
Energy Savings Insurance

Phase 2 Analysis Summary

Valerio Micale and Jeff Deason
13 October 2014

GOAL □

To provide assurance that energy efficiency projects will generate financial savings.

CURRENT STAGE □

Pilot

SECTOR □

Energy Efficiency

PRIVATE FINANCE TARGET □

SMEs from the agro-industry sector, services/commercial sector and industry sector, where energy efficiency measures can be standardized.

GEOGRAPHY □

For pilot phase: Mexico

In the future: Emerging markets (largest absolute potential in BRICS and the 'next eleven')



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.

Acknowledgements

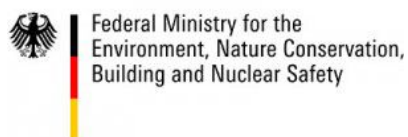
Information included in this report is based on high-level preliminary analysis, subject to changes based on the more in-depth analysis that would be performed during Phase 3 of The Lab assessment, provided Lab Advisors select this instrument.


The authors of this brief would like to acknowledge the following professionals for their cooperation and valued contributions including the proponents Assar Qureshi, Christina Graaskov Ravn, Hans Jacob Eriksen, and Nikolaj Lomholt Svensson (Danish Energy Agency), the working group members Thomas Liesch (Allianz), Matt Hale (Bank of America Merrill Lynch), Gabriel Thoumi, Paul Bugala (Calvert Investments), Oliver Straubenmueller (Hannover Re), Kiyoshi Okumura (International Finance Corporation), Asger Garnak, Matthew McClymont, Patrick Doyle (Inter-American Development Bank), Phil James (UK-DECC), Daniel Morris, and Stacy Swann (US Treasury). The authors would like to acknowledge the contribution of the experts Jose J. Gomes Lorenzo, Maria E. Netto de A. C. Schneider, Maria Margarita Cabrera Botero (Inter-American Development Bank), Patrick d'Addario (Fiorello H La Guardia Foundation), Chris Villiers (Parhelion), Sergio Zobot, Janis Hoberg (Bloomberg New Energy Finance), Mauro Roglieri and Gloria Duci (MR Energy Systems).

The authors would like to thank Barbara Buchner, Jane Wilkinson, and Elysha Rom-Povolo for their continuous advice, support, comments, and internal review.

Front cover photo by Flickr user Cobalt123.

Analytical and secretariat work of The Lab is funded by the UK Department of Energy & Climate Change (DECC), the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), and the U.S. Department of State.



Sector	Energy Efficiency
Region	Mexico, other emerging economies (BRICS, Next eleven, others)
Keywords	Energy efficiency, Insurance, Lab
Contact	Valerio Micale  valerio.micale@cpivenice.org



© 2014 Global Innovation Lab for Climate Finance www.climatefinancelab.com All rights reserved. The Lab welcomes the use of its material for noncommercial purposes, such as policy discussions or educational activities, under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License. For commercial use, please contact lab@cpivenice.org.

SUMMARY

Small and medium enterprises' (SMEs) investments in energy efficiency (EE) are mostly limited to those with very short payback periods, such as lighting upgrades, rather than more capital intensive measures. The Energy Savings Insurance (ESI) instrument aims to scale up SMEs' EE investment by providing a package of measures that boost investor confidence in the financial viability of EE investments. The core of the package is a new insurance product to cover energy savings for specifically defined and verifiable EE measures in targeted developing countries. In many cases, including in the initial pilot planned for Mexico, the insurance would be accompanied by additional interventions to mobilize investors, energy service providers, and financiers.

Plans to implement a pilot in Mexico are well advanced — a business model that complements existing initiatives has been developed, initial public sector funding commitments secured, and there is significant interest from the private sector. The proponent aims to scale-up the initiative regionally, with the involvement of the IDB, possibly linking with initiatives in other regions. The instrument could mobilize USD 20-60 million in private investment in the Mexico pilot through 2020. Out to 2030, expanding ESI to BRICS and 'Next 11' countries could catalyze significant investment and generate annual emission reductions of 27-234 MtCO₂.

