The Lab

Global Innovation Lab for Climate Finance

Energy Savings Insurance: Pilot Progress, Lessons Learned, and Replication Plan

Valerio Micale, Martin Stadelmann, and Leonardo Boni
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GOAL — *To provide assurance to investors and their financiers that energy efficiency projects will generate their projected financial savings*

IMPLEMENTING ENTITY — *Proponent: Danish Energy Agency; Implementing entity at regional level: Inter-American Development Bank (Latin America and Caribbean), and other regional development finance institutions (Asia, Africa). At national level: National Development Banks or similar champions/ coordinators, e.g., FIRA/Mexico*

SECTOR — *Energy efficiency*

PRIVATE FINANCE TARGET — *Small and Medium Enterprises in selected sectors (including agro-processing industry, service/commercial sub-sectors, and light manufacturing firms)*

GEOGRAPHY — *In pilot phase: Mexico; In the future: A proposed IDB Facility to replicate ESI in Latin American and Caribbean countries and replication in emerging countries in other regions (Asia, Africa)*

CURRENT STAGE — *Advanced pilot design as well as scoping for the scaling-up of the initiative in Latin America and beyond.*

SUMMARY

Investments in energy efficiency by small and medium enterprises are mostly self-financed and limited to small investments with very short payback periods, such as lighting upgrades, rather than more capital intensive measures. This is due to:

- The lack of technical capacity to evaluate energy efficiency investments
- Small and medium enterprises' lack of focus on these investments
- The market's lack of trust that energy savings will materialize
- Limited access to financing in many developing countries, where banks are reluctant to lend given the high perceived risks and the scarce information on the performance and track record of energy efficiency investments.

The Energy Savings Insurance (ESI) instrument aims to stimulate investments in energy efficiency by mitigating the risk that small and medium enterprise's investments do not pay for themselves if actual energy savings end up being lower than anticipated. The Energy Savings Insurance is accompanied by a package of complementary measures that address technical capacity, access to capital, and other barriers to investment in energy efficiency.

This report outlines progress made during Phase 3 on the design and pilot underway in the agro-industry sector in Mexico in 2015, where an expected 10 projects will be selected to test the instrument initially, and plans for the instrument to then be extended to the entire sector.

From September 2015 on, depending on the scale of funding, the main implementing entity will pilot the Energy Savings Insurance in an additional 6-14 Latin American and Caribbean (LAC) countries and sectors, through a proposed regional Energy Savings Insurance Facility. The proposed LAC Facility will initially target six-seven countries and sectors with USD 5 million in core funding expected to be provided by the Danish government. Additional donor grant support, in the amount of USD 16.9 million, will be crucial to expand the Facility to an additional seven countries, sectors and supporting pilots in the LAC Region. The proponent and implementing entity are also exploring partnerships with other agencies to replicate Energy Savings Insurance in China, India, Indonesia, and Africa (e.g. South Africa), all of which show substantial market potential for the instrument. Approximately USD 13.9 million in grants would be required for the initial extension of the program in one region outside of Latin America.

These efforts would help to move towards the Energy Savings Insurance global potential of USD 10-100 billion investments and annual emission reductions of 27-234 MtCO2 by 2030, as estimated in the previous phase of The Lab.

The Lab is a global initiative that supports the identification and piloting of cutting edge climate finance instruments.

It aims to drive billions of dollars of private investment in developing countries.

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Contact	Valerio Micale — valeriomicale@cpivenice.org

INTRODUCTION

The innovative merits and implementation challenges of the Energy Saving Insurance (ESI) instrument were outlined in The Lab's Phase 2 analysis. Since then, The Lab Secretariat has worked with prospective implementing entities Inter-American Development Bank and the Mexican development bank (FIRA) to advance the design of the pilot in the Mexican agricultural sector, specifically:

- Structuring the insurance terms,
- Engaging with insurers and verifiers, and
- Identifying 10 potential fast-track projects for implementation.

Significantly, funding is expected to be provided by the Danish government.

This document summarizes progress on the Energy Savings Insurance design and pilot underway in Mexico, extracting lessons learned for replication elsewhere, and outlines the implementation path for the instrument beyond April 2015.

PILOT DESIGN – PROGRESS AND LESSONS LEARNED

PROGRESS

Since Phase 2 of The Lab, in Mexico the prospective implementing entities have defined details for the implementation of the insurance mechanism and identified key implementation partners, such as third party verifiers, insurance companies, and re-insurance providers, and 3-5 technology solution providers for each eligible technology.

