Renewable Energy Supply

Financing RE Projects in Chile

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The Chilean Energy Sector

- Current installed capacity of c. 20,000 MW
- Chile imports **60% of its primary energy**, making it vulnerable to supply shortages and instability / volatility of international fossil fuel prices
- Abundant natural resources for almost all RE technologies, which are **economically competitive** against conventional generation technologies on a stand alone basis (grid parity)
- **Market driven economy** and unregulated generation sector; distribution and transmission sectors regulated
- **Severe drought** affecting the country (2010-2015) has increased energy prices in the central and southern areas of Chile while in the north have remained stable
- While prices of electric power had risen constantly and considerably during the last decade, as evidenced by the result of the previous tenders to supply electricity for regulated customers (2006: 65 US$/MWh; 2013: 128 US$/MWh), **the trend was broken** by last December's tender (109 US$/MWh)
- Prices of electric power for unregulated customers have also doubled during the last decade due to increasing electricity consumption from industries but should follow recent downward trend of regulated customers' prices
- Higher intermittent/variable RE penetration is limited by capacity restrictions of the country's fragmented transmission system

The Regulatory Context helps...

- Law 20,257 enacted in April 2008 promotes the introduction of NCRE into the Chilean power matrix: wind, solar, biomass, geothermal and small hydro (<20 MW) setting up a quota system for large generators (>200 MW):
  - 5% starting 2010 until 2014; then obligation increases 0.5% annually until reaching 10% by 2024
  - Penalty: 0.4 UTM/MWh
- Law 20,698 approved by the Congress increased the obligation to 20% by 2025.

45% of Chile´s new installed capacity from 2014 through 2025 must come from RE

but…

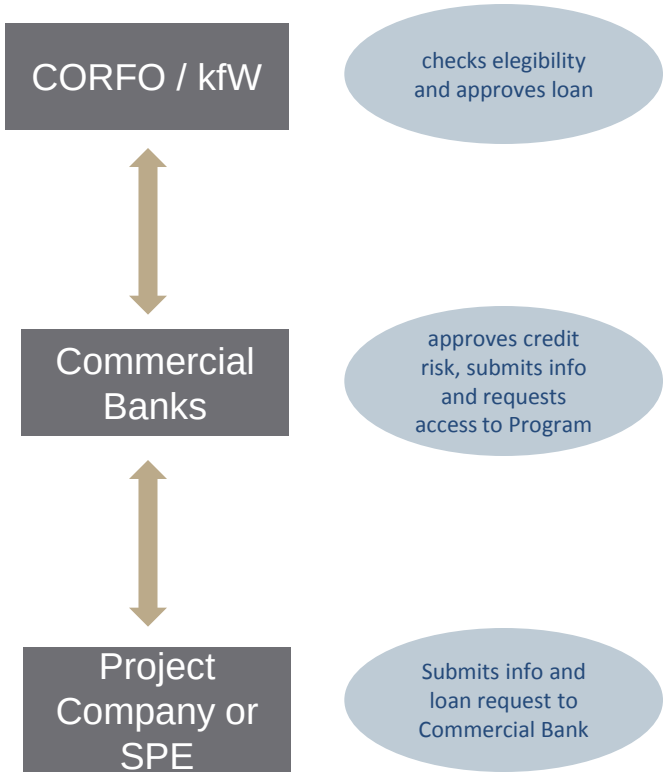
Private Banks will only commit financing if the expected risk/return profile of RE Projects is attractive, not on the basis of Government objectives

The Chilean Economic Development Agency (CORFO) comes to the rescue...

- Public-sector organization dedicated to promoting entrepreneurship, innovation and growth
- In November 2008, CORFO launched a US$ 138.8 million program (“CORFO NCRE Loan Program”) aimed at providing long-term, low-cost USD funding to commercial banks in Chile for on-lending to RE Projects
- The program was financed by kfW and the Chilean Treasury and was operational until mid 2011
- Terms and conditions had a high level of concessionality: average interest rate of 4.3% in USD, average tenor 12 years
- As a result, 15 RE projects received financing for up to US$ 140 million (13 small-hydro, 1 biogas, 1 transmission line)
- Only two banks participated in the program, Banco BICE (87%) and BCI (13%), but it helped kick-start the financing of RE projects in Chile