The success of the instrument over the long term depends on the engagement of an appropriate implementing institution (such as national development banks) at the country level, that are willing and able to implement the insurance tool paired with a comprehensive package of instruments. Supportive regulatory environments will enhance the impact of the instrument, but the package of instruments may also provide useful input to national regulators wishing to support energy efficiency market development.

Interested donors, including development banks, international financial institutions, and governments could provide strategic, complementary support to the program by fast-tracking pilot investments in different regions and demonstrating the effectiveness of the mechanism. Support could also help to extract early valuable learning from the pilot by assessing the initial performance of the business model and identifying adjustment needs.

INSTRUMENT DESCRIPTION

By ensuring that energy efficiency projects deliver on their projected savings, Energy Savings Insurance aims to foster increased energy efficient investment by small-medium enterprises (SMEs).

Many investments in energy efficiency pay their investors back over time, even if it takes years. Despite this fact, when small and medium enterprises (SMEs) invest in energy efficiency, it is mostly limited to small investments with very short payback periods, such as lighting upgrades, rather than more capital intensive measures, because of the lack of technical capacity to evaluate energy efficiency investments and because investments are mostly self-financed. The Energy Savings Insurance (ESI) instrument proposed by the Danish Energy Agency aims to scale up SMEs investment by mitigating the risk that energy efficiency investments do not pay themselves back and improving confidence of investors.

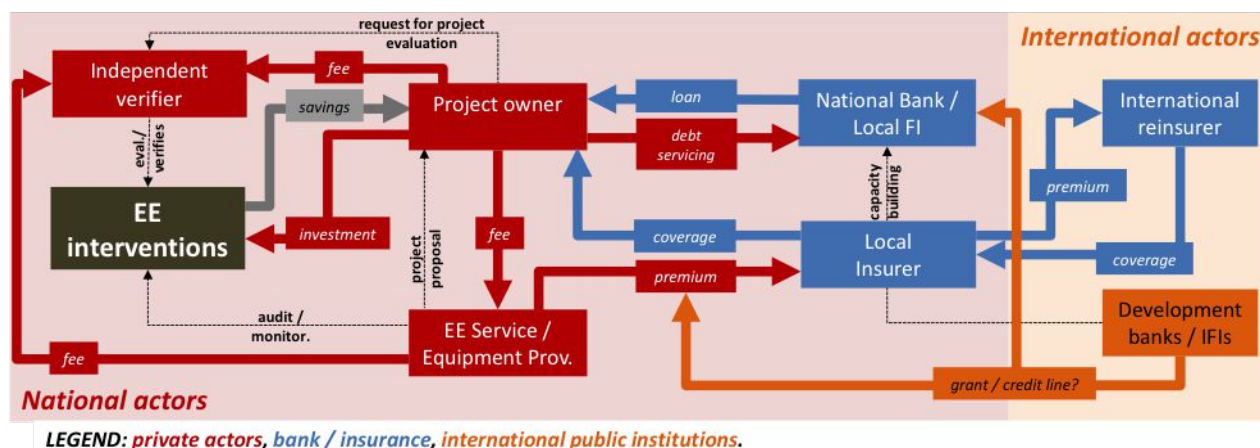
To achieve this goal, Energy Savings Insurance (ESI) would provide a financial risk mitigation package that includes an insurance product¹ that would cover projected energy savings for specifically defined and verifiable energy efficiency measures determined on the basis of technical audits performed by third party verifiers. Certified equipment providers and energy service providers (including Energy Service Companies - ESCOs²) offering contractual guarantees for the performance of their products, would purchase the insurance product (D'Addario, 2014) to back their guarantee with the view of increasing energy efficiency project sales to their clients, primarily SMEs from the agro-industry sector, services/commercial sector as well as those parts of industry where energy efficiency measures can be standardized (IDB, 2014a). In many cases, including in the initial pilot planned for Mexico, the insurance product will be accompanied by a package of complementary interventions, including credit lines and third-party verification systems.