Compared to Phase 2 of The Lab, the details of individual components of the insurance mechanism in Mexico have now been developed (see Appendix 1), namely:

- Credit lines provided by Fideicomisos Instituidos en Relación con la Agricultura (FIRA) are expected to cover up to 80% of upfront investment project costs, with tenors of up to eight years, compatible with the technical payback period of the technologies covered;
- A portion of the payment to the technology solution provider for the project will be retained and released over time as estimated energy savings are realized. The initial payment will mainly cover the investment cost of the equipment. The investor pays off the installation together with maintenance costs yearly when estimated energy savings are realized (performance related fees);
- To economically incentivize the equipment providers to provide performing products, the contract is expected to include a 50% "shared savings" clause in favour of the technology solution provider for any savings achieved beyond the guaranteed amount;
- The insurance is expected to take the form of a surety, which is a well-established instrument by which the insurer backs a guaranteed performance of the insured party (the technology solution provider) vis-à-vis a third party (the Investor);
- The premium will be a one-time-payment around 1-3% of the insured value, and coverage will sought for a period as close to the payback period of the investment as feasible. The premium is paid by the technology solution provider with the client as beneficiary;
- In the FIRA case, the package of measures will also include an existing credit guarantee product to further reduce perceived credit risks by local commercial banks.

In addition, the implementing entities have already started to identify implementation partners, including:

- The National Association of Normalization and Certification for the Electric Sector (ANCE), as the verifier within the program;
- 3-5 technology solution providers per technology eligible under the program, identified based on their experience and interest in the instrument;
- Insurance/surety providers interested in offering coverage, most likely by adjusting an existing insurance product;
- Re-insurance providers interested in covering insurers/surety providers.

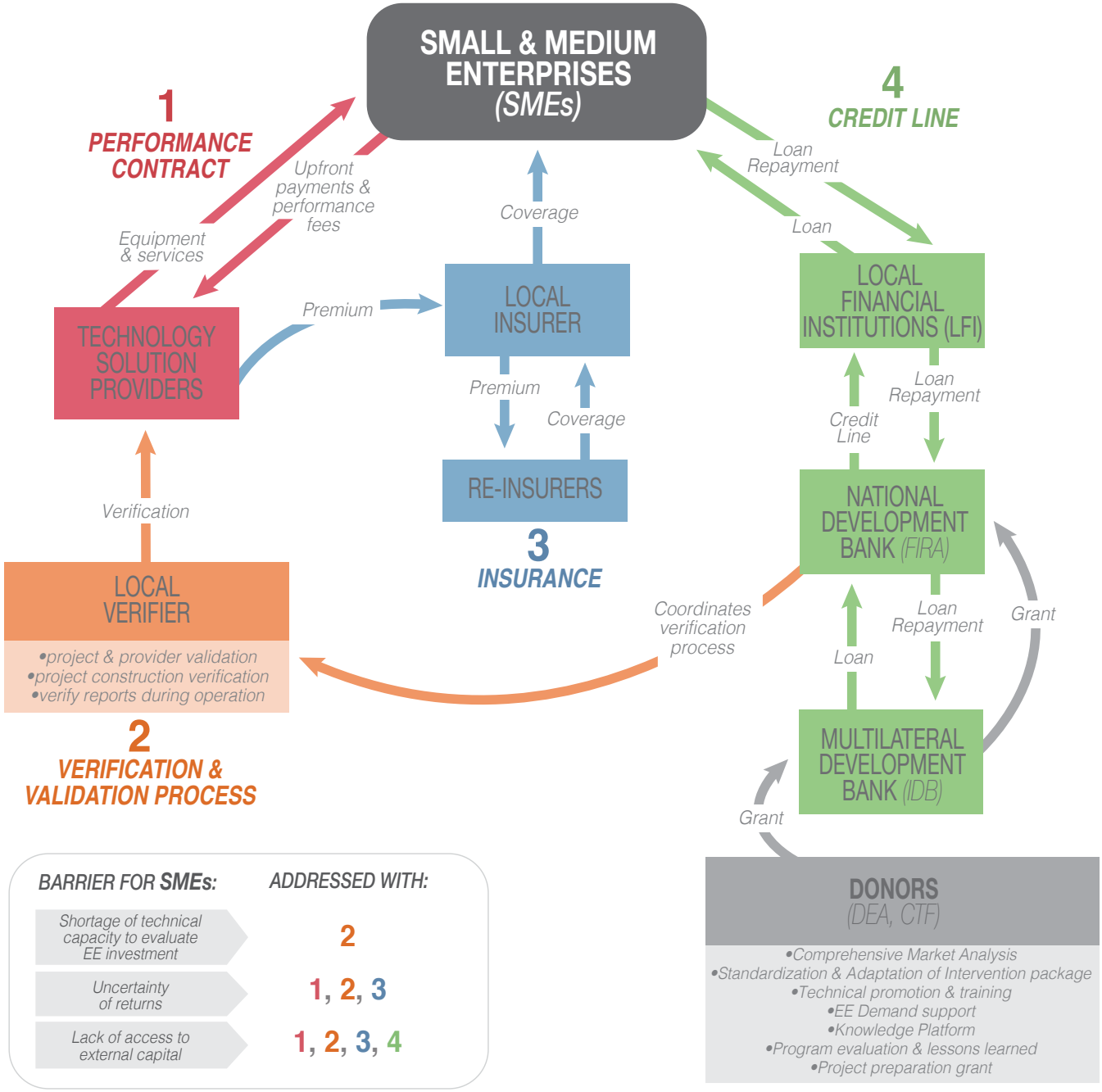
While public multilateral and national development banks (in this case IDB and FIRA) remain the main implementing entities for the program, the insurance is actively being deployed through private market players. The Inter-American Development Bank (IDB), as a multilateral development bank, is supporting the implementation of the instrument with a credit line to the local national development bank FIRA and a technical support package comprising validation and verification protocols, development of standard contracts, identification of an appropriate insurance instrument, and promotional and training activities targeting commercial banks, technology solution providers, and end users. An important role of IDB has been to facilitate access to international climate finance concessional and grant funding.

