

# Clean Energy Finance Outlook: Opportunities for Green Banks and Green Bonds in Chile?



Nicole Coquelet – Sarah Dougherty – Carolina Herrera

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**CURRENT  
SITUATION  
IN CHILE**

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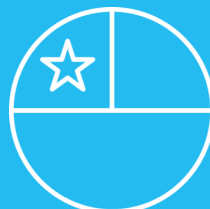
**INTERNATIONAL  
EXPERIENCE**

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**BARRIERS TO  
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**POTENTIAL  
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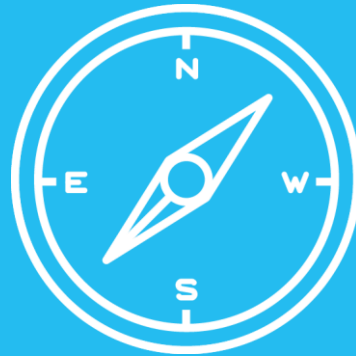


**WHAT ARE GREEN  
BANKS AND GREEN  
BONDS?**

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**NEXT STEPS**



*Current Situation in Chile:  
Clean Energy and Financing Needs*

## Current Situation: Clean Energy and Financing Needs (1)

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Crosscutting agreement on the importance of boosting clean energy in Chile's energy matrix



Various Initiatives (Energía 2050, Agenda de Energía 2014, etc.), highlight the role NCRE and EE will play in the country's energy future.



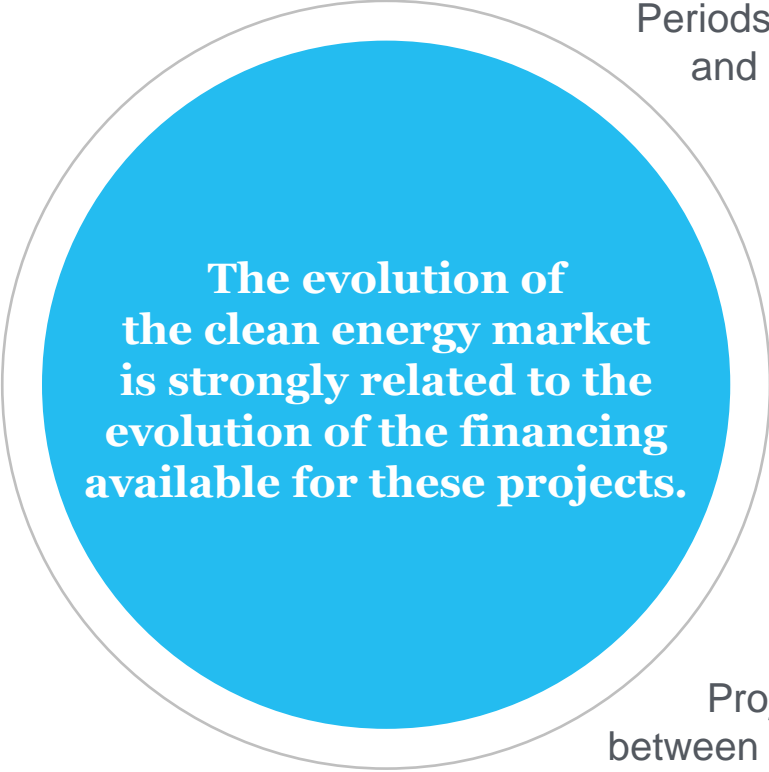
Various factors have contributed to a growing participation of clean energy in recent years



In March 2016, NCRE installed capacity represented **12%** of total installed capacity, compared to **2.6%** in 2007 (CIFES)

## Current Situation: Clean Energy and Financing Needs (2)

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**The evolution of  
the clean energy market  
is strongly related to the  
evolution of the financing  
available for these projects.**

Periods: growth (2007-2010), boom (2011-2014)  
and slow down (2015-to date)

Until 2015: Chile was one of the most attractive  
places to invest in clean energy.

Today: Changes in market conditions, slow down in  
development.

Increase in perception of risks, financial institutions  
are reestablishing requirements and conditions.

Projections: Financing needs could amount to  
between US\$1 billion and US\$1.4 billion per year.



## *Barriers to Financing*

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## Barriers to Financing

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The clean energy market has grown significantly in recent years, **HOWEVER** there are still hurdles to further expansion of these technologies.

There are market subsectors where capital does not flow despite commercial potential.



