in 2024
- All RE projects are guaranteed the marginal cost in spot market for any output generated
- Tax benefits incentivizing various technologies
- Publicly available data on RE potential to encourage private investment
Barriers affecting RE development

- High volatility in spot market means revenue is too volatile for bankers to comfortably lend against
- PPAs with offtakers not common for small-medium scale projects
- Existing PPAs are at lopsided terms due to asymmetry in negotiating power (offtakers are generally large mining companies)
- Market failure in development of financial products by commercial banks and other financial institutions
Section 2

Proposed NAMA Design
Price Stabilization Fund (PSF) - I

- The PSF will act as an intermediary between RE projects and spot/merchant market.

- The PSF will enter into PPAs with select RE projects and pay them a fixed price while earning revenues from the spot market.
Role of the PSF

Wind / PV project  →  Energy  →  Spot Market

PPA  ↔  PSF  ↔  Spot market price
Price Stabilization Fund (PSF) - II

• In essence, the PSF will act like a electricity swap provider.
• This market function is typically provided by banks in developed markets. (E.g. Goldman Sachs in US.)
• The PSF will make its decision on the projects based on thorough scrutiny of
  • Techno-economic feasibility
  • revenue projections based on simulation of energy production vs. market price
Price Stabilization Fund (PSF) - III

- The PSF will
  - make a profit when PPA price < Spot price
  - make a loss when PPA price > Spot price
  - break-even when PPA price = Spot price

- In order to structure profitable PPAs, PSF administrators will have to have clarity on long-term average prices and daily volatility in the marginal cost.
Section 3

Proposed NAMA Financing Plan
Preliminary calculations suggest that the PSF could support up to 50 MWs of wind power for 15 years with a capital base of $15 Mn.

This is calculated under a worst case scenario where the PSF makes maximum loss. (i.e. Revenue = 0)

Realistically speaking, this would not be the case.
• The PSF, if it were to be launched as a private sector entity, would need high-risk equity capital.
• The Chilean market clearly does not possess investors that can provide such capital.
• Hence, international donor support is needed to launch this effort to demonstrate the viability of this business model.
• International donor assistance will be the best source of financing at this stage.
Type of financing needed - II

• Donor assistance in the form of grants would be ideal as grants typically do not have a market-return criteria.

• Such a grant would have to be used under very special conditions (such as meeting PPA obligations) and not for operating expenses of the PSF.

• The PSF would aim to supplement the donor funds with private sector funds after establishing an operating track record for at least one year.
Financing Structure of PSF

- Project 1
- Project 2
- Project 3

PPA

PSF Trust fund

Surplus

PSF Operator

Spot prices

Deficit

Spot Market

Grants

Donors
## Financing Plan

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<tr>
<th>Timeline</th>
<th>Activity</th>
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<tr>
<td>April 2012 – August 2012</td>
<td>Discussion with Chilean stakeholders including private sector</td>
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<tr>
<td>September 2012 – December 2012</td>
<td>Negotiate with international donors on amount and structure of assistance</td>
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<td>January 2013 – March 2013</td>
<td>Finalize NAMA documentation, structure legal entity, contracts and begin drawdown on funding</td>
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<td>April 2013 – June 2013</td>
<td>Hire PSF administrator through an international tender</td>
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<tr>
<td>July 2013 – June 2014</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year of operation + development of strategy for including pvt. Investor</td>
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<tr>
<td>July 2014 – September 2014</td>
<td>Conduct partial privatization process</td>
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Section 4

Key Takeaways
### Questions for country teams

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<th>Question</th>
<th>Answer</th>
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<tr>
<td>What are the top three barriers for private sector investment in RE?</td>
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<td>Does your climate policy or LEDS or NAMA plan attack those barriers specifically?</td>
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<td>Have you taken into consideration the private sector’s feedback while designing climate initiatives?</td>
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<td>Are there any internal criteria for receiving international climate assistance? Are they consistent with the NAMA design criteria?</td>
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Let’s change the world!

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