The local national development bank FIRA — with a rural sector focus — is playing a key role as the coordinator and executer of the pilot program. FIRA, like other national development banks, has a public policy mandate to ensure sustainable development. On top of this, FIRA has the advantage of combining deep knowledge of investment conditions in the rural sector in Mexico, and deep business ties with a network of local financial institutions. Like other national development

banks, FIRA can further play both the role of stimulating the development of pipelines of bankable projects (pre-investment/ credit demand structuring) and providing finance under better conditions and terms (e.g., medium and long tenors, under higher risks) than local financial markets, using resources to provide financing to their authorized local financial institutions, which may, in turn, offer sub-loans under favourable terms to eligible investment projects. In the medium term, projects would be financed by private banks' own-funds once investors and financiers increase their confidence in and experience with energy efficiency projects.

Private local insurers will offer their product to energy efficiency equipment suppliers, which will provide the insurance to their customers, with private banks making it part of their financing requirements. Private local insurers are currently involved in the design of the insurance product, encouraged by IDB to offer new products in the ESI market as they will be the entities deploying the instrument on the ground. International underwriters have also shown interest and currently are in dialogue with IDB.

Figure 1: Refined design for the instrument and pilot, with updates since Phase 2 of The Lab



Since October 2014, the prospective implementing entities have clarified that the pilot in Mexico might initially target 10 fast-track projects, for an estimated value of USD 2.14 million, mostly in agro-businesses interested in investing in energy efficiency. After the mechanism and related contracts are finalized in the first half of 2015, technology solution providers are expected to analyze the technical and economic viability of eligible energy efficiency projects for potential investors from the agro-industry sector, with the aim of finalizing contracts in the second half of 2015. The potential 10 fast-track projects have an estimated aggregated value of USD 2.14 million. Overall, public investment needs for the potential 10 projects correspond to a total of USD 70,000-80,000 grant support covering the insurance premiums, and a total of USD 1.6 million loan financing through the credit line (see Appendix 2).

The technologies covered by the ESI pilot programs have been selected taking into account their market potential as well as their potential for applying a standardized approach to project design and contracting. The technologies include air-conditioning, electric motors, boilers, refrigeration, compressed air systems, cogeneration, refrigeration, solar water heating, and LED lighting (under development).

Beyond the 10 fast-track projects, the overall target for the pilot is to stimulate investment in 190 energy efficiency projects, with key technologies expected to be refrigeration, industrial boilers, and compressed air systems. These projects could mobilize USD 25 million in investments through 2020.

LESSONS LEARNED

ESI and its complementary measures could absorb up to 80% of the impact of potential underperformance of energy savings during the pay-back period, significantly reducing risk for the end user/equity provider and the debt holder. Additional financial or technical support may be needed to ensure that technology paybacks and the length of insurance coverage correspond to investors' needs.

Early lessons from the program are limited to experiences related to its design phase, and simulations based on the current instrument's design. Our financial modeling based on the latest information from Mexico shows that the instrument package (including loans) reduces the burden of risk to the investor and loan providers, ensuring that the risk of underperformance is distributed equitably among different stakeholders. Risk mitigation is particularly important for guaranteeing the involvement of banks: the package of measures under the ESI is able to absorb 60-80% of impact on debt service repayments, with performance fees being important in the context of moderate risk events and ESI intervening when higher impacts occur (see Figure 2).

The insurance instrument and attached package of measures also improves the revenue profile of energy efficiency investment, allowing investors to meet return expectations even in the context of significant deviations from agreed savings performances. For example, an investment in an industrial boiler implies a 26% after tax internal rate of return to the equity investor, provided that it will achieve expected results. However, in the absence of a risk mitigation instrument, an underperformance of more than 20% (compared to agreed savings) may already make the investment unprofitable. ESI and its complementary measures significantly reduce the risk, enabling the project to meet minimal equity returns even in the case of 50-60% underperformances of the energy efficiency technology (see Appendix 2 for more information).

Our financial analysis (see Appendix 2 for more details) testing the impact of instrument's terms on the viability of the project in the Mexican context, suggests the following recommendations for further improvement of the instrument:

- Durations of the loan and insurance contract need to be compatible with the technical payback period of the energy efficiency projects to ensure the financial viability of the energy efficiency investment;
- The payment of insurance premiums have a marginal impact on the viability of energy efficiency investment;
- Fast claim payments by the insurance provider in case of underperformance of the project need to be ensured so as to reduce credit risk to the local financial institutions;
- Credit risk is also further reduced if higher flexibility is allowed by banks on loan repayments. To this end, the proponent is considering introducing an interest-only installation grace period of six months to one year, in alignment with standard practices on construction loans.