Aim and Rational of CORFO's Program

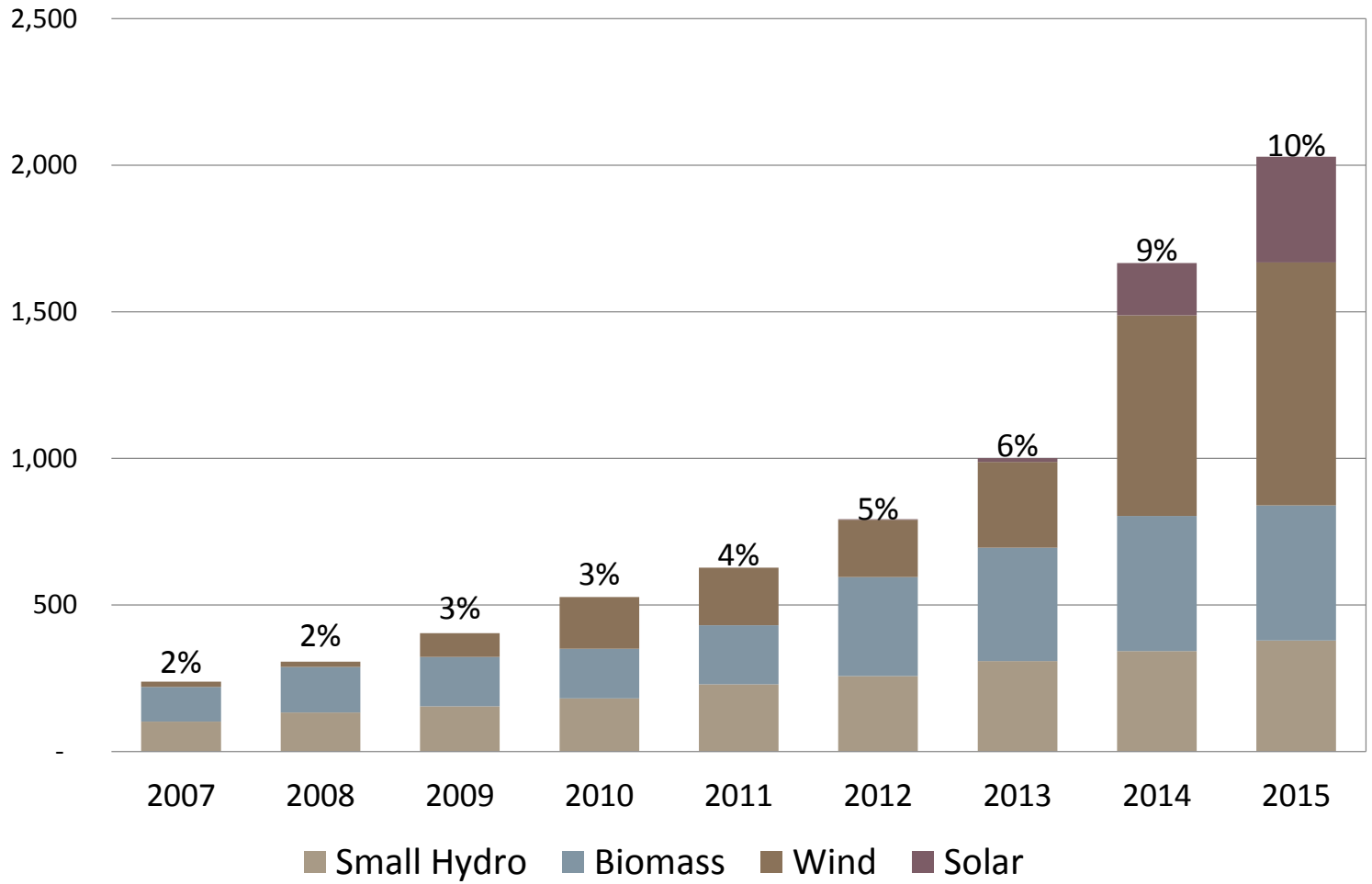
- Promote the development of clean energy projects in Chile, specifically RE and EE
- Allow for a 20% reduction in GHG emissions below BAU by 2020, as pledged by Chile under the Copenhagen Accord
- Reduce the cost of capital for low-carbon technologies through concessional loans (~ 250 bps differential with market rates for the same loan duration)
- Engage local banks in climate finance by providing access to long-term, low-cost USD funding earmarked exclusively to finance RE and EE projects under PF structures
- Reduce/remove barriers for deployment of a diversified portfolio of wind, photovoltaic, biomass and small hydro projects



