



## EVENT REPORT

# “Innovative Financial Instruments to Support Energy Efficiency: Experiences from Financial Institutions in Latin America and Asia-Pacific regions”.

December 5, 2016



Participants photo group.

The content of this publication was generated from the Event “Innovative Financial Instruments to Support Energy Efficiency: Experiences from Financial Institutions in Latin America and Asia-Pacific regions” held November 15 & 16, 2016 in Lima, Peru at ALIDE headquarters in collaboration with AFD, UNEP-FI and ADFIAP.

This publication was prepared by Maria Netto, Omar Villacorta, Esteban Suárez, Johan Arroyo and Lucila Serra from the Capital Markets and Financial Institutions (CMF) at the Inter-American Development Bank (IDB). The opinions expressed in this publication are those of the coauthors presenters and participants and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.

Photographs were taken by ALIDE.



Session 1 audience



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Conference documents and presentations are available online at:



<http://bit.ly/2grDeRo>

<http://www.greenfinancelac.org/esi/events/innovative-financial-instruments>



<http://bit.ly/2fQYP1C>

[http://www.alide.org/descargas/ALIDE\\_BID/Index.htm](http://www.alide.org/descargas/ALIDE_BID/Index.htm)

**Links:**

ESI Program: <http://greenfinancelac.org/esi>

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# Acknowledgements

This report is the summary of the Event: Innovative Financial Instruments to Support Energy Efficiency: Experiences from Financial Institutions in Latin America and Asia-Pacific regions 2016 that took place in Lima, Peru, on 15 & 16 November 2016 as part of the collaboration and capacity building activities to support National Development Banks (NDBs) in Latin America and the Caribbean, by the Capital Markets and Financial Institutions Division (CMF) at the Inter-American Development Bank (IDB).

We would like to thank all of the cosponsors for their outstanding support to make this event a true success. A specific thank you to ALIDE for providing their facilities, the Agence Francaise de Developpement (AFD) for sponsoring the cocktail reception and Daniel Magallon for serving as moderator. This event would not have been possible without their support.

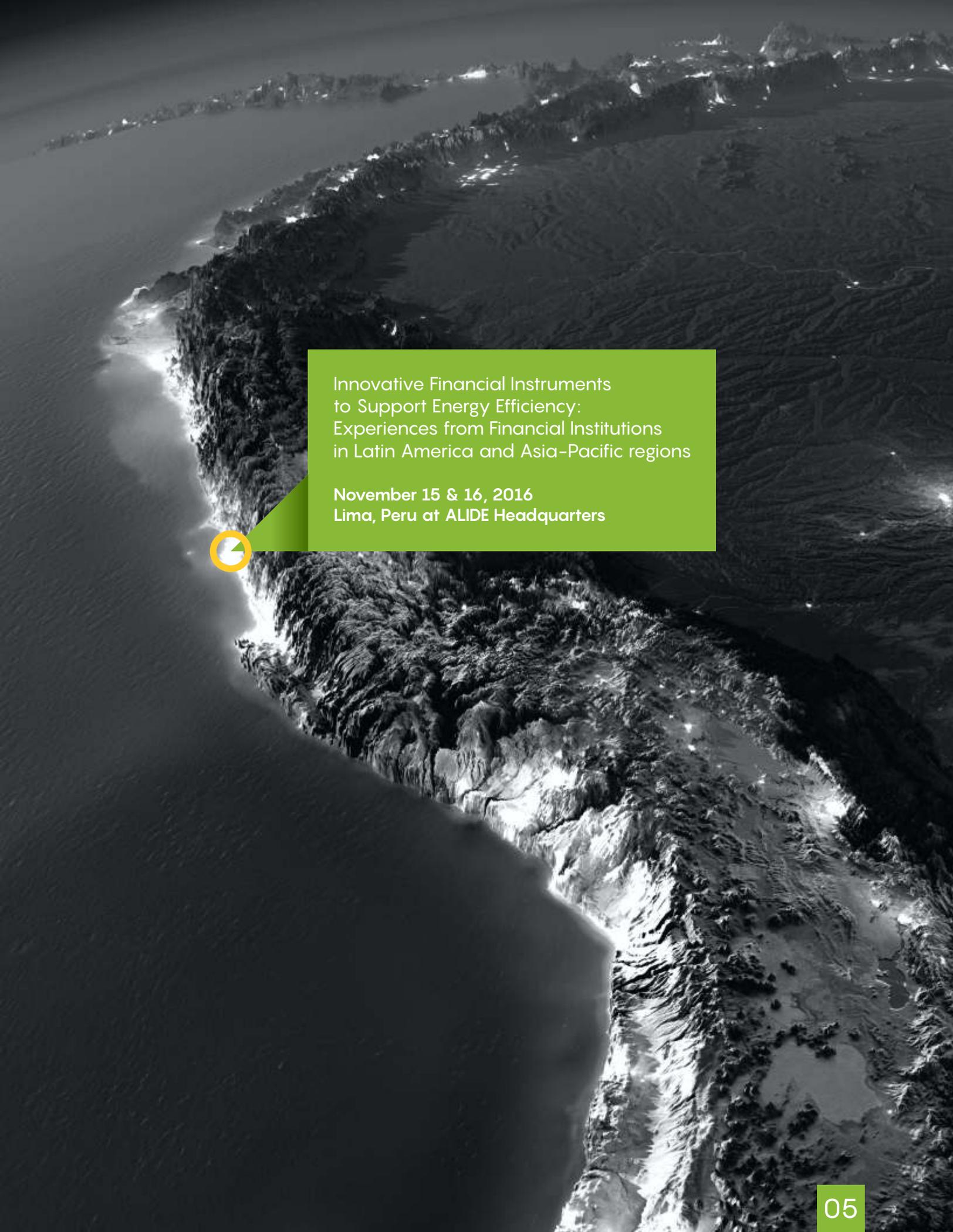
Over the course of the two days, more than 40 speakers and facilitators discussed innovative energy efficiency financing programs and projects, and risk-sharing mechanisms and candidly shared the opportunities and challenges they have faced in the process of developing these programs and making them sustainable and viable in specific sectors such as buildings, service sector and industry.

We would like to thank all the presenters for dedicating their time and resources to share their knowledge and experiences with the goal of paving the way and crowd-in the private investments in energy efficiency to mobilize and deploy adequate and effective financial resources to achieve a low-carbon, climate-resilient development.

Our appreciation also goes to the 150 + participants from across the region and the world for contributing with their comments and questions and making the discussions lively and thought-provoking.

A special thank you also goes to the team of rapporteurs— Christophe Hoor, Adalberto Padilla, Manuel Luque Casanave and Gustavo Pimentel— for helping us document the key messages and lessons from the various sessions. We eagerly await seeing the fruits of the conversations, learnings and collaboration that occurred over the course of these days. We also look forward to seeing the future learnings that will in turn result from putting these into practice.

**María Netto**  
**CMF Division at the Inter-American Development Bank (IDB)**  
December 2016



Innovative Financial Instruments  
to Support Energy Efficiency:  
Experiences from Financial Institutions  
in Latin America and Asia-Pacific regions

November 15 & 16, 2016  
Lima, Peru at ALIDE Headquarters





# Agenda

## Opening Ceremony

Masami Yamamori, IDB  
Edgardo Alvarez, ALIDE  
Carlos Paredes, COFIDE

## Opening Remarks

María Netto, IDB

## Moderator

Daniel Magallon, BASE Energy

## Innovative Instruments for EE financing for SMEs

Esteban Suárez, IDB  
Fernando Hoyo Oliver, Bancomext, Mexico  
Doris Arevalo, Bancoldex, Colombia  
Xiaochen Zhang, SMEs Financing Network, China  
Kyong Ran Seo, Industrial Bank of Korea (IBK), Korea

## Innovative Instruments for EE Financing in Buildings

Ana Lucía Pereyra, Sociedad Hipotecaria Federal (SHF), Mexico  
Bryan Garcia, Connecticut Green Bank, USA  
Hernando Carpio Montoya, Mivivienda, Peru  
Christiaan Gischler, IDB  
Mauricio Torres, Banco Pichincha, Ecuador

## Innovative Instruments for EE Financing for Industry

Erick Rodriguez Maldonado, FIRA, Mexico  
Lynda Garcia, BCIE, Centro America  
He Xiaoliang, ICBC, China/Peru

## Strategies for Financing EE related PPPs and Concessions

Enrique Nieto, IDB  
Ursula Sola de Inestrosa, FINDETER, Colombia  
Enrique Gomez Junco, Optima Energía, Mexico  
Polash Das, Energy Efficiency Service Limited (EESL), India  
Kerry Wilson, Real Term Energy (Canada)



### **Opportunities on working with technology providers**

Rodrigo Calderon, Energetyka, Mexico  
Marcelo Sigoli, ABESCO, Brazil  
José Carlos Caparó, JC Soluciones Técnicas, Peru  
Mario Garcia, Latius, Mexico  
Orlando Espezua, Honeywell, Peru

### **Opportunities & lessons learned by insurances and other risk sharing mechanism businesses**

Eduardo Ramos Tercero, ASERTA, Mexico  
Rubem Hofliger, Swiss Re  
Julio Giraldo, ICONTEC, Colombia  
Diana Angeles, BOSC, Mexico

### **Latest trends on energy efficiency initiatives**

Mustapha Kleiche, French Development Agency, AFD  
Sarah Challe, UNEP-Fi  
Jeff Schub, Coalition for Green Capital (CGC) / Green Banks Network (GBN)  
Gustavo Pimentel, SITAWI, Brazil  
Heidi Sumser, The Global Climate Partnership Fund (GCPF)

### **Sharing experiences and lessons learned from the EE market**

Haydee Mendoza, BANDESAL, El Salvador  
Franco Piza, Bancolombia, Colombia  
Marco Monroy, MGM  
Igor Shishlov, Institute for Climate Economics (I4CE)  
Francisco Bezerra, Banco do Nordeste (Brasil)  
Per Lagerstedt, Nordic Development Fund (NDF)

### **Closing Remarks**

Joaquin Dominguez, IDB  
Mustapha Kleiche, AFD  
Sarah Challe, UNEP Fi  
Eduardo Vasquez, ALIDE  
Albert B. Reyno, ADFIAP



"It is essential to promote a dialogue and exchange of experiences among development banks to enhance South-South cooperation, helping to find innovative ways to leverage private investment for the adoption of new technologies, such as energy efficiency, to help countries of the region in their transition to more productive and sustainable economies"— Juan Antonio Ketterer, Chief Division, Capital Markets and Financial Institutions of the IDB.