In the event that projected financial flows associated with energy efficiency savings are not realized, the instrument would provide partial compensation to SME project owners; additional compensation would be derived from retained performance fees

¹ In the following, the financial risk mitigation instrument is assumed to take the form of insurance (or a "surety" as a variant of this). However, the exact form will depend on country-specific circumstances. In the presence of barriers to an insurance mechanism, an alternative option could be a guarantee instrument.

² ESCOs are not an explicit target of this proposal but providing their proposals are solid, there is not in principle problem including them as energy service providers. While we do not present an ESCO-oriented business model here, the instrument could be of interest to ESCOs which have the technical know-how to assemble projects, but in certain cases may not have the financial capacity. (IDB, 2014a)

Figure 1: Energy Savings Insurance mechanism



withheld by the investor SME instead of being paid to the energy service provider³ in order to address moral hazard. Figure 1 illustrates the structure of the ESI mechanism.

STAKEHOLDERS

- ☒ **An implementing institution**, likely a national development bank, operating at country level with a public policy mandate would coordinate the different elements of the intervention package including quality assurance through development of the contractual and validation framework supporting the insurance instrument. The implementing institution would help establish the initiative in the country, by partnering with international organizations and interacting with local insurers and international reinsurance companies; third party independent validators; local commercial banks; and energy service providers. The implementing institution would also engage national or local government actors with a view to linking the initiative to national energy efficiency plans, including by implementing any legal/regulatory adjustments necessary to make the instrument compatible with the local environment.
- ☒ **Local insurers** will also be important implementing parties of the mechanism by covering project owners based on a premium paid by energy efficiency service/equipment providers.
- ☒ **Energy efficiency service/equipment providers** will be verified by a third party independent validator, and be the main point of contact with project owners.
- ☒ **International donors or donor-backed development finance institutions** can provide technical and financial support for the country level implementing institution and help set up the initiative to ensure a strong platform

³ The provider could receive only a part of the upfront amount due by the investor (perhaps the 70-75% needed to implement the project), with the rest being paid to the energy efficiency service provider based on the performance of the project, as payment for the monitoring and preventive maintenance for the project until the financing is repaid (IDB, 2014a); alternatively the provider could take some kind of first loss (perhaps the first 10% of loss) (Parhelion, 2014).

for future efforts to scale up the instrument. Donors would further support the launch and demonstration phase of the program, e.g. by supporting the design of some highly visible demonstration projects, and initially ensuring grants to cover a part of the insurance premium, or the fees associated with third party verification. Donor support may also help make available credit lines for longer-term financing than would otherwise be available locally.

THE ROLE OF THE LAB

The Lab's role could be to provide support in assessing the initial performance of the pilot business model and identify adjustment needs. The Lab could also assist securing international donors to provide strategic complementary support to the program by fast-tracking and financially supporting pilot investments in different regions and demonstrating the effectiveness of the mechanism in the context of a regional upscaling initiative.

CONTEXT

Without interventions, SMEs have little interest and financial resources for investing in energy efficiency. To increase their engagement, the instrument will target emerging economies with supportive policy frameworks, emerging ESCO markets, and within sectors where EE measures can be standardized. Mexico, the region proposed for an initial pilot, presents good conditions for successful implementation.

While the design of the risk mitigation instrument aims at adapting existing instruments available in the different local contexts, the context in which the instrument would operate is characterized by several factors.

Without interventions, energy efficiency investment by SMEs is mostly self-financed and limited to low-hanging fruit. SMEs interest in EE investments are limited to those which

can be paid for without going to the bank (SMEs usually do not adopt bank financing, but instead rely on cash or partner with ESCOs), which have the potential to pay for themselves through energy savings over time, and which are not considered risky. The financial sector may have the potential to be a key player to facilitate the development of energy efficiency projects, however the supply of specialized energy efficiency and renewable energy financial products is limited due to a combination of perceptions of high risk and a lack of information regarding the trustworthiness of technologies, equipment, and service providers. As a consequence few companies engage in replacing equipment for efficiency reasons with the investments that do occur limited to low-hanging fruits.