**WHY?**

**Barriers to financing persist**

## Principal Barriers Identified



### **NCRE Projects (Medium and Large) Interconnected to Electric Grids**

#### **SME-sponsored projects:**

Lack of ability to provide guarantees or equity, lack of track record, high cost of structuring financing

#### **Innovative technologies:**

Projects considered risky due to unfamiliarity with technology



### **NCRE Projects (Small-scale) Net-metering or Self- Supply**

Lack of interest from financial institutions due to small project size

Inability to provide guarantees, equity, etc. due to the size of the sponsor

High cost of structuring financing

Unfamiliarity with technical and operational profile of the technologies

Difficulty perceiving the economic benefits

Lack of specific financial instruments



### **Energy Efficiency Projects**

Difficulty perceiving the economic benefits

Perception that payback periods are too long

Lack of specific financial instruments

Incipient level of development of ESCOs



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## Actions to Overcome Barriers

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### **International Experience:**

Green Banks  
and  
Green Bonds

Mobilize capital toward sectors where traditional financing does not reach

Drive private investment in clean energy

Standardize clean energy financing practices

Reduce perceived risk associated with clean energy projects

Decentralize access to financing



*What are Green Banks?*

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## What are Green Banks? (1)

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### Green Bank

Public or semi-public financing institution with a mission to accelerate clean energy market development (financial innovation)

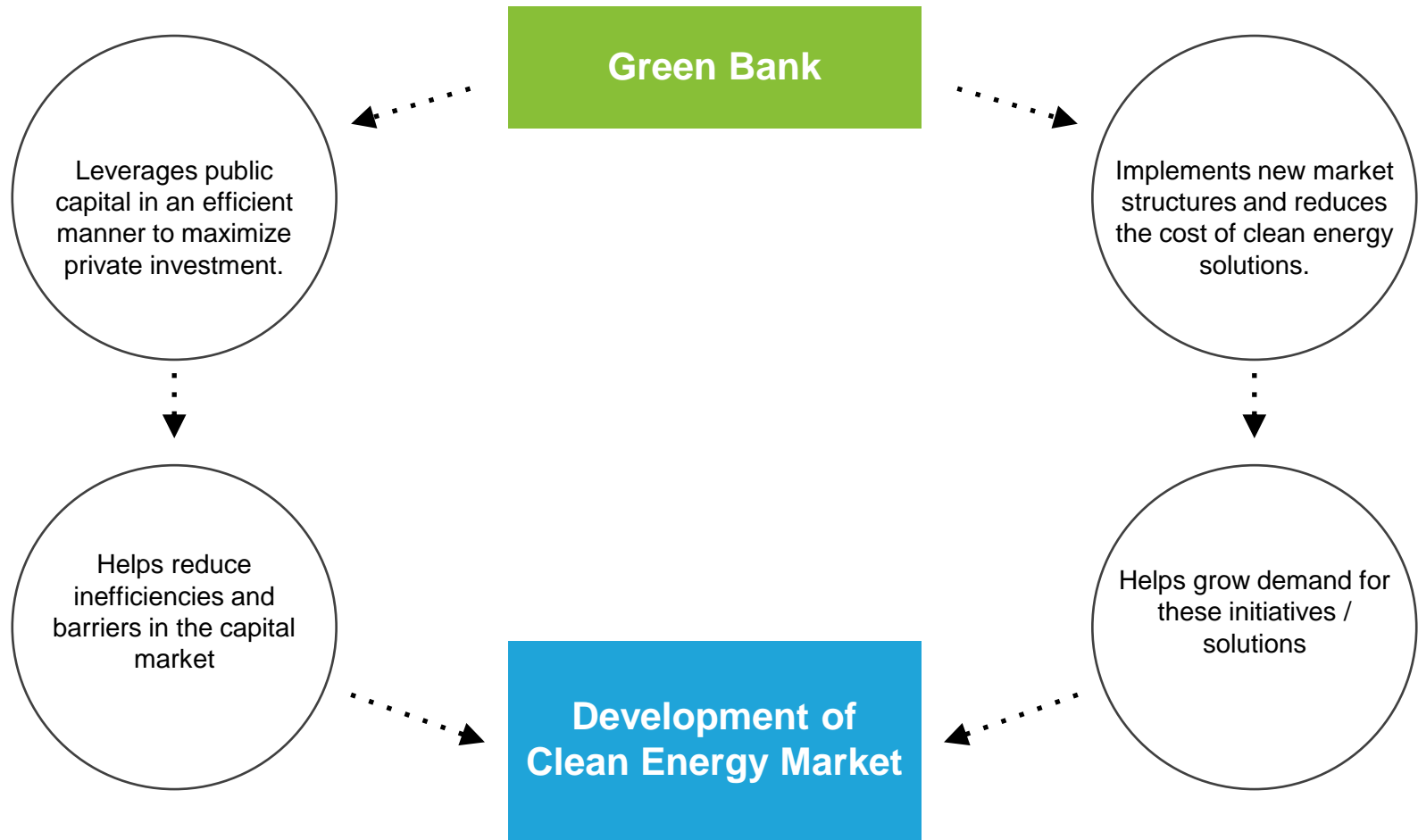
Facilitate access to financing (credit enhancement and direct financing)

Contribute to the development of liquid financial markets for clean energy projects that are available but have limited development

Leverage public funds and use a wide range of financial products to attract private investment.