"Development banks are key actors in helping to bridge the energy efficiency investment gap globally. Their technical and financial support to develop projects and build the capacity of private financial institutions, together with increased sharing of experience, can catalyze private finance for energy efficiency through innovative business models and financial instruments" - Eric Usher, Head of UNEP Finance Initiative.

"In the field of environmental and climate financing, ALIDE is committed to expanding the contribution of development banks to the process of environmental sustainability and mitigation of climate change in the region, in which its participation with innovative instruments to promote investments in efficiency Energy is fundamental "-- Edgardo Alvarez, Secretary General ALIDE

# Welcome & Opening Ceremony

**The Workshop: Innovative Financial Instruments to Support Energy Efficiency: Experiences from Financial Institutions in Latin America and Asia-Pacific Caribbean regions** took place in the city of Lima, Peru, on November 15 & 16, 2016 at Alide's Headquarters.

Attendees were welcomed and the stage set for the day's topics by representatives of the IDB, ALIDE and COFIDE.

**Masami Yamamori**, the Chief Operations Officer at the Inter-American Development Bank (IDB) mentioned how the IDB, as the largest regional development bank for the Caribbean and Latin America, has been supporting countries in the private and public sector for the development of technologies, innovations and new business models to promote efficiency energy in order to help the region in its transition to more productive and sustainable economies. It highlighted the fundamental role of development banks not only as entrepreneurs financing but also as promoters of financial instruments that facilitate companies, especially SMEs, to take the initiative so that they can implement actions oriented to energy efficiency. As the region's development bank has a long history of experimenting with financial instruments and has successful experiences for development purposes such as social housing, SME promotion, there is great potential and dynamism to develop an energy-efficient financial market and is looking for suitable financial instruments. On the other hand in the Asia Pacific region there are rich experiences with new technology, private public associations and new business models that allow to leverage private investment with the aim of achieving energy efficiency. In this context, it is extremely timely to have this event attended by representatives of the development banks of the two regions in order to foster the exchange of experience and knowledge on innovative financial instruments to promote energy efficiency.

**Edgardo Alvarez**, Secretary General, of the Latin American Association of Development Financing Institutions (ALIDE) highlighted ALIDE's commitment in the field of environmental and climate financing, and in expanding the contribution of development banks to the sustainability process and climate change mitigation in the region, in which its participation with innovative instruments to promote investments in energy efficiency is fundamental. Mr. Alvarez highlighted the importance of South-South cooperation and Action for Climate Finance and how this seminar is focused on a critical aspect of the climate agenda: addressing the investment gap in more efficient energy and the role that development banks can play in supporting private investment in that sector through innovation in financial products and services.



› Masami Yamamori  
IDB

**Carlos Paredes**, CEO, Corporación Financiera de Desarrollo (COFIDE) spoke about how COFIDE is a development bank that is 45 years old and is committed to support the development of 250 communities in the Ayacucho region through capacity building and training to teach the rural communities how to live in a more rational way, saving and lending, generating the culture of financial intervention in the Puna, and doing what is the Bank's daily business: intermediating resources based on trust. COFIDE described how the institution has had the opportunity to grow very strongly in the last five years. Their loan portfolio has grown at a rate of 60% per annum and today they are a bank that handles roughly US \$ 7 billion. The Program COFIGAS was described as a program that finances the integral implementation and conversion of projects of the different economic sectors to natural gas, covering all linked processes, from engineering to network infrastructure, internal installations, equipment and new machinery.

**Maria Netto**, Team Leader of the Capital Markets and Financial Institutions Division (CMF) at the IDB expressed that this event is one of a series of event that have been organized in collaboration with ALIDE. Other events organized in the past focused on very important topics such as sustainable rural financing, green funds, adaptation and climate finance but with this event the goal is to focus on energy efficiency (EE). The reason for promoting energy-efficient products for the IDB is because this is an additional benefit to development, and the issue of energy efficiency for the IDB is part of the broader problem of the region, which is to promote, on the one hand, productivity and access to SME credit in the region.

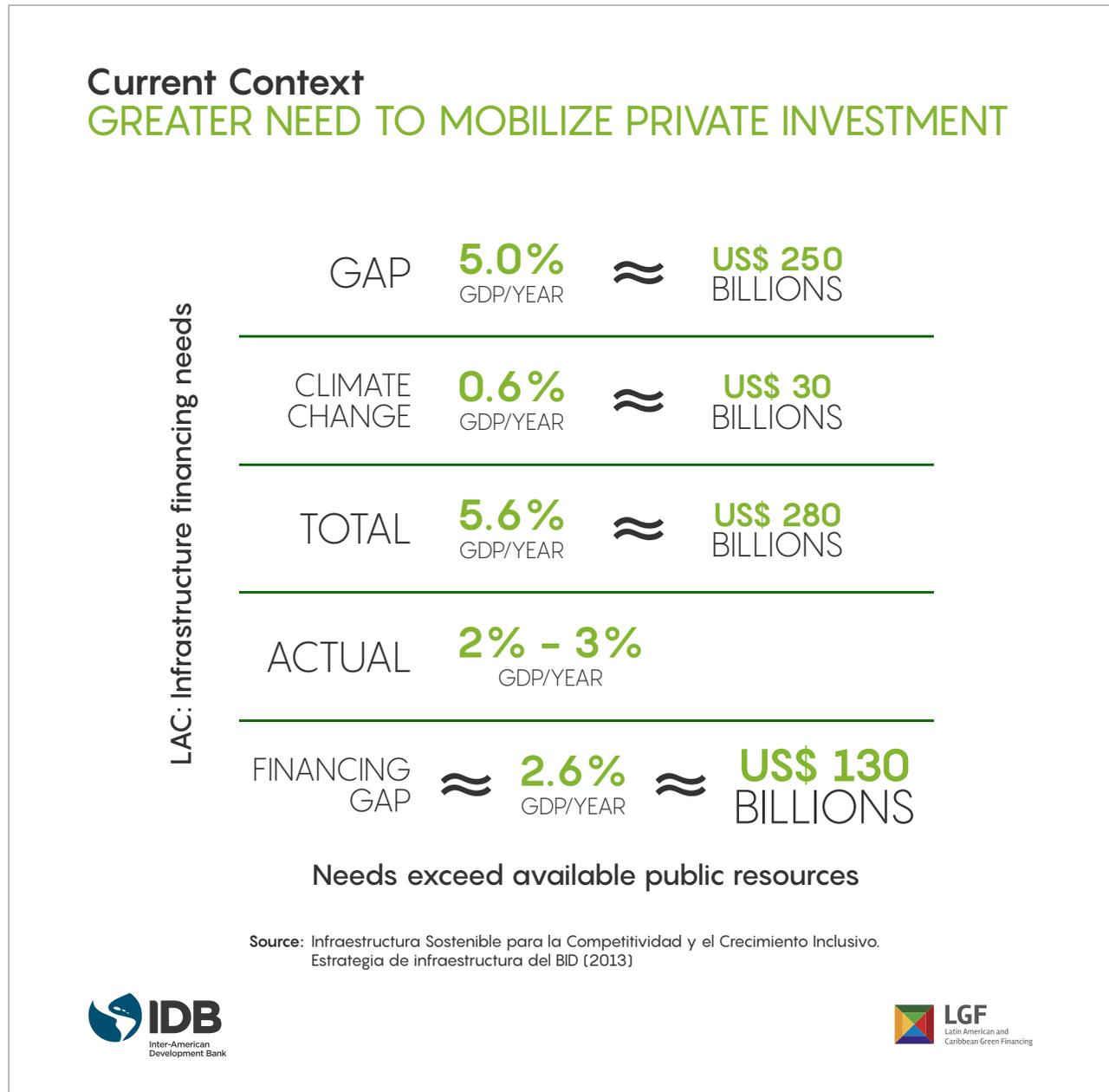
Mrs. Netto presented about the current context and the paradigm shift on how development will be financed post 2016 and how it can be used strategically to unlock, leverage and catalyze private investment. She also mentioned the needs to scale up private investments for infrastructure, the innovative financial instruments for supporting energy efficiency investments that are being used and the opportunities and challenges associated with that; and finally mentioned the key role of IFDs, and especially National Development Banks (NDBs)



▶ Edgardo Alvarez, ALIDE  
Maria Netto, IDB



FIGURE 1



Source: Maria Netto. IDB Presentation.