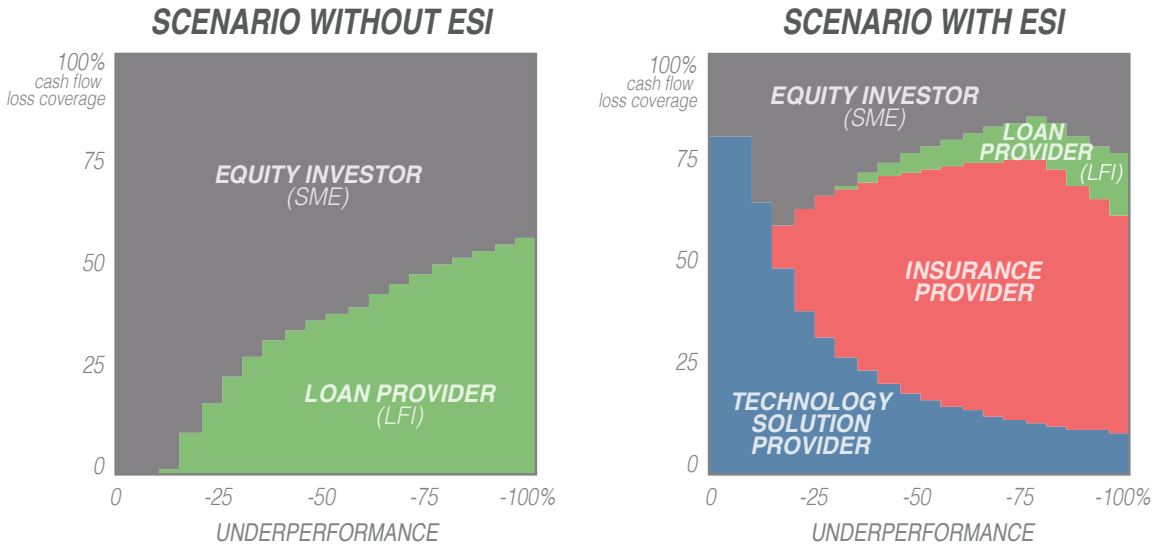
IMPLEMENTATION BEYOND APRIL 2015

MEXICO PILOT IMPLEMENTATION

The prospective implementing entity is scheduled to finalize negotiations with Mexican insurance companies in order to make the ESI operational from June 2015. The ESI has reduced relevant implementation risks in Mexico, and implementation is fully funded.

The prospective implementing entity, IDB, has taken several measures to mitigate relevant implementation risks in Mexico, including adapting insurance contracts, engaging key stakeholders, and mitigating political risks.

Figure 2: Distribution of underperformance across the different stakeholders.



An insurance expert has been hired to adapt existing insurance contracts; the involvement of the local development bank, FIRA, mitigates the risks of local bank non-participation; and local insurance companies have been contacted early on to make sure the instrument fits their needs. Pilot project criteria have already been established to ensure fast implementation once the insurance contracts have been agreed upon, and transaction costs are kept low through standardization. Finally, regular meetings of IDB and FIRA with local authorities reduce political and policy risks. IDB is limiting the risk that some stakeholders (investors, technology solution providers) are not participating through:

- Measures, such as long term funding for pilot projects; promotion of standard contracts; third party validation and verification of technology solution providers and projects
- Extensive consultations with market participants on draft formats and instruments, focusing on market acceptability and minimized transactions costs through streamlined procedures)

The implementation in Mexico is fully funded. IDB has already secured USD 0.5 million from Denmark for technical assistance, USD 2 million from the Clean Technology Fund for the programs' design and initial ESI subsidies, and provided USD 20 million of IDB non-concessional loans for credit lines through FIRA.

The final step toward implementation of the Mexico pilot is finalizing contracts with local insurance companies. This step is expected to conclude in mid-2015, at which point, an IDB report for the instrument proponent and core funder, the Government of Denmark, should provide insight on lessons learned in the development phase of the ESI.[1] This report will support the development of further pilots in Latin America.

1 Lessons will both come from the ESI pilot in Mexico as well as another ongoing pilot in Colombia (energy efficiency in hotels and hospitals) that IDB has been developing outside The Lab.

SCALING UP IN LATIN AMERICA

The prospective implementing entity, supported by the instrument proponent, is in the process of designing its regional scale up and replication, to be implemented in six-to-seven countries and sectors beginning in 2016. Depending on additional donor support, seven additional Latin American and Caribbean countries and sectors could be covered.

The prospective implementing entity, IDB, is currently developing a regional ESI program in Latin America and the Caribbean, including the identification of national implementing entities for six-seven interventions in several countries/sectors. These interventions will be selected based on an assessment of sectors and technologies, as well as interactions with key national stakeholders. Initial discussions are taking place with potential national implementing entities in Brazil, Chile, Colombia, Dominican Republic, El Salvador, Mexico, Nicaragua, Panama, and Peru.