Have the ability to adjust as necessary to particular needs

## What are Green Banks?(2)





*International Experience:  
Green Banks*

## International Experience: Green Banks

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### **Australia: Clean Energy Finance Corporation**

Accelerate the transformation of Australia into a more competitive economy in a world with less carbon, by catalyzing greater investment in emission reductions.

### **Malaysia: GreenTech Malaysia**

Develop sustainable and widespread green technology markets and strengthen local green technology industry.

### **Japan: Green Finance Organization**

Support the development of local communities to address the impacts of slow economic growth.

### **United Kingdom: Green Investment Bank**

Achieve ambitious emissions reduction targets.

### **Connecticut, United States: Connecticut Green Bank**

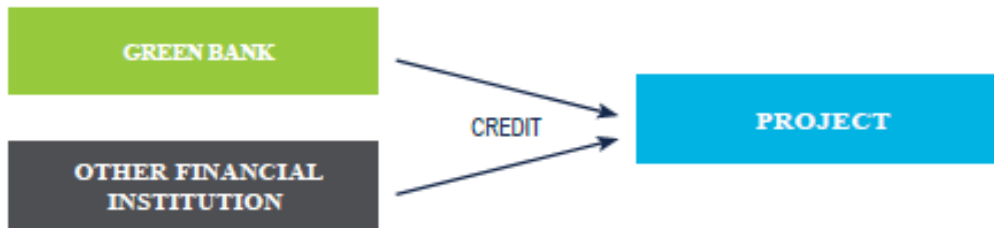
Prioritize reducing carbon emissions and reducing energy costs, while contributing to the creation of local jobs by investing in clean energy.

### **New York, United States: New York Green Bank**

Transform and accelerate the deployment of clean energy in the State of New York through funding and collaboration with the private sector.

## Potential Green Bank Offerings

### Clean Energy Finance Corporation (Australia): Bioenergy Fund



US\$150 million fund

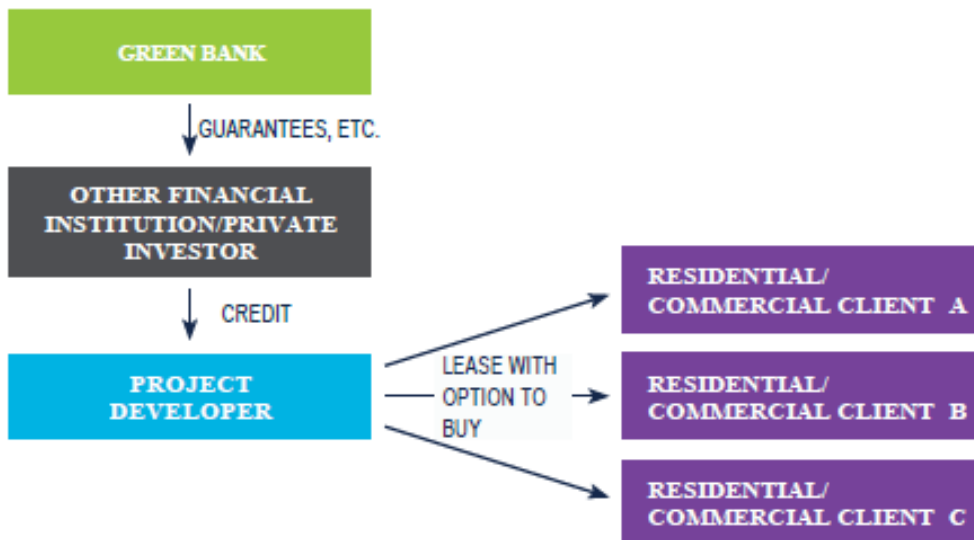
Bioenergy projects in forestry, agriculture, etc. sectors

CEFC provides US\$75 million

Credit enhancement techniques  
(*co-financing*)

## Potential Green Bank Offerings

### Connecticut Green Bank (United States): Residential Solar Lease



US\$60 million fund for small-scale solar (residential/commercial).