## Session 1

# Innovative Instruments for EE Financing for SMEs

This session explored the real and perceived barriers that small and medium enterprises (SMEs) have in terms of the financing of energy efficiency (EE) upgrades, as well as, the existing opportunities and co-benefits associated with the investing and implementation of EE in developing countries, such as increase productivity, GHG emission reductions, among others.

The event moderator, **Daniel Magallon**, from BASE Energy, highlighted the session's key questions to be addressed such as the identification of the main challenges and risks to finance EE projects to SMEs (energy prices, policy, risks) and how to mitigate those risks; the importance of identifying the elements of effective and attractive EE credit lines for SMEs and the market potential of EE in SMEs.

The **Inter-American Development Bank (IDB)** gave a brief introduction of the Energy Savings Insurance (ESI) Program that the IDB is deploying within the LAC region. It was highlighted the importance of the barriers to energy efficiency (EE) financing, such as: Imperfect and asymmetric information, lack of finance, low experience of technology services providers in project development and low demand due to lack of interest by small and medium businesses (SMEs) that do not see EE as a priority in their business strategy. At the same time, the important savings that SMEs can realize with the Program was pointed out clearly and key risk mitigation mechanisms were explained so the audience see the benefits of the ESI approach easily.

In his presentation, **Bancomext** started giving basic information about the bank and the support the Mexican Government gives to its activities. Clear points were made on the nature and versatility of the bank now that it presents schemes of a first and second tier financial institution as the sectors in which most of its efforts are focused, to name the most representative, Tourism, Electric and Electronic, Automotive and Auto parts, and Energy Efficiency. To engage specifically on the EE matter, Bancomext executive mentioned the direct relationship that the bank has with the National Commission for Efficient Use of Energy (CONUEE) and with the National Secretariat of Energy (SENER).



› **Kyong Ran Seo**  
Industrial Bank of Korea



› **Xiaochen Zhang**  
SMEs Financing Network



› **Fernando Hoyo Oliver**  
Bancomext

Bancoldex started with a brief explanation of the market perception regarding EE, encompassed with barriers to EE finance that Bancoldex encountered when developing the ESI Program, certain highlights were the poor knowledge about the Energy Services Companies (ESCO) model, high risk perception on performance contracts and credit guarantees. General aspects of the ESI Program in Colombia were pointed out and a brief status of its progress was lined out. The adaptation of the mechanisms to the Colombian regulatory framework and markets as key stakeholder's functions were detailed to the point of presenting insurance policies and validation costs in order to catalyze EE finance on SMEs.

**The SMEs Financing Network** in China started with a brief explanation of the global actions that the Network is developing, outstanding bullet points were:

- 200 financial institutions and 400 micro, small, and medium businesses (MSMEs) as members of the Network.
- All members are building capacity enhancing clean tech value chains and financing.
- All financial institutions have access to business rounds and networking, peer learning opportunities and technical assistance.
- All MSMEs are being financially strengthened.

On the climate change mitigation efforts, the Asian Cleantech MSME Financing Network is committed with the Paris Agreement and targets, the G20 Energy Efficiency Action Plan. Important statistics shown were a 60% of China's GDP is accounted by the SMEs, on the other hand, SMEs are on average almost 40% less energy-efficient than large industrial enterprises, and thus EE initiatives could impact a 25% of current energy demand.

**For the Industrial Bank of Korea (IBK)** SMEs financing is a priority for the Korean Government, as a 41.8% of financing goes to SMEs in the country in contrast to a 26.8% average in OECD countries. Public lending has followed certain actions, among some of them:

- Provide cheap, long tenure credit to focused industries - Mostly for capital expenditure purposes.
- Enhance SMEs' creditworthiness to facilitate SME lending.
- Encourage banks to allocate a certain portion of their lending to SMEs.

To continue, it explained how is supporting 'green finance' in different sectors such as industry, buildings, transport, and appliances & equipment. The bank is fostering early investment in green technologies, enlarging finance, guarantees, and policy loans and marching funds. Foreseeing a 5-year plan and fostering EE infrastructure and a carbon market.





FIGURE 2



Source: Esteban Suárez, IDB Presentation

## Session 2

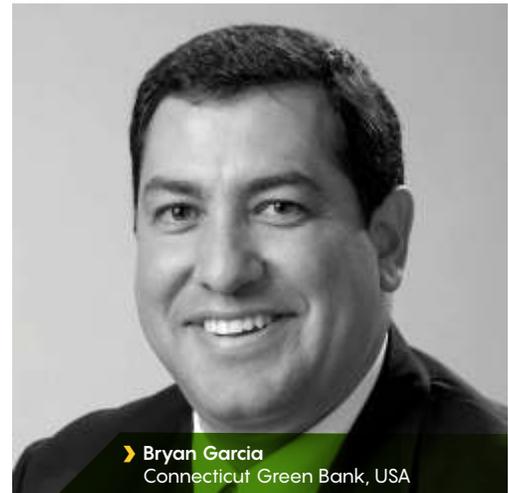
# Innovative Instruments for EE Financing in buildings

This session showcased some concrete experiences of financial institutions working with blended funds supporting EE in the building, tourism and service sectors through technology upgrades.

Throughout this session, speakers presented the particularities (risks, barriers, gaps) that the Financing of EE in buildings (residential, commercial and public) have; the types of financial instruments that are needed to support EE in buildings. It was also addressed how the leasing or private equity or other financial instrument complement/ support the financing of EE in buildings.

**Sociedad Hipotecaria Federal (SHF)** presented the different products developed to mitigate housing risk in Mexico (funding lines, guarantees, trade union loans, financing, insurance, financial education, agreements with states and municipality, etc.). To meet population growth requires \$ 34,000m in housing investments per year taking into account that 66% of the real estate in Mexico is housing. The SIF Ecocasa, IDB and KfW fund was created to make NAMAs a reality to support sustainable housing developers. These measures include rainwater harvesting, energy saving lights, digesters, solar panels, energy-saving stoves and thermal insulation, with long-term social, economic and environmental aspects. This fund of more than \$ 800m allows, by reducing the interest rate of loans, the construction of more than 32 thousand sustainable housing from 2013 to 2019, generally obtaining a 20% reduction of CO<sub>2</sub>. A reduction of 800 thousand tons of CO<sub>2</sub> was achieved since 2013. The initial product was diversified into 6 products depending on the different market segments. SHF works with Housing Producing Agencies that integrate the social factor as the self-production of housing in the same place where the beneficiary previously lived. Residential

In the state of Connecticut in the USA the **Connecticut Green Bank** manages a \$ 30M non-refundable fund coming from a fraction of the electric bills of the same consumers of this state (0.001 \$ / kWh consumed). The bank co-finances energy efficiency projects with a commercial bank. The project money goes to an energy services company (ESCO) called POSIGEN that proposes a leasing of a PV system on roofs for 55-100 \$ / month. Once convinced of the savings, POSIGEN proposes to the beneficiary a package of energy efficiency (change of luminaires, insulation, controls for AA, etc.) in leasing for an additional cost of 10 \$ / month. In 15 months, the system has been installed in 352 homes or 2.3MW in installed PV systems (target 1,000 homes / 6MW SFV). 86% of those benefited by the PV solution added the energy efficiency package.



› **Bryan Garcia**  
Connecticut Green Bank, USA



› **Mauricio Torres**  
Banco Pichincha, Ecuador

**Mivivienda** is a government company that offers mortgage loans through IFIs for the construction of housing to the low-income population not served by commercial banks. Their objective is to reduce the gap between the sustainable housing surplus and what the client can invest. **Mivivienda** makes the beneficiary aware of sustainable housing, including measures to save water, energy, gas use, waste management, bioclimatic architecture, due to the low operational costs. The criteria for sustainability of the housing defined by the AFD are verified by an external certification company. **Mivivienda** offers a direct subsidy (4% of the investment amount) that covers the investment overheads in sustainable housing with respect to a traditional dwelling. If the client is a good payer the state offers another bonus that is added to the initial bonus making the investment even more profitable. AFD's lending facility amounts to \$ 120m (\$ 40m for sustainable housing + \$ 80m traditional credits) to finance 1,300 homes. The subsidy is financed by the preferential rate of credit.

**BancoEstado** demonstrated how they are committed to Energy Efficiency in Chile by offering more than 10 million debit cards nationwide, even in areas where no other bank is. Since June 2016, it has provided mortgage loans through the ECO Mortgage Program (replication of a German Sustainable Housing Program) with a funding from KfW to finance sustainable housing. With \$150M, it aims to invest in 4,300 sustainable homes through loans that finance 90% of the value at 20 years, with 2 years of grace period and a rate between 12% and 15% lower than that of a regular loan. Sustainable homes with thermal insulation of the wall, greater thickness of glass in the windows, greater insulation of doors and optimum orientation have to save 30% of energy compared to traditional houses and meet the European standard of energy efficiency for housing. The bank works together with strategic partners in the construction sector to be able to develop projects with these characteristics.

