Clean Technology Fund Investment Plan for Chile



Sergio del Campo Fayet Viceminister of Energy May 2012



Our Challenge



Electricity demand forecast: SIC and SING 2000 - 2030

Associated with a projected GDP of 4.9% average annual rate from 2012 | Source: Ministry of Energy

- Until 2020 the demand for electricity is projected to grow at an average of 5.8% annually, without measures of Energy Efficiency (EE).
- The Ministry of Energy estimates that electricity demand will nearly double by 2020

Electricity Generation by Fuel







Industrial electricity prices



Electricity cost for copper mining industry (cUS\$/kWh)



Fuente: Brook Hunt, promedios ponderados. Excepto Chile, calculado con información de Brook Hunt y Codelco

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Residential electricy prices



Source: Cochilco, Ministry of Energy

Industrial Consumption by Source



Industry and Mining account for 37% of total energy demand in Chile

Industry is highly dependent on imported fossil fuels

Roughly 75% of the Chilean energy sources are imported, representing more than 50% of the total value of Chilean imports

Environment



CO₂ intensity (kg of CO₂ per kg of oil equivalent of energy use)

Scaling-up renewable energy resources is a solution to increase energy security and to contribute to accomplish our commitment to tackle climate change

Our Commitment to Tackle Climate Change

• Chile signed the Copenhagen Accord on 29 January 2010.

Chile will take nationally appropriate mitigation actions to achieve a 20% deviation below the "Business as Usual" emissions growth trajectory by 2020, as projected from year 2007. To accomplish this objective Chile will need a significant level of international support. Energy efficiency, renewable energy, Land Use and Land Use Change and Forestry measures will be the main focus of Chile's nationally appropriate mitigation actions.

- Ministry of Energy and Ministry of Environment were established
- Inter-Ministerial Committee on Climate Change
- Climate Change Action Plan 2009-2012
- GHG Emissions Inventory
- Second National Communication on Climate Change (2011)
- Mitigation Options for Addressing Climate Change (MAPS)
- Renewable energy law 20.257, renewable portfolio standard of 10% in 2024
- National Energy Strategy

Our Challenges

"Clean, competitive and secure energy"

- Reducing dependence on external energy sources (65% renewable energy by 2030 in the electricity mix)
- Ensuring the competitiveness of productive sectors and the welfare of people
- Designing the correct policy interventions to incentivize cleaner energy technologies
 - Renewable portfolio standard of 10% in 2024. Law 20.257
- Maintaining high environmental standards
 - Pollutant Release and Transfer Registers (PRTR) Program

Today: National Energy Strategy (ENE), 2012-2030

SIX PILLARS

- Energy efficiency
- Scaling-up of non-conventional renewable energy resources
- Higher role to conventional energies greater weight assigned to hydro resources, and less external dependence
- A new approach to transmission (potential SIC-SING interconnection)
- Towards a more competitive electricity market
- Sustained progress in regional electricity interconnection options

Chile's CTF Investment Plan

Purpose: scale-up renewable energy & energy efficiency

- CTF co-financing will support the Chilean ENE's efforts, by reducing costs, risks, liquidity and capacity barriers in the flow of financing to NCRE and EE projects
- Crucial for Chile, as it is facing a global environmental issue, and a national energy security challenge
- Reforms and incentives have been in place, but it's not enough to maximize the country's excellent potential and develop a clean, resilient and stable power matrix

Chile's CTF Investment Plan cont.

Purpose: scale-up renewable energy & energy efficiency

- Lower the already decreasing cost curve of the renewable energy industry and help to reach future market competitiveness of the technology
- Create a competitive advantage for Chilean products and services (in the view of advantages for low carbon-intensive products)
- Create jobs in the RE and EE industry, and include gender policies to ensure a higher labor participation of women

Priorities: selected projects

Defined taking into consideration both the Government and the CTF's objectives:

- **Potential**: Outstanding potential, such as solar, and that have the viability to scale-up in the short to medium term.
- Lack of uptake in the market: Exceptional potential but have not been implemented in Chile due to a lack of financial resources or other barriers.
- **Technical viability**: Proven technologies in the world but need to reduce local risk perceptions and to build capacity to boost the local industry and develop best practices in the use of these technologies.