Lease contracts with option to buy

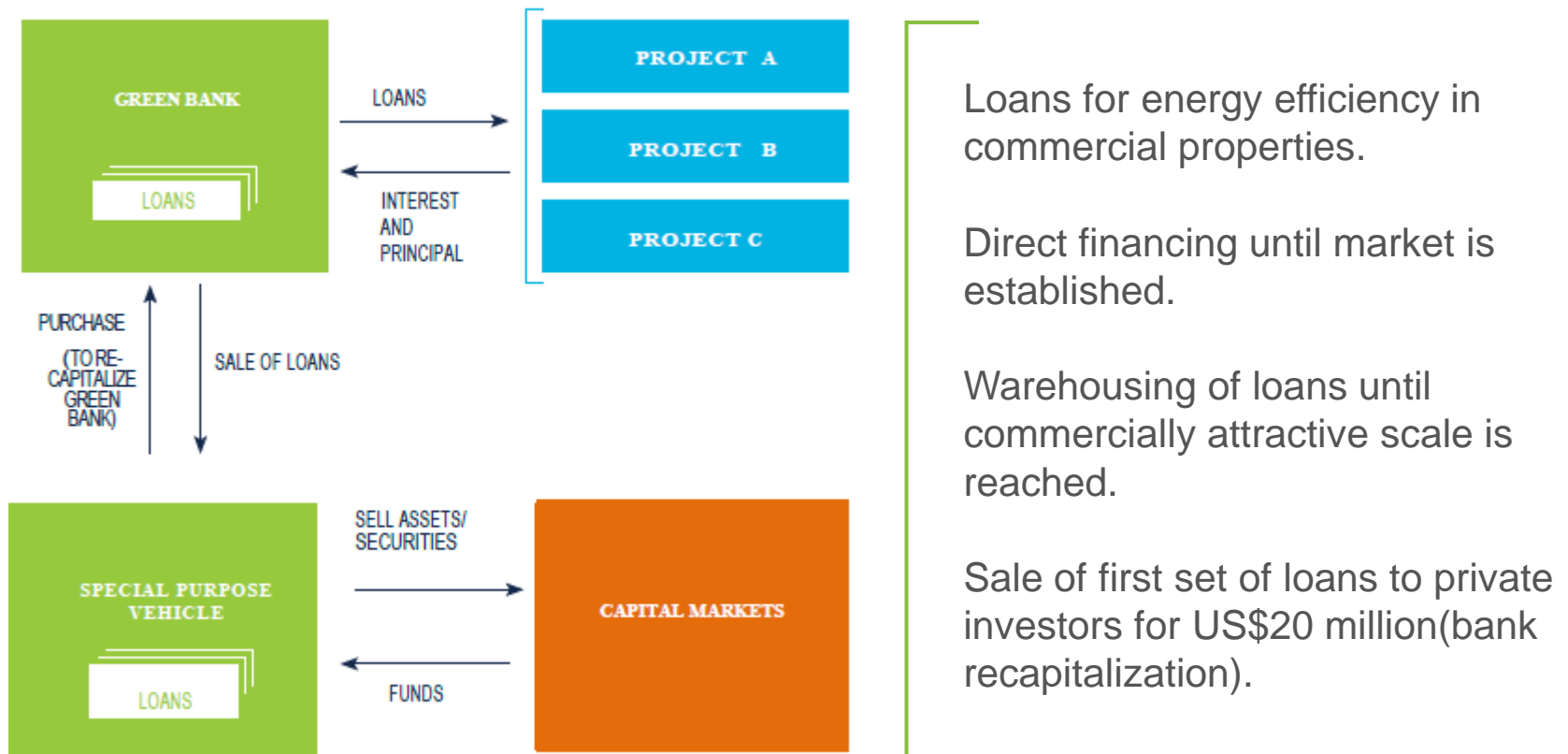
CTGB provided US\$10 million in subordinated debt and equity capital