**The IDB** presented some of its experiences and projects in energy efficiency in public buildings and hotels in the Caribbean. It mentioned that because of the cost-effectiveness of energy efficiency measures coupled with high energy costs (2% of GDP), these measures in CARICOM buildings and hotels are highly profitable. Thus the returns are very short regardless of the type of technology (AA: 1.6 years, Lighting: 0.7 years, solar water heating 1 year, etc.). AAs in these segments account for 65% of consumption with a potential energy savings of 30 to 40% in energy and 40 to 50% in water. Implementing comprehensive and sustainable measures of energy efficiency in a building has a return of 4.7 years according to the example presented. When these measures are applied to buildings on a staggered basis, the savings in measures are capitalized and reinvested in new buildings, a 100% IDB funding (\$ 2.8m in the example) recovers to 100% in 6 years. Moving forward, the future can be achieved to generate all the energy that is needed in a distributed way connecting the self-generators in Smart grids, smart buildings and interconnectivity pouring surpluses into the network.



▶ Hernando Carpio Montoya  
Fondo Mivivienda

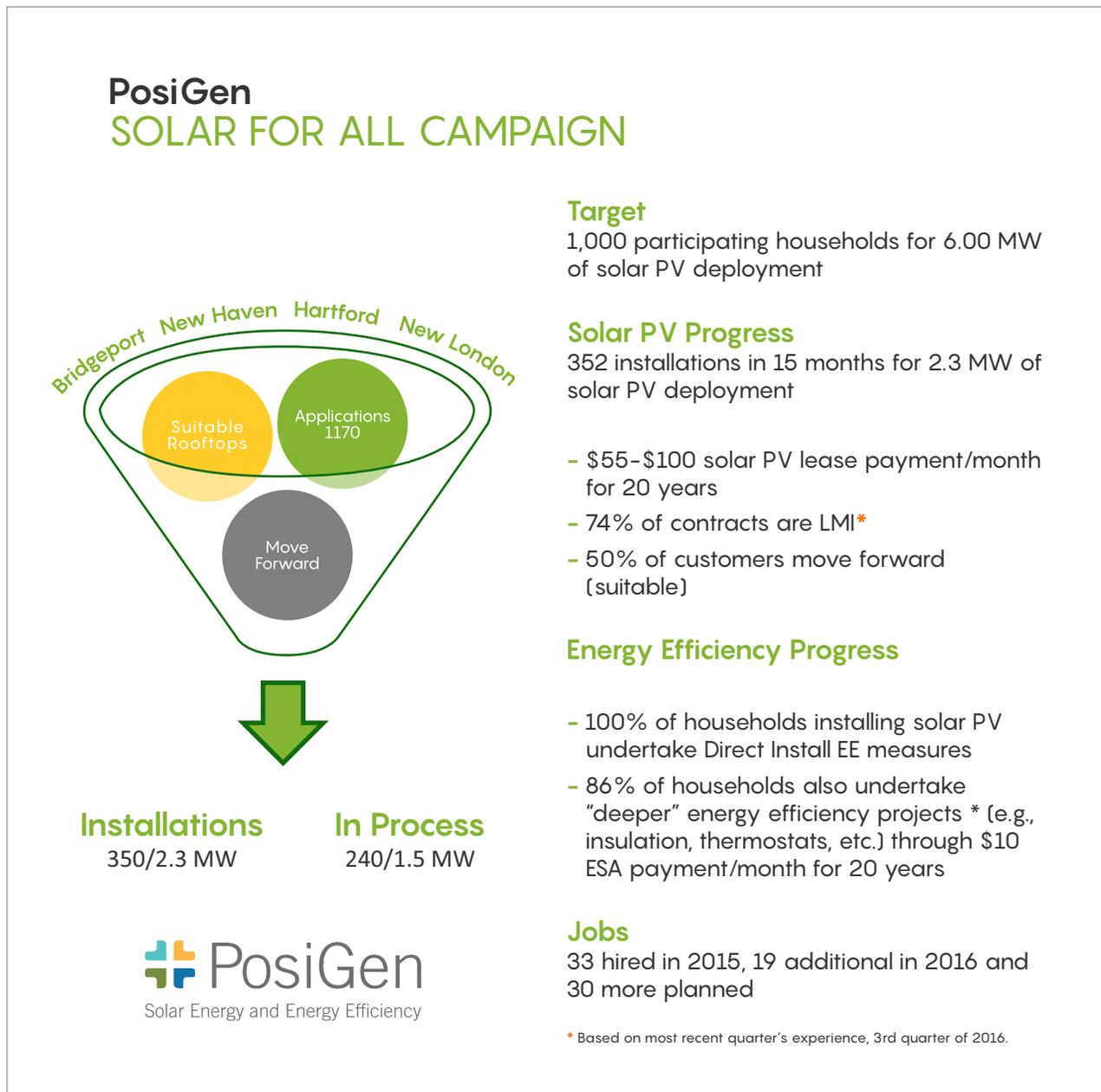


▶ Ana Lucia Pereyra  
Sociedad Hipotecaria Federal, Mexico



**Banco Pichincha** explained that the real estate market in Ecuador represents with 800 projects a business of \$ 3b annually. 65% of the projects of buildings are developed in the capital. Banco Pichincha is the bank that provides the largest mortgage loan in the country. It participates in a State Program to fulfill the objectives against the climatic change of the country, developing constructions focused on the energetic efficiency. The government approves the construction plans and executes them. Of the 8 banks initially committed, only 2 are still committed due to the lack of market. The Program needs to develop fiscal incentives, lines of financing to motivate potential real estate.

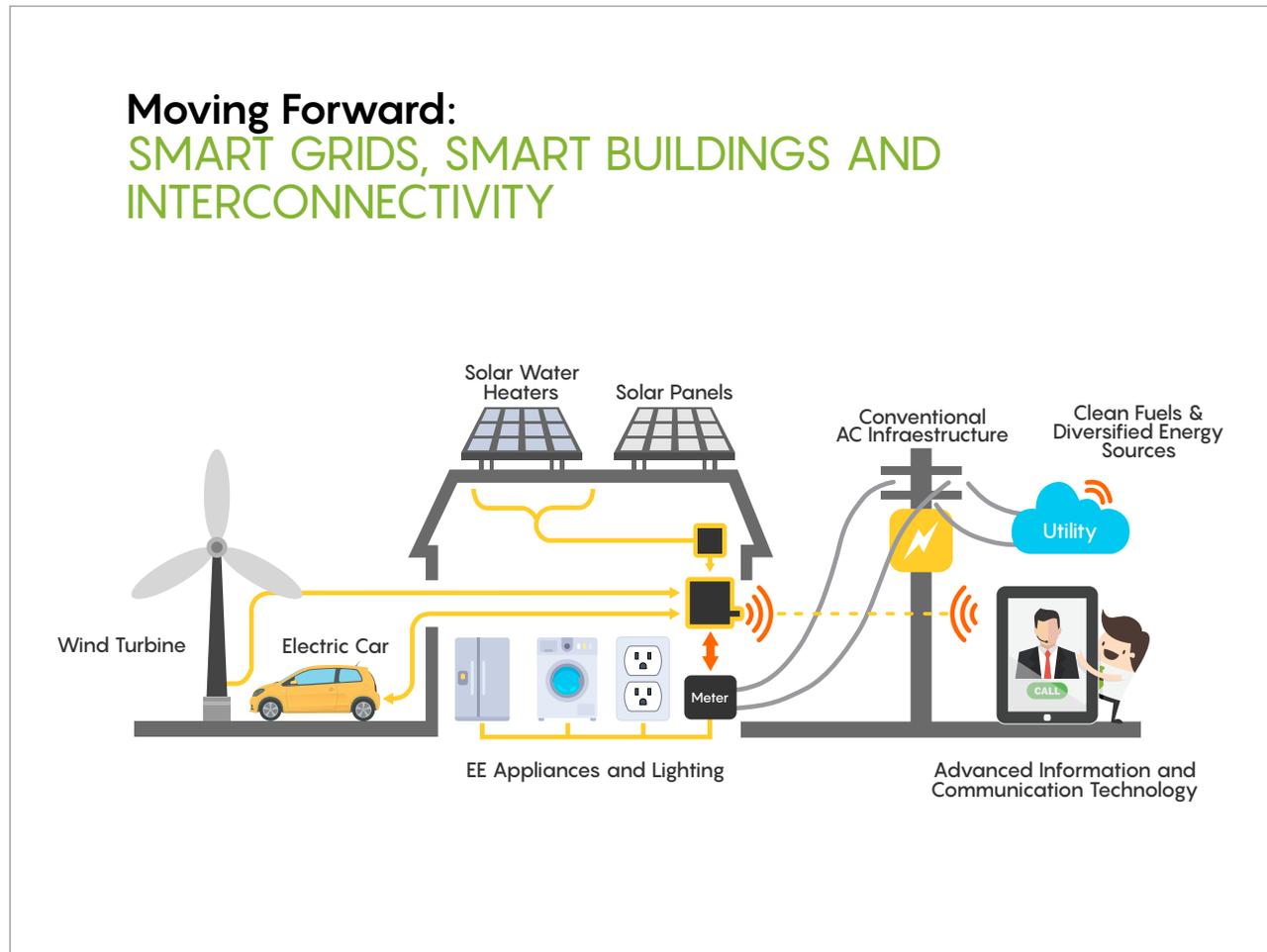
FIGURE 3



Source: Bryan Garcia, Connecticut, Green Bank Presentation



FIGURE 4



Source: Christian Gischler, IDB Presentation

## Session 3

# Innovative Instruments for EE Financing for Industry

This session engages financing strategies to promote energy efficiency in different industries, experiences from financial institutions and private organizations leveraging investment in diverse industrial sectors.