The instrument proponent, the Government of Denmark, expects to approve this regional program for funding in September 2015 and to provide USD 5 million for the replication of the ESI in six-seven countries and sectors. A further estimated USD 16.9 million would enable the Latin America and Caribbean ESI initiative to add another seven countries, sectors and support pilots. Additional resources would be required if financial incentives are needed (e.g., for subsidizing technology solution provider premiums for ESI and for supporting partial credit guarantees to commercial banks). All these figures do not include potential IDB finance for dedicated credit lines, expected to be USD 20-40 million per country and sector (details on funding needs and use are available on request).

REPLICATION BEYOND LATIN AMERICA

Development banks and government agencies outside Latin America have expressed interest in replicating the ESI in Asia and Africa

In addition, other development banks and government agencies are interested in replicating the ESI in Asia (e.g. China, India, Indonesia) and Africa (e.g. Senegal, Tunisia, South Africa), which are all markets with substantial potential for the ESI. The Danish Energy Agency and China's National Energy Conservation Center (NECC) have agreed on a work program for Sino-Danish Cooperation in the field of Energy Efficiency in 2015. A feature of this program will involve joint Sino-Danish research on the ESI potential in China. Furthermore, The Lab Secretariat has identified development banks and government agencies that are exploring the ESI in India, Indonesia, South Africa and other African countries. Each of these markets has substantial energy savings potential, the policy framework required, an ESCO market not-yet fully developed, and small and medium enterprises that struggle to access debt from local commercial banks for investments in energy efficiency.

To extend the initial program to regions or countries outside Latin America, around USD 13.9 million in grants from donors would be required for seven additional countries or sectors. Such an extension to another region would have to be coordinated by an international development finance institution with a strong presence in the relevant region (details on funding needs and use are available on request).[2]

IDB has conducted international and local dialogues with representatives of insurance and re-insurance industry as well as verifiers, and is planning a further dialogue with technology solution providers and institutional investors to draw on their experience and explore their interest and possible role in a scaled up initiative in Latin America and the Caribbean and beyond. While the program is still in a pilot phase, these dialogues explore the interests and needs of different partners, pricing structures, potential standardization approaches, and the possibility for existing insurance products to be adapted to fit the ESI, among other topics. In a subsequent stage, IDB will explore to what extent the elements of standardization of contracts, project validation, and savings verification may mobilize the interest of institutional investors, such as pension funds, e.g. through securitization and green bonds. All these efforts would help to move the ESI to a global potential of USD 10-100 billion investments and annual emission reductions of 27-234 MtCO2 to 2030, as estimated in the previous phase of The Lab.

ROLE AND REASONS FOR PUBLIC FINANCE

It is expected that public finance needed for program development, subsidies, and credit lines can be gradually phased out in pilot regions and sectors.

An overview of secured and needed funding can be found in Table 1. Grants are needed for program development and initial subsidies for verification and insurance premiums, while non-concessional loans enable credit lines through local financial institutions that are reluctant to enter the energy efficiency market. All this public finance is expected to be phased out after the pilot phase as local technological providers, banks, insurers, and verifiers become familiar with the ESI and energy efficiency technologies.

2 This includes an estimated USD 2 million in comparison to the scale-up in Latin America and the Caribbean for the design of the Standardized Intervention package and a regional knowledge management platform.

Table 1: Available and needed funding for different ESI pilots

ESI pilot	Grant needs ($ mn)	Status	Loan* needs ($ mn)	Status
Mexico pilot in agriculture sector (2015)	2.5	Secured (Clean Technology Fund, Denmark)	20	Secured (IDB)
Latin America and Caribbean Regional facility: 6-7 initial countries and sectors (2016)	5	$5 mn expected to be provided by Denmark	120-210 - preliminary IDB estimates	Expected to be provided by IDB
Latin America and Caribbean Regional facility: 7 additional countries, sectors and supporting pilots	16.9	Not yet secured – hoped to be provided by additional donors	140-210 - preliminary IDB estimates	Expected to be provided by IDB
Replication in 7 countries and sectors in Asia or Africa	13.9	Not yet secured – hoped to be provided by additional donors	To be estimated	Not yet secured

Note: based on preliminary IDB estimates. * Non-concessional loans for credit lines

APPENDICES

Appendix 1: ESI, Mexican pilot - structure of mechanisms and activities that support the ESI

Validation of equipment suppliers and projected savings: Estimated energy savings of a technology are determined on the basis of technical analysis performed by the Program's third party Verifier, the National Association of Normalization and Certification for the Electric Sector (ANCE). After the loan request has passed its initial credit review of the client, the local financial institution sends the project proposal package to FIRA, who then requests that the Verifier validate the qualifications of the technology solution provider to participate in the program. The Verifier also validates the project's design, its projected energy savings, and its monitoring and verification (M&V) scheme, according to a technology-specific methodology and notifies FIRA. Later, ANCE verifies proper installation of the equipment and the proper disposal of the old equipment. Finally, the verifier arbitrates any disagreements that may arise between the supplier and end user with regard to energy savings. The cost of the validation of projects and technology solution providers and the verification of project installation and related savings are expected to be covered, at this stage, with public funding, possibly using CTF resources (IDB, 2015).