Credit enhancement techniques



## Potential Green Bank Offerings

### Connecticut Green Bank (United States): Commercial Scale Energy Efficiency Program



# Green Bank Network

## Green Banks

UK Green  
Investment Bank

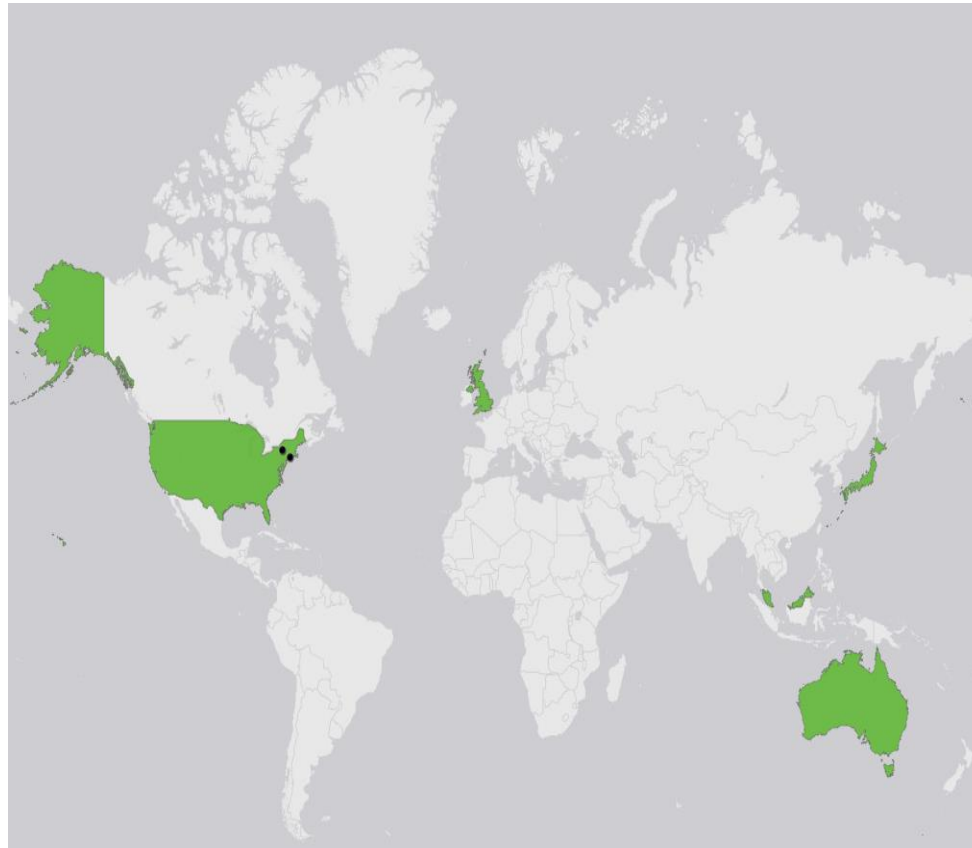
Connecticut Green  
Bank

NY Green Bank

Green Finance  
Organization (Japan)

Malaysian Green  
Technology Corp.

Clean Energy  
Finance Corp.  
(Australia)