It addressed the kind of risks and barriers for the financing of EE in the industrial sector. It identified the the kind of public finance mechanisms that are needed to support EE in the industrial sector; and the main challenges to implement an Energy Performance Contract (EPC) and position ESCOs to provide energy efficiency services to the industry sector, among other topics.

**FIRA**, the Mexican development bank for agriculture in Mexico, mentioned that their experience is supported by research conducted at the University of Cambridge, UK. They are providing funding to the commercial banks with soft credit to the farmers, which includes technological support. Of 7,000 farmers in Mexico, 78% are potential customers, 80% are not aware of EE, and 40% are interested in EE. Many of them are companies that add value to food. The main market challenges are barriers, such as access to capital, risk, imperfect information, hidden costs, inertia, corporate culture. FIRA technologies for farmers: high efficiency motors, solar heaters, compressed air distribution, boilers, cooling systems, cogeneration.

Studies suggests the need to have sector and country specific analysis to have a better understanding of the specific barriers and drivers of energy efficiency investment decisions in a specific context

FIRA's energy efficiency program considers the granting of anchorage and / or FIRA guarantee, with added value through access to a set of risk mitigants and incentives in the interest rate.

**Banco Centro Americano de Integración Económica (BCIE)** the multilateral development bank, with its Institutional Strategy 2015-2019, defined 6 areas of focus to contribute to the development of the Central American region: human development and social infrastructure, productive infrastructure, energy, rural development and environment, Financial intermediation and Development finance, and Competitiveness services. They have implemented the Green SMEs Initiative with the purpose to contribute to the environmental and climate protection through the MSMES in Central American region. For this initiative KfW provided 30m Euros (reimbursable fund), CABEL 3M euros (reimbursable fund) and the EU 3M euros (non-reimbursable fund).



▶ Erick Rodriguez Maldonado  
FIRA, Mexico



▶ He Xiaoliang  
ICBC, Peru



The program focuses on EE and RE loans to adopt new technologies or EE/RE projects; with loans up to 10 years' period, and for EE projects the energy savings has to be equal or greater than 15% of the energy cost; and for RE projects an installed capacity of energy generation up to 5 MW. Some of the achievements of this initiative: US\$22 Millions were financed in 49 energy efficiency projects with energy savings of 215,608 kWh, 72 energy audits for MSMEs; and US\$30 Millions financed in 20 renewable energy investments with energy generation of 25 MW, and 27 renewable energy project studies.

**ICBC** has a commitment to the social and the environmental development. In 2014 they implemented the Green Credit Development Strategy. They have the challenge of evaluating and giving credit to a huge mass of clients, thousands of applicants to green funds. ICBC's environmental risk management responsibilities are firstly divided between their Head office and branches. The emphasis on risk monitoring, early warning, prevention and control management strengthens the supervision and evaluation process. They have a set of products and Services Innovation, such as Green Funds, Green Bonds, Green Equity Investment and Private Capital.



FIGURE 5

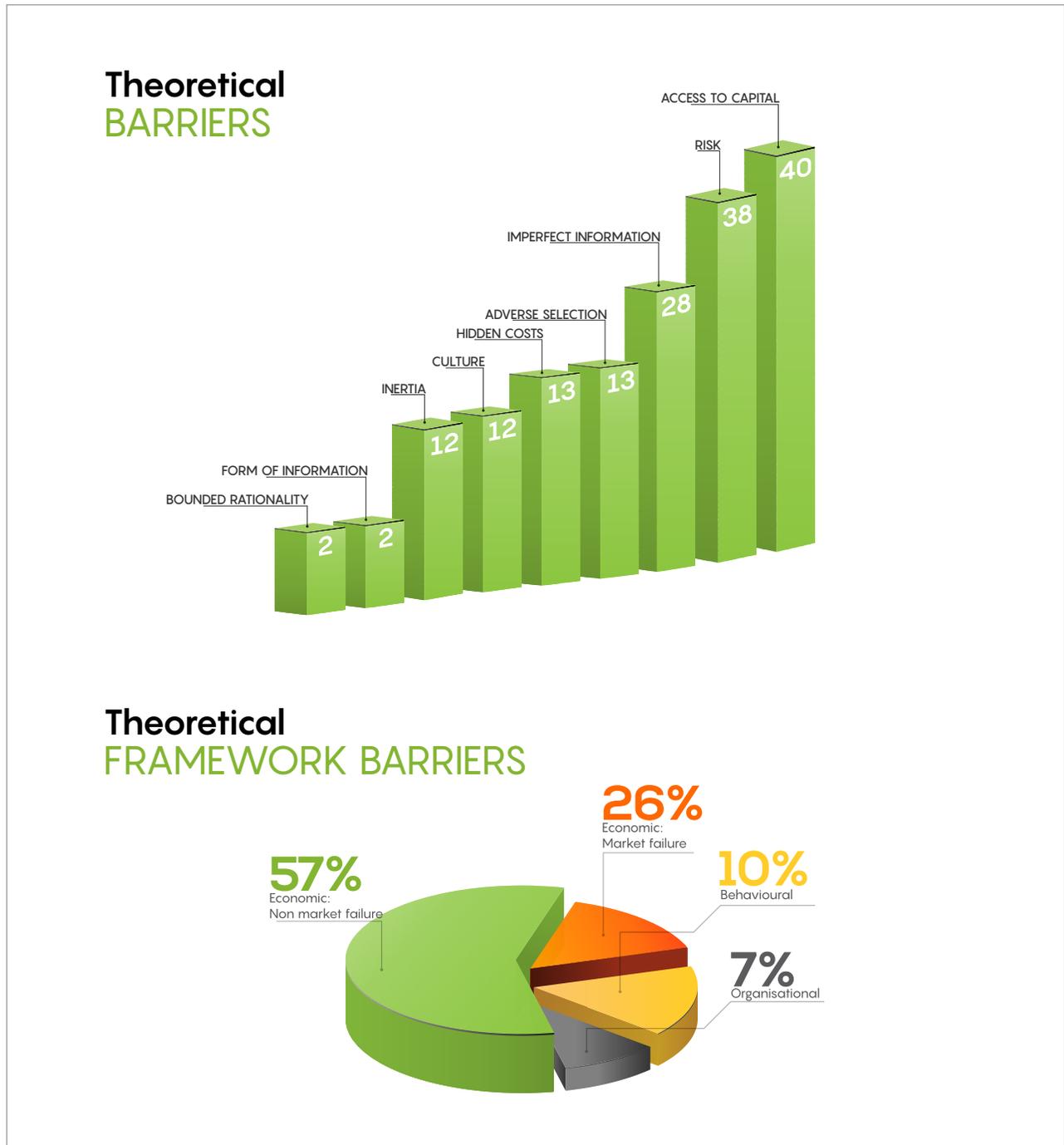
## Results BARRIERS THEORETICAL FRAMEWORK

Theoretical Framework	Theoretical Barrier	Barrier	Frequency	Theoretical Framework Frequency
<b>Economic: Non Market Failure</b>	Hidden Costs	<ul style="list-style-type: none"> <li>+ Cost / inconvenience of research new technologies</li> <li>+ Difficulties in obtaining information about EE equipment and its performance</li> <li>+ Lack of technical capacity</li> </ul>	13	<b>91</b>
	Access to Capital	<ul style="list-style-type: none"> <li>+ Lack of financial resources</li> <li>+ Access to finance and adequate financial products</li> <li>+ Investments problems related to the use of subsidies</li> <li>+ Lack of government incentives/programmes</li> </ul>	40	
	Risk	<ul style="list-style-type: none"> <li>+ Long payback period of investment</li> <li>+ Price energy</li> <li>+ High risk perception / lack of risk management tools</li> <li>+ Technology performance / adequacy for the plant</li> <li>+ Reliability of technology providers</li> <li>+ Uncertainty about economic performance of the projects</li> <li>+ Unclear energy regulation</li> </ul>	38	
<b>Economic: Market Failure</b>	Imperfect Information	<ul style="list-style-type: none"> <li>+ Lack of knowledge about EE</li> </ul>	28	<b>41</b>
	Adverse Selection	<ul style="list-style-type: none"> <li>+ High investment cost</li> <li>+ Access to technology</li> <li>+ Fast technological cycle</li> </ul>	13	
<b>Behavioural</b>	Bounded Rationality	<ul style="list-style-type: none"> <li>+ Slow investment decision making process</li> </ul>	2	<b>16</b>
	Form of Validation	<ul style="list-style-type: none"> <li>+ Lack of successful examples</li> </ul>	2	
	Inertia	<ul style="list-style-type: none"> <li>+ Preference to invest in production expansion</li> <li>+ Short term vision</li> </ul>	12	
<b>Organisational</b>	Culture	<ul style="list-style-type: none"> <li>+ Cultural barriers for adoption of technology</li> <li>+ Lack of interest in energy management</li> <li>+ Lack of interest in the environment</li> </ul>	12	<b>12</b>

Source: Erick Rodriguez Maldonado, FIRA Presentation



FIGURE 6



Source: Erick Rodriguez Maldonado, FIRA Presentation

## Session 4

# Strategies for Financing Energy Efficiency related PPPs and Concessions

This session reviewed the different ways to promote EE finance through public-private partnerships (PPPs) and by utilizing the existing and new innovative instruments available for EE; the key role played financial institutions, as well as the available contractual and regulatory incentives to crowd-in and leverage private investments in EE for a low carbon pathway.