The Chilean Case - Lessons Learned

1	• Strong interest in the Program from Project Developers but limited engagement with Commercial Banks: only 2 out of 23 banks participated in the Program. • Possible reasons: size of projects not attractive for larger banks; gaps in Project Finance skills and capacities within smaller banks; perceived complexity of working with public entities/MDBs; lack of confidence in developers who are newcomers to the energy sector, etc.
2	• Attracting interest from banks in financing non-hydro RE and EE projects proved to be extremely difficult at the beginning. • Possible reasons: in the case of non-hydro RE projects, risks associated with low-carbon technologies such as wind and solar relatively unknown; in the case of EE projects, cost-saving investments seemed less attractive to finance than cash flow generating assets; small transaction size/high transaction costs; difficulty to measure efficiency performance.
3	• First mover advantage allowed Banco BICE to be perceived as market leader in project financing to the RE sector in Chile. • Other commercial banks followed suit, reinforcing their PF teams and started to finance small-hydro projects in 2011. • Currently, near one third of all banks operating in Chile are actively involved in the financing of RE projects, including wind, photovoltaic and small-hydro.

Positive Evolution of Installed Capacity of Renewables in Chile
(in MWs)



Strong Pipeline of RE Projects but the barriers are formidable...
(in MWs)

Technology	In Operation	Under Construction	With Environmental Approval / Not Constructed	Without Environmental Approval / Not Constructed
Biomass/Biogas	465	0	143	72
Wind	892	188	5,602	2,220
Small Hydro	369	86	337	215
Solar	546	1,757	9,481	4,875
Geothermal	0	0	120	0
Total	**2,272**	**2,031**	**15,683**	**7,382**

11.4% of Total Installed Capacity

Source: SEA, CER, CDEC-SIC and CDEC-SING, Chile, April 2015

Examples of Financial Instruments to to help de-risk low carbon investments for the Private Sector

Barrier	Risk	Mitigation Instrument
Weak domestic capital markets / lack of financial infrastructure	Limited access to capital at the right cost impacts revenue flow and profitability	• Concessional loans: senior and subordinated debt/loans provided at concessional rates and/or extended maturities • Equity and/or quasi-equity
Weakly scoped energy projects due to lack of human capital	Longer Project development period resulting in crowding-out of private investors	• Grants for technical assistance and capacity building
Project specific	Failure to achieve project completion	• First loss partial guarantee
Lack of coherent, long-term predictable and stable political and regulatory framework	Unrewarded exposure to political and regulatory risk discourages private sector investment	• First loss partial guarantee • Insurance products (eg: political risk insurance, sovereign risk insurance) → complex to deploy

The GCF and other sources of climate finance can play a key role where financial barriers are significant

Enabling Conditions

Stability in Legal / Regulatory Framework and Public Policy	• The "rules" must be known and stable over time • Shorter duration of the policy cycle compared to the recovery period of the investment requires public policy stability (e.g. Spain and withdrawal of feed-in-tariff)
Protection of Property Rights and Credibility of institutions	• The title to the essential assets of the Project must be robust and ensure peaceful use by the developer • Permissions and authorizations that have been duly given in adherence to current legislation must not be revoked without cause
Access to Long Term Finance at reasonable cost	• Energy projects have high capital costs and therefore require moderate interest rates over the long term • Basel III will restrict the ability of banks to lend long-term so it is necessary to explore new models that combine different sources of funding (eg. Banks in the short term and Institutional Investors in the long term)

Enabling Conditions

Reduction of transaction costs	• Individual projects must achieve a certain scale to attract private sector financing on economic terms • Individual projects that do not meet this criterion should be aggregated to reduce transaction costs
Suitable physical and operational infrastructure	• Countries with a well-trained workforce and adequate physical infrastructure (transmission networks, sub-transmission and distribution, roads, ports, etc.) will attract higher levels of investment
Social acceptance	• Renewable energy must be accepted as a reasonable cost solution to the energy problem competing on equal footing with conventional energy generation technologies (grid parity) • The development of renewable energy projects must represent long-term benefits for the communities in which they are implemented (social license)

Thank You