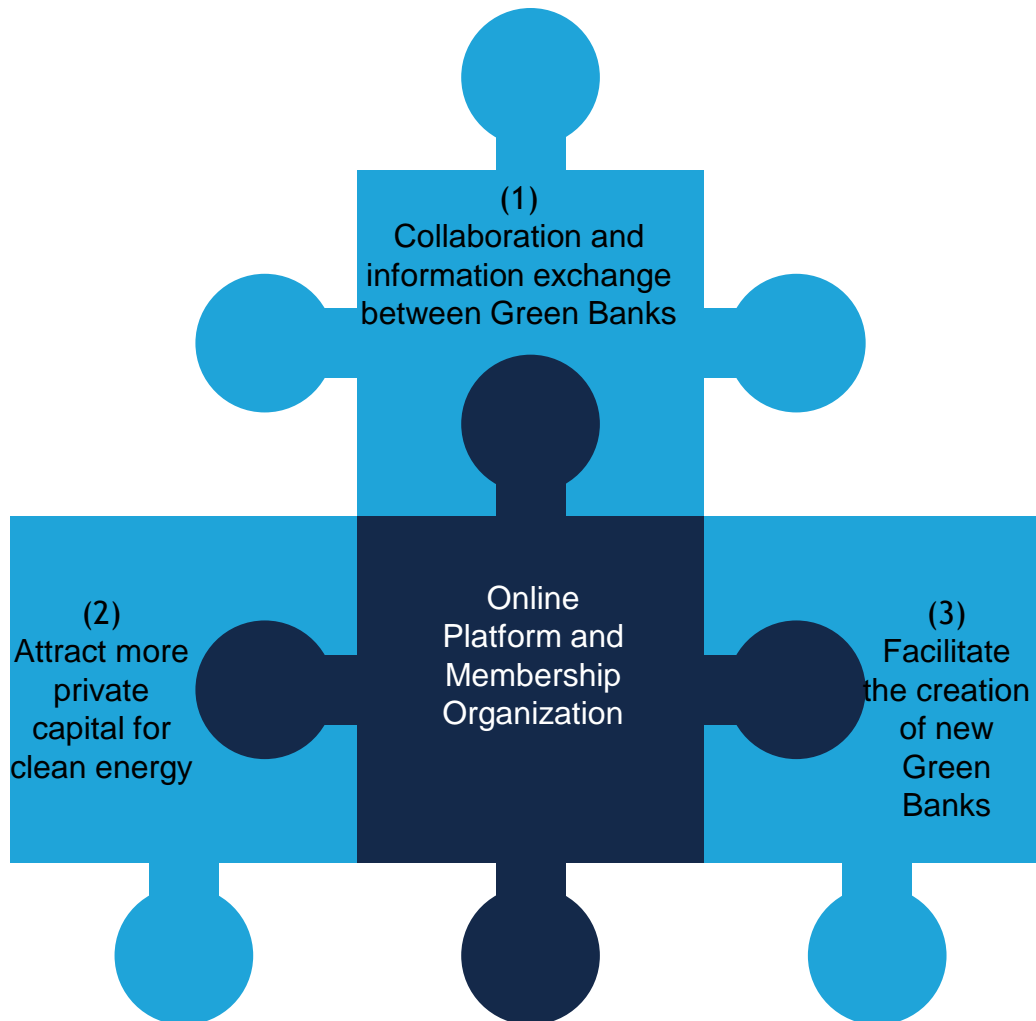


## Project Managers



## What are the objectives and structure of the network?

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*What are Green Bonds?*

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## What is a green bond?

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### Green Bond

Debt instruments that operate like conventional bonds with the additional requirement that funding be used for green projects.

Offered for a fixed term, and usually at a fixed interest rate to raise capital to finance projects (larger scale NCRE and aggregated small projects).

Can be issued by multilateral organizations, development banks, government agencies, municipalities, financial institutions and private companies.

Provide a way to verify compliance of financed project with environmental standards: use of proceeds is specifically defined.

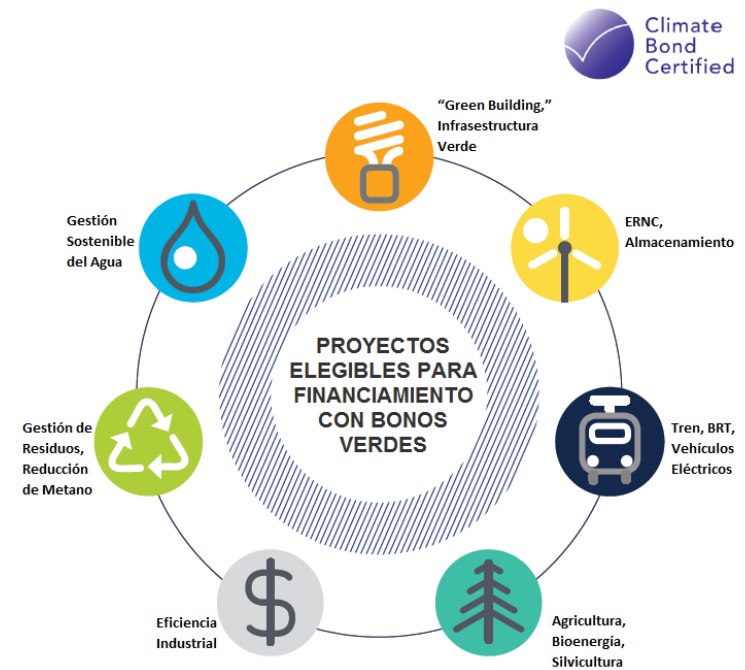
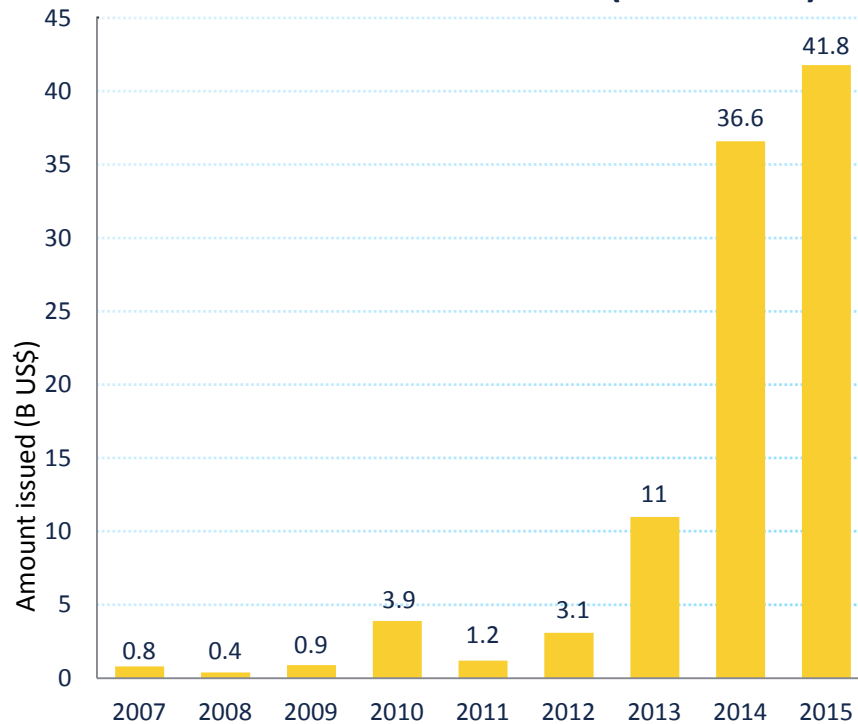
Key to making market work is ensuring transparency and accountability.