Provision of FIRA loans via local banks: If the assessment by the Verifier is positive, FIRA notifies the local bank that it is entitled to funds from the program's concessional credit line. Based on validation of project proposal, the local bank disburses the credit to the client at concessional rates. The loans would typically cover 75% of upfront project costs (80% maximum) and provide tenors ranging from three years for some types of motor upgrades and up to eight years for cogeneration projects (IDB, 2015). After six months, third party verifiers will check whether the old equipment has been replaced and properly disposed of and if the approved monitoring activity has been put in place as proposed in the validated project. A failure to satisfy these requirements would result in the return of the credit to the local bank / FIRA (CTF, 2014).

Standardized contracts and guarantee mechanism (performance payments and insurance): Purchase and service contracts between the investor and the technology solution provider are standardized for each eligible technology type and include energy performance guarantee clauses, clarifying how performance risk is shared between the parties involved in an energy efficiency project:

- In order to address moral hazard, part of the performance risk is borne directly by technology solution providers, linking a portion of the contracted payments to the performance of the project. Upon installation, the technology solution provider is paid the cost of the equipment itself. Payments for design, installation, maintenance costs, monitoring and verification, and profits are withheld by the investor as the supplier's guarantee of savings. An agreed upon portion of the technology solution provider's guarantee will be paid in each payment period in which the guaranteed savings are achieved, and will be used to compensate the end-user in periods in which savings are not realized (D'Addario, 2015).
- The remaining risk is covered as a last recourse by the energy savings insurance, purchased by the technology solution providers to back the remaining performance guaranteed to investors. Private insurance will offer coverage for the energy efficiency savings at a one-time payment of 1-3% of project costs depending on the risk of the technology solution provider, for up to five years. The premium is expected to be covered by public funds for the pilot phase. The form adopted by the ESI for the pilot will be a surety, rather than pure insurance (IDB, 2015).[3]
- Should the project over-perform, the equipment provider will receive 50% of the savings achieved beyond the guaranteed amount from the investor. Shared savings would add to performance related payments for that year (D'Addario, 2015).

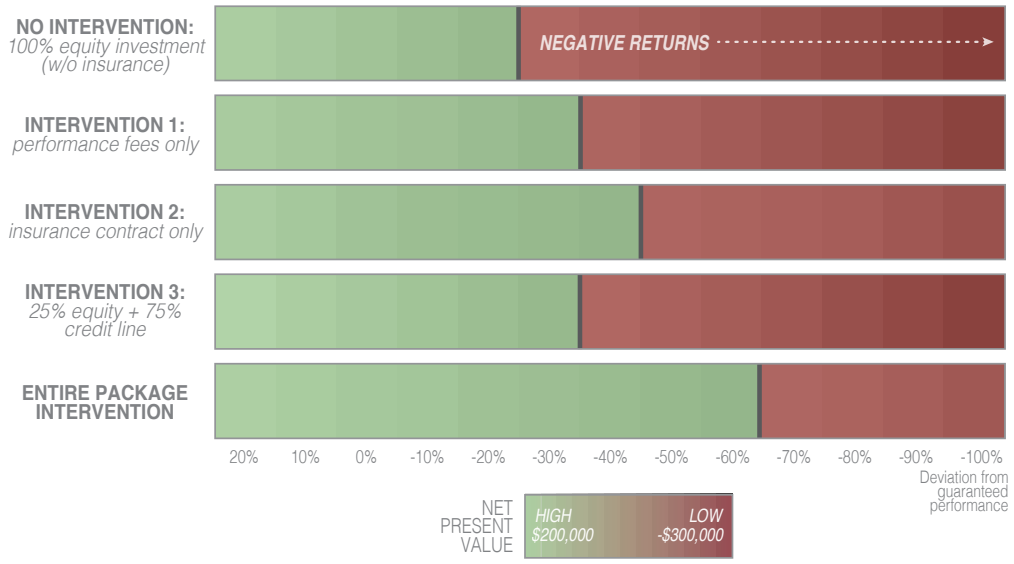
Periodic reporting on energy savings achieved by the equipment sold issued by the energy efficiency technology solution provider: Such reports are the basis under which energy efficiency technology solution providers get paid the balance of the project price by the investor. If the investor does not agree with the energy savings reported by the technology solution provider, the third party verifier would review the report on energy savings and determine the actual energy savings generated. If these are below those promised by the energy efficiency technology solution provider to the beneficiary at the beginning of the project, the beneficiary deducts the shortfall from the performance fee due the energy efficiency technology solution provider. If such amount is not enough to cover the shortfall in energy savings, the beneficiary firm can make a claim on the performance insurance policy for the difference (CTF, 2014).

Appendix 2: Financial model analysis

We use a discounted cash flow analysis of the project's financial profile to estimate the project's revenues, liabilities, and profitability. We used financial metrics as a basis for estimating the impact of underperformance events on returns for the investor and the ability of the project (in this case a boiler used for industrial steam generation in the agro-industry sector in Mexico) to pay back loans, with or without the support of ESI (including elements from the package of measures). We also tested with a sensitivity analysis different settings of the instrument features and parameters.