CTF Investment Plan



Concentrated Solar Power with Storage

Opportunities

- High solar radiation. The highest worldwide
- CSP can better meet the demand profile of industrial consumers on the grid (24-hour flat demand); in a region that increasingly relies on carbon-intensive fossil fuels

Challenges

- High capital investment cost and risks perceptions
- Need for business and contractual model consolidation

Financing Plan

| CTF Co Financing | 100 |
|------------------------|------|
| MDBs | 200 |
| GoC | 14 |
| Other possible sources | 42 |
| Private sector | 130 |
| Total | 486M |

Program submission July 2012

Firm selection June 2013 Proj. const. completion August 2015

Large scale solar PV

Opportunities

- High solar radiation
- Viability to scale-up in the short to medium term
- Lower perceived risks and greater consolidation will decrease the cost of capital in domestic markets in the future

Challenges

- Lack of track record, knowledge, demonstration, and data in energy solutions that are in the early commercial stage
- High perception of risk: Lack of technological familiarity associated with PV installations amongst local financial institutions and off-takers

| CTF Co Financing | 50 |
|------------------|--------|
| MDBs | 100 |
| GOC | 0 |
| Other | 0.6 |
| Private sector | 150 |
| Total | 300.6M |

Financing Plan

| Program submission | | | |
|--------------------|--|--|--|
| July 2012 | | | |

Renewable Energy Self-supply and Energy Efficiency

Opportunities

- High potential to reduce energy demand
- Cost-effective action to reduce GHG emissions
- Viability to scale-up in the short to medium term

Challenges

- Lack of knowledge and experience among financial institutions; lack of information on potential technologies and use of alternative energy resources
- Lack of experience among energy end-user clients and technical service providers on energy business models
- Need for track record, knowledge, demonstration, and data in energy solutions that are in the early commercial stage

Financing Plan

| CTF Co Financing | 50 |
|------------------|--------|
| MDBs | 100 |
| GOC | 20 |
| Other | 2.8 |
| Private sector | 250 |
| Total | 421.8M |

Prep. Grant submission August 2012 CTF application January 2013

1st disbursement May 2013

Annex: Investment Plan (USD M)

| Financing source | Concentrated solar power | Large scale Solar PV | RE self-supply & energy eff. | Prep. Grant | TOTAL |
|----------------------|--------------------------|-------------------------|------------------------------|----------------|---------|
| CTF | 100 | 50 | 49 | 1 | 200 |
| Gov. Chile | 14 | 0 | 20 | 0 | 34 |
| IDB loans | 100 | 50 | 50 | 0 | 200 |
| IDB grants | 1 | 0 | 0 | 0 | 1 |
| GEF | 1 | 0.6 | 2.8 | 0 | 4.4 |
| IFC Loans | 100 | 50 | 50 | 0 | 200 |
| Bilateral agencies | 40 | 0 | 0 | 0 | 40 |
| Other private sector | 130 | 150 | 250 | 0 | 530 |
| TOTAL | 486 | 300.6 | 421.8 | 1 | 1,209.4 |

The Transformational Impact of the Investment Plan

- Chile's market is at an **inflection point** where RE and EE technologies are just becoming commercial. Limited interventions can curb the current increases in carbon intensity.
- The CTF IP will provide key catalytic resources to reduce targeted risk, cost, and capacity barriers and attract private investment into the RE and EE markets.
- The programs will have a long term impact of building capacity and learning about the application of these proven technologies in the Chilean context.
- A better track record will reduce perceptions of risk amongst banks, off-takers and developers and attract financing to viable projects.
- Over time this will lead to financially sustainable uptake of RE in the private energy market.

GRACIAS!

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