The IDB explained how any large scale project involves both public and private sector actors and public private partnerships (PPPs) are about how to split risks between private and public actors: a continuum exists. Also highlighted the case of NAFIN/IDB for renewable energy in Mexico: the total funding of \$440MM from IDB and CTF, plus NAFINs \$963MM mobilized \$6,40 billion in total investments, 3.2 GW installed capacity and 7.4 million annual average CO<sub>2</sub>tons emissions avoided.

Findeter focuses on Colombian public sector, especially municipalities. A lesson learned from its experience is that climate change adaptation requires debt capacity, because grants are very limited. It was also mentioned how IFDs can blend funds from different sources and leverage government association to structure projects.

Optima Energia from Mexico expressed that the modernization of street lighting systems is a clear PPP opportunity, the largest and most feasible EE investment worldwide. In Mexico, street lighting is the largest expenditure of municipalities after payroll, and the #1 complaint from citizens but municipalities are not trustworthy for the financial sector, and the regulations differ for each of them. They illustrated the ESCO model with performance contracts with each municipality, and how the technology risk for LED is very low, no need for additional risk sharing. The model is starting to attract pension fund investment for new projects. They concluded that street lighting could be the entry point for derivative performance-based contracts with municipalities, such as alternative energy, waste water treatment, landfill, pump efficiency: smart city model.

Energy Efficiency Service Limited (EESL) a public ESCO from India which main activity is replacing appliances: street and residential lighting, water pumps, air conditioning. According to EESL it has a current pipeline of \$1.5 billion. Street lighting: PPP and demand aggregation model for provinces, covering technology risk: EESL issues debt 80%, equity is 20%. Residential Led lamp distribution: purchase at scale and install.

Real Term Energy is a Montreal-based street light company. For them the ESCO model seems better / faster than PPP model: as they have the experience of 10-year energy performance contract in Canada. For them, PPP takes a long time to structure and needs scale (>25MM USD). The ESCO model takes performance insurance from 3rd party to protect owner and savings are securitizable.



› Enrique Nieto  
IDB



› Ursula Sola de Inestrosa  
FINDETER, Colombia



› Polash Das  
EESL, India



› Kerry Wilson  
Real Term Energy, Canada

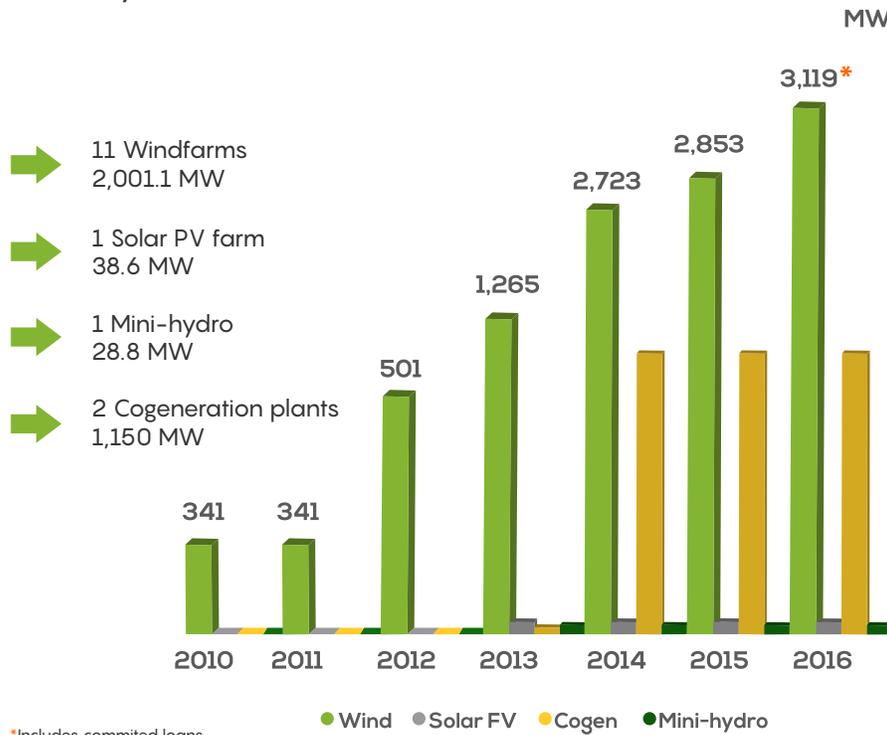


FIGURE 7

## Project FINANCING

Since 2010, Nafin has set a credit offer for sustainable projects.

- + Focused on **large-scale projects** (more than 30 million dollars per project)
- + **Case by case** analysis, generating tailor-made structures
- + **Partnerships** with commercial, development, national and international financial institutions (e.g. club deals, syndications)



CTF US\$ 70.0 million

IDB US\$ 37.0 million

Total Funding US\$ 440 million

Nafin  
US\$ 963 million



Nafin's Portfolio

US\$ 6.4 billion Total Investment

3.2 GW installed capacity

7.4 million annual average CO<sub>2</sub> tons emissions avoided (once at full operation)

Source: Enrique Nieto, IDB presentation

## Session 5

# Opportunities on working with technology providers

For this session, different EE technologies/services providers shared their experiences in energy efficiency projects for SMEs, industries and public institutions; barriers encountered and solutions approached to overcome them. Some of the key issues addressed included the identification of the kind of risks, challenges and effective strategies EE technology providers face to promote their products. The session also addressed the different kind of guarantees, contracts and risk coverage mechanisms that are being used by technology providers to mitigate the performance risk, the breakdown of the EE equipment, and other potential risks (damage due to client's misuse of the equipment).

**Energetyka** presented its initial experience with innovative renewable energy products in Mexico and how these were derived in energy efficiency projects and smart cities. Within the promotional experience, Energetyka has offered energy performance contract for its customers' peace of mind that their contracts have the promised viability of savings. The contract in this case was a relevant tool for the promotion of energy efficiency.

**ABESCO**, officially represents the Brazilian energy efficiency segment and has more than 100 associated companies, service providers, manufactories and consultants. Their mission is to foster and promote actions and projects for the energy market growth. For ABESCO the supply of ESCOs in this country is important and linked to the obligation of energy operators to allocate a percentage of resources for energy efficiency projects. It mentioned the barriers to EE development such as information, culture, market, technical and finance. As the Measurements to promote EE from the government side, the ones mentioned included the establishment of a State Energetic Policy, which considers the systematic organization of various energy efficiency initiatives already in place, the review of the National Program of Energy Efficiency and the relocation of the concessionaries investments by using the uncoupling rates. In terms of the users side, the stimulus of public and private users to take energy management mechanisms (ISO 50.001) and formalize performance contracts with ESCOs and the creation of methods which undertake end-users to deploy continuous improvement processes and accomplish the pre established targets.



▶ Marcelo Sigoli  
ABESCO, Brazil



They mentioned as other forms of initiatives: the compulsory application of minimum energy efficiency levels for equipment and edifications; the encouragement of distributed generation; the creation of energy efficiency auctions methods; the improvements of finance lines, creation of guaranteed funds and tax incentives for efficient equipments; and the promotion of society engagement and knowledge investments orientation and dissemination of best practices.

The company **JC Soluciones Técnicas**, based in Peru, commented on the saving potential of certain technologies such as air conditioning in hospitals, hotels, shopping malls, as they consume between 40% and 65% of their total electricity consumption. It highlighted the importance of proper engineering and equipment sizing and how this allows customers to save significantly. Emphasis was placed on the energy efficiency expert's need to make an adequate estimate of energy savings since users tend to buy based on the cost of the equipment, putting aside the future benefits.

**Latius**, a technology provider from Mexico, highlighted the opportunities that exist in the cold chain and how through technology the client can make effective energy savings of 30% and sometimes up to 70%, where through pilot tests allows customers to know the real potential of their equipment. In addition, incorporating continuous and online measurement tools ensure that the installation is generating the expected results.

**Honeywell**, from Peru, has expertise in the thermal field, namely combustion systems. In this type of technology, efficiency is not as good as in others, so experience and technology is essential to achieve this energy saving. Safety is a very important element in energy solutions.

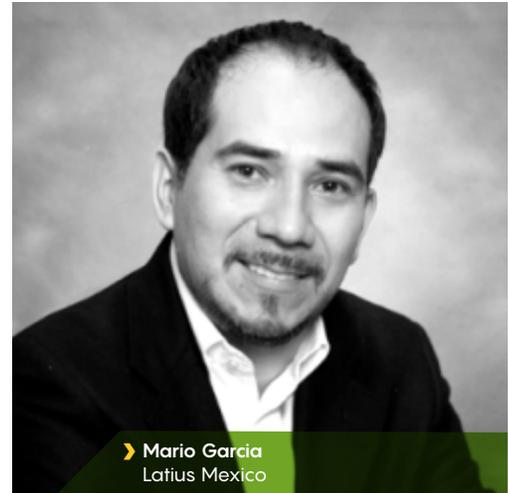


FIGURE 8



Source: Mario Garcia, Latius Presentation

## Session 6

# Opportunities & lessons learned by insurances and other risk sharing mechanism businesses

This session reviewed some of the activities and roles of insurance and reinsurance agencies and other risk mitigation mechanisms, the opportunities in these markets as well as some concrete win-win experiences improving productivity among stakeholders while encouraging EE. Some of the key issues addressed during the session included the role of insurance and reinsurance companies to share risks faced by EE projects; the most important aspects for an insurance/reinsurance company for getting involved in an energy savings risk coverage, such as contracts, technical validation, financing; and the biggest challenges for an insurance company/reinsurance company to develop and Energy Savings Insurance product.