3 In Mexico there is an insurance market, primarily serving individuals; and a sureties (fianza) market, primarily for firms. To avoid the uncertainties of submitting a new product to the regulatory process, the Program is currently working with afianzadoras (IDB, 2014). In the case of savings underperformance, the afianzadora has recourse to the technology solution provider's collateral; its risk assessment is then also linked to the value of the asset provided as collateral. Were underperformance covered by insurance, risk management would be linked to the likelihood of loss in the overall portfolio covered.

Figure 3: impact of ESI intervention on equity holder expected NPV for a investment in an energy efficient boiler



Note: equity NPV (discounted at 17.6%) calculated for different scenarios and different levels of underperformance.

The insurance instrument and attached package of measures improves the revenue profile of energy efficiency investment, allowing the investor to meet return expectations even in the context of significant deviations from agreed savings performances. An investment in an industrial boiler implies a 26% internal rate of return (IRR) after taxes to the equity investor, independent of the instruments used for the risk coverage, provided that it achieves expected results. However, an underperformance of more than 20% (compared to agreed savings) may already impact on expected returns and make investment unprofitable. The Figure 1 shows that ESI and other instruments in the package significantly improve the risk profile for the investor even in case of underperformance of the energy efficiency technology, increasing the chances of meeting financial expectations of the investment also when significant deviations from guaranteed performance occur: The insurance alone shifts break-even point from 20% to 40% underperformance, increasing to 60% when performance clauses and credit lines are also packaged with the instrument.

Standard ESI contracts including performance-related fees together with the ESI are able to absorb 60% to 80% of the impact of potential underperformance during the first five years, significantly reducing risk for the equity provider and, importantly, the debt holder. The instrument reduces the burden of risk to the investor and loan providers, ensuring that the risk of underperformance is distributed equitably among different stakeholders. Risk mitigation (through verification, insurance, and guarantees) is particularly important for securing the involvement of banks. Figure 2 shows how underperformance risk is distributed between different actors during the first five years, corresponding to the years needed by the investor to pay back a 75% loan is provided by a commercial bank. When investment is not backed by ESI or performance related fees, underperformance impacts immediately on the debt provider once it starts eroding the revenues that are needed to pay back the loan.[4] Risk mitigation instruments which are part of the package of measures for the ESI are instead able to absorb 60% to 80% of such impact, with performance-fees being important in the context of moderate risk events and ESI intervening when higher impacts occur.

Public support aims at promoting the market uptake of the instrument, through a grant covering payments of the insurance premium and, more importantly, a credit line sustaining 75% of investment. A part of the grant currently allocated to the pilot is dedicated to energy efficiency demand incentives, including the coverage of the insurance premium and of the costs for validation, monitoring, and verification, corresponding to around 2% of upfront costs. Such a grant would provide a marginal contribution of 1.5% of project costs over the lifetime of the project. More significant from the investor's side is the credit line (75% of project costs), which has the merit to significantly reduce its equity commitment and to increase after-taxes equity IRR from 26% to 41%.[5] Overall public investment needs for an expected set of 10 projects of the pilot valued USD 2.14 million (see table below for more info) correspond to USD 70,000-80,000 grant support and USD 1.6 million finance through loans[6] (out of a total USD 1.5 million

4 It is worth noting that inability of the investment to generate enough revenues to pay back the loan does not necessarily mean that the loan defaults, as such investments are usually made through balance-sheet finance rather than via a project financing, and can be bridged with funds that the company can retrieve from other sources (e.g., business revenues). Adequacy of revenues is, however, an important indicator to reflect the financial independence of the investment.

5 Assuming a scenario where guaranteed savings are met.

6 We estimated this figure assuming 75% loan coverage and 2.5% premium (calculated as share of upfront project investment costs). We assume that loan and contract tenors are set to cover the technical payback of the project. We also assume that withheld payments representing performance fees mainly cover maintenance costs.

Project Types					
Technologies	Investment (USD)	Annual energy savings (USD)	Annual energy savings (KWh)	Assumption of no. of fast track projects for the pilot	Total fast-track projects Investment (USD) TOTAL
Electric engines	9,500	3,102	28,806	1	9,500
SWH	35,000	6,477	59,313	1	35,000
Industrial boilers	100,000	37,261	712,346	3	300,000
Compressed air systems	30,000	7,387	68,589	1	30,000
Industrial refrigeration systems	90,000	30,179	280,234	3	270,000
Cogeneration	1,500,000	309,053	3,773,735	1	1,500,000
TOTAL					**2,144,500**

Source: IDB (2015d), potential investments identified by market study for fast-track phase of the pilot, based on average investments' features.

grant resources and USD 20 million loan resources allocated for Mexico).