*International Experience:  
Green Bonds*

# International Experience: Green Bonds

## Global Green Bond Market (2007-2015)



Source: The Climate Bonds Initiative

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## International Experience: Green Bonds

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### **Mexico (NAFIN)**

Development Bank

US\$ 500 million bond issuance. Registered demand of more than US\$ 2.5 billion

Diversified investor base

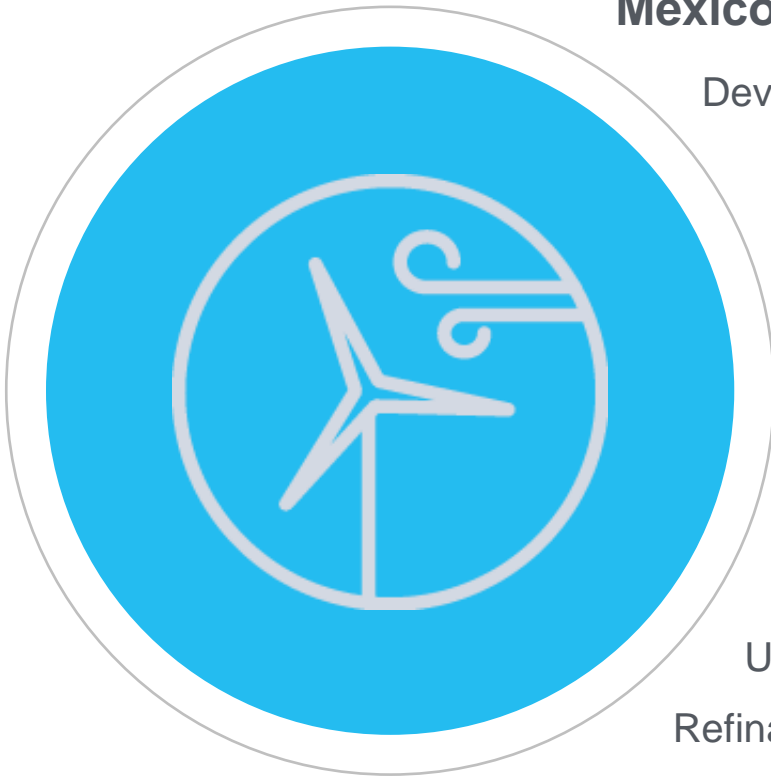
International certification by Climate Bonds Standard Board

### **Peru (Energía Eólica S.A.)**

Private company

US\$ 204 million

Refinanced project at a lower cost







*Potential Applications in Chile*

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## Potential Applications in Chile: Grid connected NCRE

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### Potential Applications in Chile

First time  
solar/wind/biomass/minihydro  
project proposed by a small or  
medium enterprise



### Financing Barriers

Inability to offer guarantees,  
equity and/or track record



### Green Finance Solutions

Capital investment, loans, risk  
mitigation instruments

Innovative technologies for  
energy storage or generation

Project considered risky due  
to lack of familiarity with the  
technology

Risk mitigation instrument (credit  
enhancement techniques)

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## Potential Applications in Chile: Self Supply Projects

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### Potential Applications in Chile

Small-scale residential or  
commercial projects

Industrial or agro industrial self  
supply

Net metering projects



### Financing Barriers

Lack of interest from  
traditional financial  
institutions

Lack of targeted instruments

Difficulty in perceiving  
economic benefits of  
projects, perception that  
payback period is too long



### Green Finance Solutions

Financing, credit enhancement,  
project standardization and  
aggregation, warehousing

Risk mitigation products,  
development and sharing of  
information

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## Potential Applications in Chile: Energy Efficiency

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### Potential Applications in Chile

EE projects or solutions for  
residential, commercial,  
industrial scales



### Financing Barriers

Difficulty in perceiving  
economic benefits of projects  
(M-V-C)



### Green Finance Solutions

Risk mitigation, standardization,  
(reduce individual costs),  
disseminate information

ESCO projects to retrofit  
equipment

Incipient level of ESCO  
development: Financial  
institutions not completely  
familiarized

Standardization, Warehousing,  
Securitization, etc.