Supportive energy laws and regulations are critical to ensure successful implementation of the instrument, and in this regard, a supportive regulatory environment for energy efficiency is already emerging in many developing countries. In evaluating good regions for implementation, some policies that make a region more attractive for ESI include EE subsidies, an accreditation system for service providers, promotion of standardized contractual arrangements, and efficiency standards for technologies.

The instrument targets emerging economies where ESCO markets are not very well developed. The largest absolute potential would be found in the BRICs⁴ and “the next 11”⁵ however, the instrument would be relevant in a wider range of middle income/emerging economies where ESCO markets are not very well-developed and where investment initiative belongs to enterprises.⁶

The instrument targets energy efficiency investment projects with standardized equipment, which have been tested in the market, are mature, scalable, and replicable. Targeted activities therefore include: high efficiency motors; replacement of electric motors with hydraulic motors; efficient boilers; preheating with solar thermal; distribution of compressed air; air compressors; refrigeration and freezer systems; refrigerator/freezer compressors; and cogeneration. The insurance would cover the nonperformance of the project as a whole, including elements other than technology, such as design, installation and maintenance.

PILOT CONDITIONS

Initiatives and market conditions in Mexico create a good environment to test the instrument. In Mexico the first energy efficiency regulation dates back to the early nineties and the

4 Brazil, Russia, India, China, and South Africa

5 Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Turkey, South Korea and Vietnam.

6 Examples on which IDB is already working include countries with high potential for energy demand growth such as Colombia (where the mechanism is actually already being developed). Other candidate countries that are not next eleven and where energy has a high cost includes Peru, Chile, El Salvador, and Dominican republic.

further evolution of energy laws and regulations in recent years has helped to trigger the development of energy efficiency systems.⁷ In particular, the National Energy Strategy for the period 2013-2020 identifies the promotion of energy efficiency, both in consumption and production, as a means to reduce energy consumption while promoting productivity. Mexico has also developed several energy efficiency finance programs (see Annex I for more information). These programs already provide the critical elements of an energy efficiency project finance pipeline, which are pre-requisites to a risk mitigation instrument, with potential synergies for the promotion of projects and for the verification system used for the qualification of vendors (D’Addario, 2014).

INNOVATION AND BARRIER REMOVAL

This instrument introduces new energy savings insurance in targeted developing markets to complement other energy efficiency initiatives. The instrument directly reduces technical risk and uncertainty of financial returns for energy efficiency investors.

INSTRUMENT INNOVATION

The instrument would make available, for the first time in targeted developing countries, an energy savings insurance product that would complement other energy efficiency initiatives. To evaluate the innovativeness the instrument, we focus on its potential implementation in Mexico and compare its features with existing programs targeting similar energy efficiency markets and sectors, most of which are still under development.⁸ We consider the types of programs and instruments on offer, their objectives, targeted sectors, technologies, and audiences in Mexico in Annex I and around the world in Annex II. Based on this examination, we classify ESI as innovative as it introduces a new risk mitigation tool (energy savings insurance), and does so as part of a comprehensive package of supporting instruments (standard contracts, independent validation and verification),⁹

7 Early policies include the introduction of voluntary labels identifying energy-efficient products on the Mexican market - followed by programs supporting replacement of inefficient equipment, green mortgages and training for energy savings specialists.

8 With the exception for Mexico ECOCASA Program-Energy Efficiency Program Part II that is currently ongoing, the other programs are still not implemented.

9 Existing programs targeting similar EE markets and sectors in the country are mostly under development and provide principally financial, knowledge and technical support to local financial intermediaries, or evaluate technical and financial feasibility of energy efficiency investment e.g. through energy audit. It is important noting that variants to the current design elements of the instrument could introduce additional elements of innovativeness, or (on the contrary) add redundancies, depending on the way the instrument itself will be able to exploit synergies with other existing instruments and programs.

including credit lines and an active marketing strategy, and could potentially be expanded to incorporate additional financial instruments such as partial credit guarantees.