**ASERTA** detailed the product launched in the Mexican market and commented on the necessary elements to make its design feasible. One of them is to have a simple methodology to give clarity in the calculation of energy savings. Another crucial element is the existence of a third party to verify and validate the feasibility of the project in terms of savings.

**SWISS RE** offers weather risk solutions, renewable energy solutions (for example for Low Solar Radiation Solution) and a Reinsurance coverage for EE projects therefore, they need to quantify the aspects that influence in the energy management. Swiss Re operations have been linked to the reinsurance of renewable facilities. In this type of business, the operation of a reinsurer is very important since the risk is distributed among different actors, giving certainty of controlled exposition to risks. The technical understanding of the project is based on the worldwide experience. On the other hand, local insurers allow them to leverage their capital by having shareholder participation in these types of companies.

According to **ICONTEC** the role of certifying agencies is very important in energy efficiency schemes. ICONTEC explained its approach and procedures carried out to issue opinions on the validation of suppliers, projects and equipment. Also its role as arbiter is relevant to settle any differences between the parties. This is a key player in encouraging insurance companies to participate in energy efficiency schemes.

At the end of the panel, **BOSC**, a legal expert in the field of insurance, gave a perspective of the different options available to design a hedging instrument for energy savings. He referred to the product that has been highly implemented for this purpose: the surety contract and highlighted how a tendency for the development of a new type of surety products that blends benefits of a pure surety contract with the benefits of insurances.



▶ PANEL SESSION 6



▶ Rubem Hofliker  
Swiss Re



▶ Julio Giraldo  
ICONTEC, Colombia

FIGURE 9

## Estrategia DEL BID

**ICONTEC:** Desarrollo de un mecanismo de evaluación para soportar técnicamente el instrumento financiero que estaban creando, de manera que:

- + Valorar el grado en que los proyectos a financiar incorporaban cambios tecnológicos, eficientes y efectivos en costo y que permitieran alcanzar, en gran medida, los ahorros energéticos sustanciales.
- + Evaluar la idoneidad de los formuladores de los proyectos

Igualmente crean un modelo de contrato y una póliza que medie entre las partes (contrato de desempeño — justo para ambas partes)



Source: Julio Giraldo, Icontec Presentation

## Session 7

### Latest trends on energy efficiency initiatives

This session brings to this event some examples of the latest trends and the global initiatives of financial instruments for green technologies and EE financing. It also raises the question: Green Banks and NDBs, competition or cooperation to foster sustainable growth? Some key questions addressed during this session included are related to what is missing to mobilize investment and finance in EE in emerging economies?; How to create trust of investors in EE projects? and, How the different initiatives improve the risk-return trade-off and the attractiveness of the EE investment opportunities?

The **French Development Agency (AFD)** shared its expertise in energy efficiency financing programs by defining the main barriers as hidden costs, energy market failures (such as an inappropriate energy price), and the lack of information on efficient technologies. AFD highlighted how a program like ESI could help managing risks at a beneficiary and project level, or even helping assure the impact at a more high-level (with a change on culture). Some key success points for projects are the eligibility criteria (energy consumption vs. tCO<sub>2</sub> emission), standardization of processes (list of approved technologies), dialogue with decision makers and fine-tune of credit risk measurement within LFI.

**UNEP-FI** presented the energy efficiency investment gap which amounts to \$430 billion annually. They have a unique partnership between UN Environment and the private financial sector covering banks, investors, insurance connecting finance with energy efficiency policy. They facilitate the exchange of experiences and best practices among financial institutions, through their policy engagement in Europe they have strengthen investor confidence through increased EE investment information and by bringing policy/finance dialogue to national level in 15 countries within the next 3 years.

UNEP-FI is a Member of G20 Energy Efficiency Finance Task Group (EEFTG) Secretariat, which gathers 14 countries to promote high-level investment enabling policy frameworks and the “Voluntary Energy Efficiency Investment Principles for G20 Participating Countries” welcomed by G20 Energy ministers and embedded in the G20 Energy Efficiency Leading Program adopted in 2016. In terms of the mobilization of the financial sector UNEP FI leads the engagement with private finance..



**Coalition for Green Capital (CGC)** is an NGO that leads the implementation of the green banking model —Green Banks Network (GBN)- and trains financial institutions on that subject. Green banks aim to provide the necessary "low carbon" investments in line with the Paris Agreement. Green banks focus their efforts in (i) developing and organizing the market for energy efficiency and renewable energy, (ii) channeling private and public funds (green bonds, pension funds, resources from development banks, green funds, etc.), and (iii) taking financial risk and also assuming first and second losses. Through its network and in cooperation with development finance institutions, green banks are key players in developing and supporting new financial models for investing in energy efficiency and renewable energy projects, exploring new markets and opportunities, and eventually creating new green banks.

**SITAWÉ** presented green finance trends in Brazil in relation to energy efficiency and renewable energy. Efforts had prioritized the field of clean energies combining benefits of GHG reduction and productivity. There is strong potential with the transportation sector (vehicles with natural gas, low carbon battery-powered trains), infrastructure and municipal wastewater treatment. Funding schemes are more developed for green bonds, and the creation of incentives for banks but not so much on subsidized interest rates.

**The Global Climate Partnership Fund (GCPF)** is a Public-Private Partnership dedicated to mitigating climate change through a reduction of greenhouse gas emissions in emerging markets primarily through financial institutions. ResponsAbility is the investment manager and it has the goal to achieve the reduction of CO<sub>2</sub> emissions and/or projected energy demand by  $\geq 20\%$ . Beginning in 2009 and as of October 2016 with \$ 325M it is composed of a mix of funds from different institutions (KfW, FMO, IFC, German Pension Fund, ASN BANK, among others). The GCPF offers funding to financial institutions and direct financing to energy efficiency and renewable energy projects. More than 40 thousand projects have been financed through 21 institutions in 17 countries achieving a reduction of 7.1m tCO<sub>2</sub> and 48% of energy savings to date. A key to the successful placement of this fund is participation in the country's economic development, attractive risk-adjusted return, high loss protection, diversified global portfolio, careful selection of investments by experts and technical assistance for institutions.

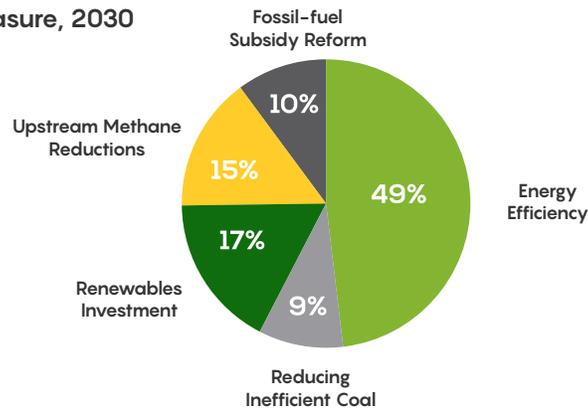




FIGURE 10

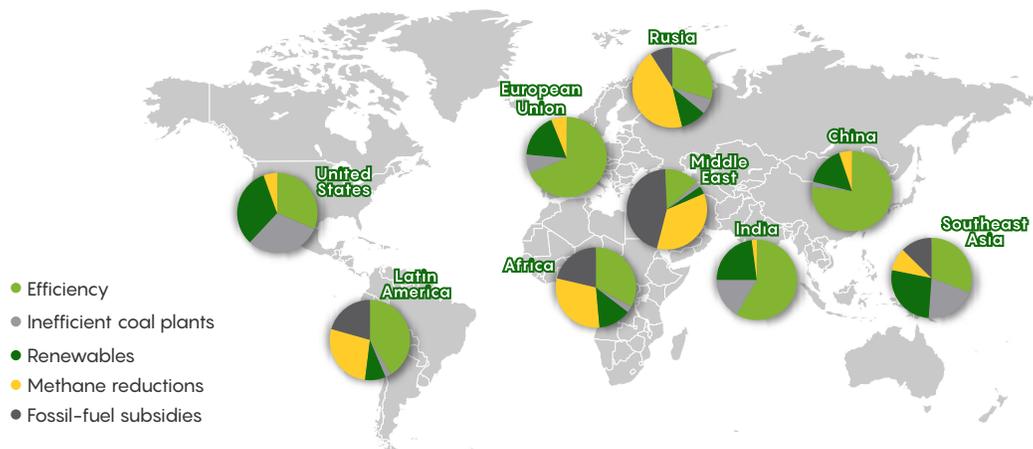
## Why Energy Efficiency Finance? ENERGY EFFICIENCY IS THE #1 CLIMATE ACTION

● Savings by Measure, 2030



IEA Energy and Climate Change WEO Special Report 2015

● GHG Emissions Reduction by Measure in the Bridge Scenario Relative to the INDC Scenario, 2030



IEA Energy and Climate Change WEO Special Report 2015

The measures in the Bridge Scenario apply flexibly across regions, with energy efficiency and renewables as key measures worldwide

According to Sustainable Energy for All, the energy efficiency investment gap amounts to US\$ 430 billion annually

Source: Sarah Challe, UNEP-FI Presentation

## Session 8

# Sharing experiences and lessons learned from the EE market in the regions

This session analyzed the lessons learned, learning by doing, do's & don'ts, and gave a deeper understanding of successful projects delivered in the energy efficiency and green technologies scenarios. It addressed the main challenges and lessons learned to develop an EE initiative. It brought to the table the discussion about the role of the NDBs, bilateral organizations and banks in promoting EE; and finally it guided the conversation towards the status of the international climate finance as suitable for developing the EE markets in developing economies.