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## Other Benefits of Green Banks and Green Bonds

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**Achieve  
Energy Targets**

**GHG Mitigation**

**Diversified  
Energy Matrix**



*Next Steps*

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## Green Bank Implementation Phases (International Experience)

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### PHASE 1

Scoping and Education

Exploratory Research

Outreach to  
stakeholders

### PHASE 2

Analysis and Investigation

Market Analysis

Legal Analysis

Capitalization Analysis

### PHASE 3

Establishment

Stakeholder  
Consensus

Enabling Legal Actions

Product Development

### PHASE 4

Operations

Start of Operations

Recapitalization

Ongoing Operations

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#### Principal Stakeholders

Civil Society Groups  
Renewable Energy Trade Associations  
Energy Efficiency Trade Associations  
Consumer Protection Groups

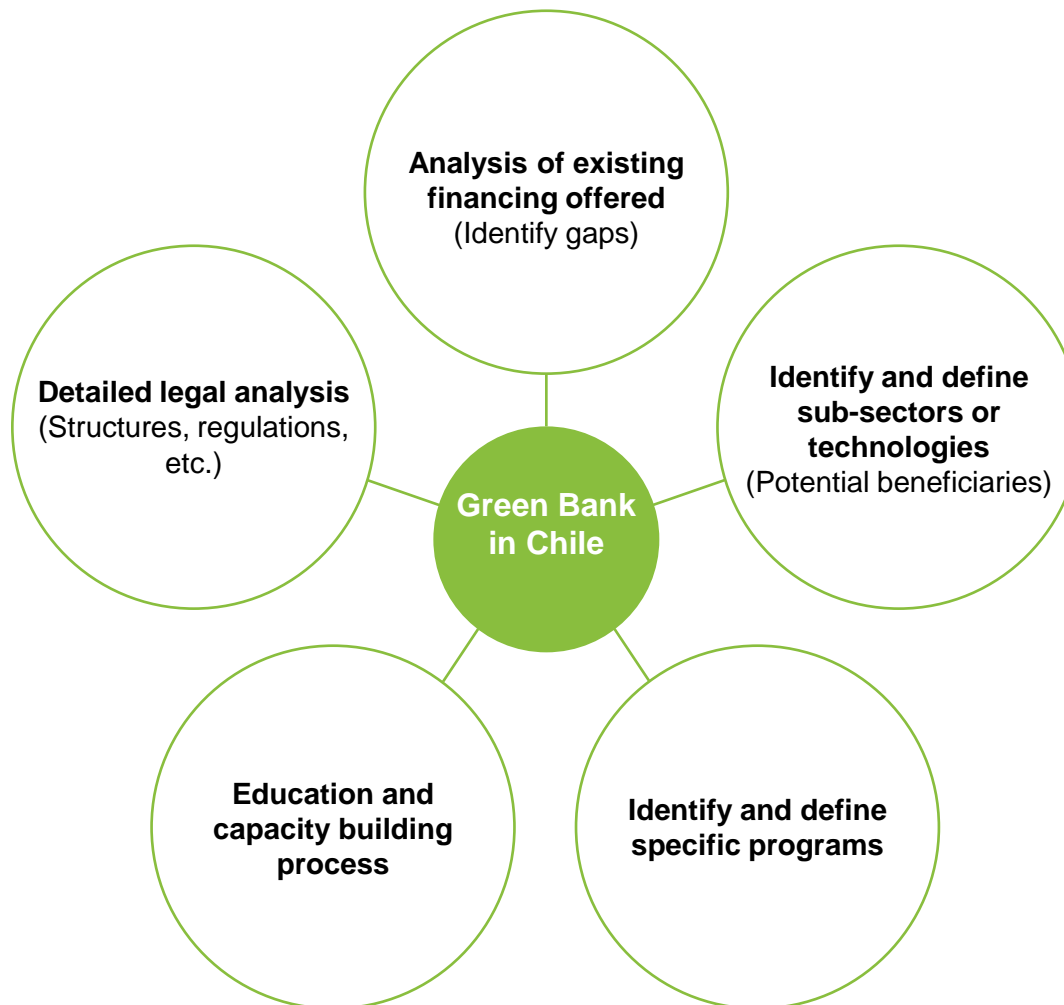
Government Ministries  
(Energy, Environment, Finance)  
Government Financial Institutions  
Commercial Banks/ Private Investors

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## Green Banks: Next Steps in Chile?

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## Green Bonds: Next Steps?

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## *Questions/ Discussion*

Nicole Coquelet  
[nicolecoquelet@gmail.com](mailto:nicolecoquelet@gmail.com)

Sarah Dougherty  
[sdougherty@nrdc.org](mailto:sdougherty@nrdc.org)

Carolina Herrera Jáuregui  
[cherrera@nrdc.org](mailto:cherrera@nrdc.org)

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