Durations of the loan and insurance contract compatible with the technical payback of the energy efficiency projects are essential to ensure the viability of the energy efficiency investment. Additional public support could be given to ensuring quick claim payments in case of underperformance, increase flexibility on loan repayments and subsidize debt interest rates. We ran a sensitivity analysis to test the impact of differing contract terms[7] on the viability of the project under different performance scenarios. Viability is assumed to depend on the profitability of the project for the equity investor and on the amount of debt payments at risk for loan providers.

Our model shows that over-performance fees paid to the equipment providers have only a marginal impact on expected returns for the investor, and thus could be an excellent incentive for equipment providers to supply better products, possibly in schemes offering equipment providers more than 50% of over-performing savings.

In case of 50% underperformance, sensitivity analysis suggests:

- **The duration of the loan and insurance contract is the most important factor affecting the viability of the energy efficiency investment:** For the instrument to be effective in mitigating risk for the loan provider, tenors must correspond to the technical payback of the project;
- **Grant support on the insurance premium would have a marginal impact on the project viability.** Much more relevant for the equity investor is support deriving from the credit line. This, of course, significantly increases exposure for the loan provider; this risk can be offset, however, by making sure that underperformance is covered by the insurance;
- **Higher loan interests impact on the investor's revenues, but also indirectly increase risk for debt holder, with significant changes when rates exceed a limit threshold:**[8] public support could be used to cover a portion of debt interest payments;
- **The time required for insurance claim payment impacts particularly on debt repayments:** reducing the time required for insurance payments, or alternatively increasing flexibility on the terms for loan repayments, would allow the investor to find the resources to pay back the loan directly from the project, significantly reducing risk for the debt holder. To this end, an interest-only installation grace period of six months to one year should also be considered (IDB, 2015).

7 These include: 1) Share of investment covered by the loan, 2) Loan and contract tenor, 3) Cost of debt, 4) Shared savings in case of over-performance; 5) Insurance premium (including M&V); 6) Share of technically achievable savings guaranteed by the provider; 7) % Asset (annual savings) covered by ESI; 8) Time required for insurance repayment (years).

8 Threshold varied based on underperformance. In a 50% underperformance scenario such threshold would be 15%, but that would decrease further for higher underperformances.

Appendix 3: Residual implementation challenges and risks addressed in Mexico Pilot

Implementation challenges / risk	How does IDB address the risk / What are the contingencies?
Transaction costs. Transaction costs can limit the application of the instrument to large energy efficiency initiatives, limiting its potential for scaling up	All mechanisms are expected to be standardized and as simplified as possible. This is an ongoing process with the goal of reducing transaction costs significantly, so that they can be fully internalized in the insurance costs at some point.
ESI depends on existing contract types in the country (e.g., EPC or vendor contracts). A workable insurance product needs a liability related to the performance, but defining new types of guarantee contracts may take time.	A local legal insurance expert has been hired in Mexico to align the contract to the insurance company requirements and local framework. Energy performance will be added to an existing, widely-used, construction completion bond.
Political and policy risk. Government change may lead to adjustments in regulations and financial incentives, affecting operation of businesses and repayment of loans.	The pilot and program is based on frequent interaction and collaboration with the National Development Bank and coordination with relevant ministries including the Finance Ministry. While not eliminating political and policy risks, this substantially limits risks.
Investors' creditworthiness. More certain returns lower loan default risks, indirectly increasing investors' creditworthiness for banks, but strength of balance sheets remains a factor.	FIRA mitigates credit risk through financial guarantees it offers to commercial banks. Furthermore the financial assessment undertaken by the insurance providers, which assess the fiduciary side of the technology solution providers, should cover part of credit and investment risks perceived by commercial banks.
Participation of banks. Entry cost barriers for banks associated to the development of a new business line could discourage their participation in the pilot.	The program is complemented by long term concessional financing provided by FIRA as second tier bank, an incentive for local financial institutions (LFIs) to intermediate resources. In addition, LFIs are expected to perceive less risk associated to energy efficiency projects given that technology solution providers and energy efficiency projects would already have gone through a financial assessment and are covered by insurance. Furthermore, FIRA is training LFIs and promoting a pipeline of bankable projects, enhancing the volume of energy efficiency business that the Program will generate for LFIs.
Participation of insurers. Residual entry costs for local insurers associated to the development of a new business line (e.g., building understanding of energy efficiency projects) could impact on the participation to the pilot of some players.	Insurers (surety firms) were pre-identified and demonstrated interest to participate in the Program based on their assessment of the business opportunities and risks. The third party validation and verification of technology solution providers, energy efficiency project quality and delivery provides for a strong incentive for insurers to participate in the program. Furthermore, reinsurance companies will be involved, mitigating the risk borne by local insurers and facilitating the participation of other insurance companies.
Participation of technology solution providers. Equipment suppliers and technology solution providers may be discouraged from participating in the program by compliance requirements required by the programs and higher costs.	Key technology providers have been identified and expressed interest to participate. They will be involved in the discussions when the contract/and insurance/and validation mechanisms are finalized. Moreover, the program provides the suppliers with a significant, low-risk, business opportunity – repeat sales to previous customers with serviceable, but low-efficiency equipment.

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