**BANDESAL**, is implementing the ESI program in El Salvador with support from the Inter-American Development Bank (IDB). Its current work is focused in the development of market instruments including a) a standard performance contract, b) validation and verification processes for the quality of technological suppliers, and c) a new surety product in alliance with a private insurance company. The potential of energy efficiency projects and financial and non-financial barriers have been analyzed through a market study with surveys of technology providers, SMEs and local financial institutions.

**BANCOLOMBIA** presented the global concern is the development of sustainability and its challenges and mentioned the importance of global action to the local solution; especially the changes in the economic model, business model and corporate. Bancolombia expressed that it contributes to the country's environmental goals from financing with Linea Verde and financing sustainable businesses. In that sense, they have financed 44 green operations, which have saved 5,945 MWh of electric energy, 10.74 tons of fuel / coal, and 27,679 tons of emissions avoided. They have also done 164 environmental and social risk assessments from projects in which the risks associated to human rights violations were identified resulted in the rejection of financing of 17 projects. Bancolombia strengthens the bank's sustainability through three key points in the credit operation: revenue generation, cost reduction and risk mitigation. The current challenge is the generation of added value to the company.



▶ Franco Piza  
Bancolombia

**MGM** has experience in EE and RE projects in several countries in LAC. MGM mentioned that the provision of technical-financial solutions is key to solve issues in energy efficiency (EE) and in renewable energies (RE). MGM group has three complementary companies: MGM Innova Capital, MGM Innova Energy Service and MGM Innova Consulting. MGM is currently participating in the financing of biogas projects (Mexico), photovoltaic systems (Costa Rica), and four hydroelectric plants (Peru). Some of the lessons learned from these projects are:

1. Using savings to pay for investment is a feasible business model.
2. Main obstacles: a. Lack of interest from potential customers b. Lack of trust in energy service providers c. Requirements for guarantees for debt by banks d. Cycle of projects is much longer than expected.
3. Main risks for investors: a. Low energy costs b. High volatility of exchange rates.
4. Recommendations: a. Execute projects and design programs of financial schemes once the barriers in the field are identified b. Promote success stories to build trust.

**Institute for Climate Economics (I4CE)**, from France, has three research areas addressing the issues faced by actors involved in the energy transition: (i) energy, industry and climate, (ii) territories and climate (in agriculture, forestry and urban areas), (iii) finance, investment and climate. The next 15 years are critical to 'shift trillions' as the global investments requirements from 2015 to 2030. The barriers to green lending are economic, financial and legal, apart from the low awareness and lack of understanding of the climate investment opportunities, prevailing business practices, lack of in-house capacity to develop sound investment proposals to commercial banks from the demand-side (project developers). From the supply side barriers mentioned are related to lack of capacity to perform environmental lending unsuitable lending practices of banks that do not do not match the requirements of private climate investments; lack of risk management mechanisms, including credit ratings and risk transfer and pooling instruments; and profitability considerations that limit capacity building and developing loan products suitable for financing green investment.

Challenges to Green Credit Lines (GCL) deployment: additionality concerns, such as portfolio change and long-term practices; market distortion risk, concessional terms vs. market terms; and difficulty in evaluating the impact.



**Banco do Nordeste**, in Brazil, is the largest development bank in Latin America with the largest productive microcredit program oriented in South America. The first bank to create an innovative hub. Its area of action is 1 million 800 thousand km<sup>2</sup> serving 7 million people, with a portfolio of 4 million customers. They finance environmental sustainability projects - FNE Verde, with interest of 6.5% to 11%, with terms of 20 years and lack of 8 years. Mortgage guarantees, financial alignment, pledge, security, guarantee. They grant credits to renewable energies: wind, solar photovoltaic, biomass. The current challenge is distributed microgeneration financing with installed power up to 75 kW. FINESOL financing program up to 100% for photovoltaic systems, biomass with a reimbursement system based on the reduction in the electricity bill, which serves to pay the monthly installments compatible with the monthly savings.

**Nordic Development Fund (NDF)** is a financing institution supporting climate change projects in low and middle income countries. NDF raised the question of why EE is not as appetizing for the company as it seems for the external expert. The potential for EE is described as huge in most countries and advice is given that shows on short payback times and considerable savings but still the experience shows that it is not as easy to get companies to invest in EE as expected. There are some reasons for that: the resistance to take on loans and implement suggested measures, but then it starts to get difficult. Fewer than expected loans are applied for: competition as credit cards are used; the unwillingness to deal with banks (due to the traditional mistrust), unattractive conditions, security difficulties, unwillingness to limit other lending possibilities, and reluctance to let others own the investment inside their productive chain.

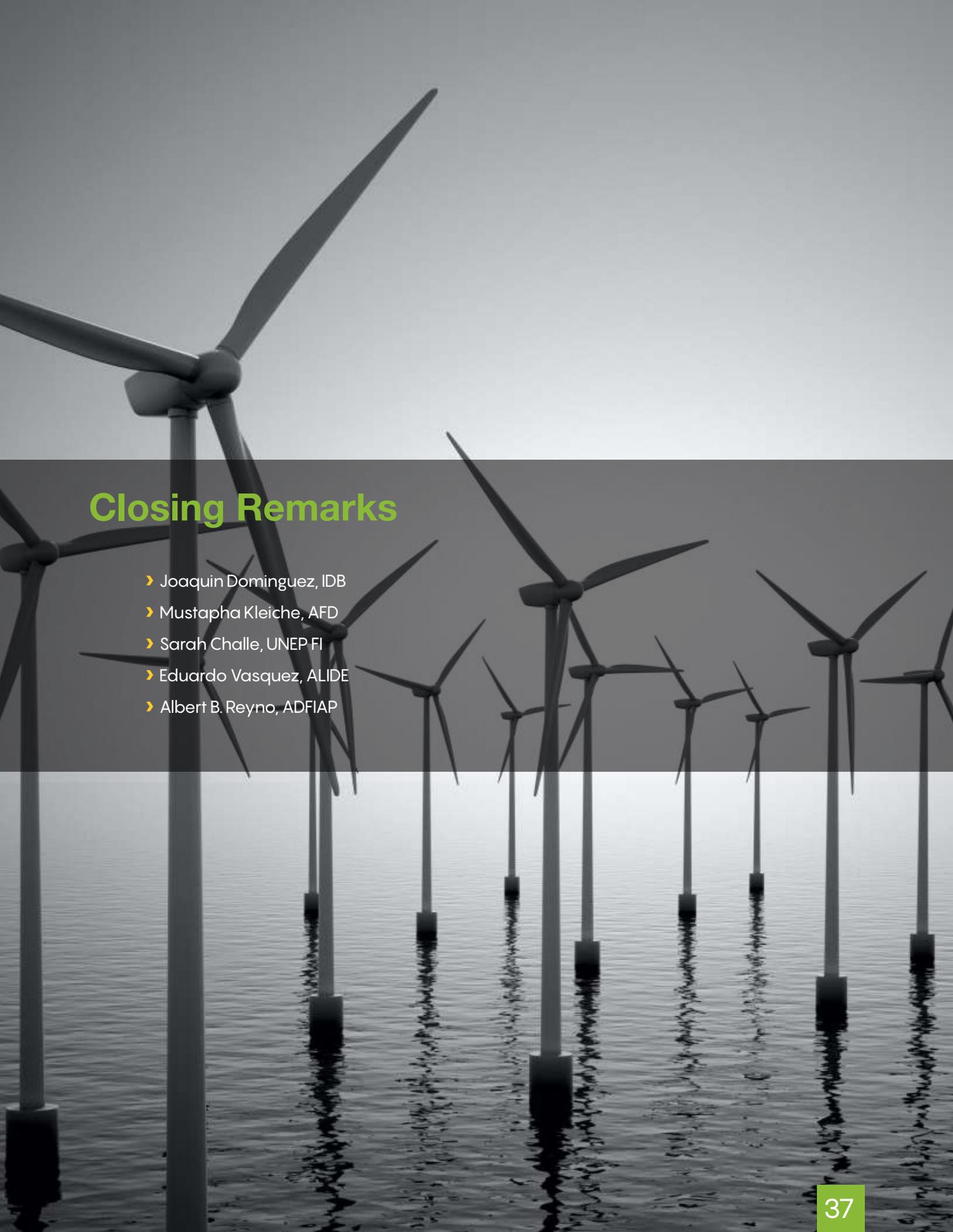




FIGURE 11



Source: Haydee Mendoza, Banesal Presentation



## Closing Remarks

- › Joaquin Dominguez, IDB
- › Mustapha Kleiche, AFD
- › Sarah Challe, UNEP FI
- › Eduardo Vasquez, ALIDE
- › Albert B. Reyno, ADFIAP



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