To avoid duplication and maximize effectiveness, however, the instrument's business model should draw on the experience of other energy savings insurance instruments and similar initiatives around the world. Experiences with existing programs suggest initially limiting the scope of ESI in its pilot phase to energy efficiency interventions in the agro-industry sector.¹⁰ ESI could be expanded based to several other sectors and regions in its second phase.

BARRIERS

Based on the sectoral context and the type of private finance targeted, we have identified a set of barriers. Taking into consideration the insurance instrument, the third party verification mechanism, and the use of standard contracts, credit lines, and other program elements, we assess whether the instrument overcomes the following barriers directly, indirectly, or not.

Barriers directly addressed by the instrument

- ☒ **Uncertain financial returns associated with performance/technical risk:** The introduction of a risk mitigation instrument such as an insurance complemented with a third party verification mechanism and a standard performance based contract designed by a recognized independent party would increase market certainty and foster demand for investments in energy efficiency. The existence of a third party validator also reduces the time taken to resolve legal conflicts.¹¹ A small degree of uncertainty on financial coverage remains as the performance of the investment also depends on the utilization of the equipment (e.g. by the investor).
- ☒ **Technical risk:** ESI addresses technical risk by supporting and verifying both vendors and the preparation of technically robust projects.¹² Not only does third party validation ensure that projects are technically robust, it also reduces costs and improves the likelihood of achieving good results which improve investor confidence, and can be a key factor to the

engagement of insurance companies (IDB, 2014a). Equally important are methodologies and criteria for monitoring and verifying energy savings, which borrowers, service providers, insurers and third party verifiers can rely upon. Furthermore, the standardized contract will include a performance guarantee by the supplier that is coupled with retention of part of the remuneration of the supplier, thus full payment is only released upon demonstration of the savings achieved. Finally, market reputation of supplier also plays a role: If the project fails to deliver the promised savings and the insurance company must pay damages to the client, the supplier's market reputation would be damaged and its access to other types of risk mitigation instruments in the market impaired.

Barriers indirectly or partially addressed by the instrument and components

- ☒ **Investors' creditworthiness:** The financing institutions' decision to finance a particular energy efficiency project or not will continue to be based on the creditworthiness of the balance sheet of the end-user; more certain returns only slightly improve the likelihood that investor returns will cover loans repayment and boost their creditworthiness with banks (IDB, 2014a). The insurance would have a significant impact on the loan financing related to the energy efficiency project only if it is fully off-balance sheet/project financed via a special purpose vehicle (SPV) structure; an alternative could be to opt for risk mitigation instruments offering comprehensive risk coverage packages that effectively address banks' perceived risks, like credit guarantees.¹³ Both solutions would imply higher transaction costs related to the legal expenses required to setting up the SPV, or to the involvement of additional players for including a credit guarantee to the energy savings insurance, and minimizing such costs would require additional public sources from donors (IDB, 2014c).
- ☒ **The availability of long-term debt:** In some developing countries, historic instability has made banks hesitant to offer medium- to long-term loans. While the insurance product provides some certainty for the investor, loan terms and maturities may still fail to match the maturity of projects financed preventing investment (IDB, 2014a). Pairing the insurance instrument with longer-term debt (e.g. channeled through a development bank) that matches the investor's financing requirements (>5 years) may help investors to access appropriate debt. In some countries structures already in place would help

¹⁰ In its experience with Energy Savings Warranty Hannover RE has initially limited the offer to SMEs companies, and to specific types of initiatives. This has also been the approach in Colombia's Energy Efficiency Financing Program for the Services Sector where a limited amount of sector types and EE initiatives has been considered for standardized contracts (Working Group, 2014).

¹¹ Third party validators know the baseline and the expected benefits and are involved in the physical inspection of the project, thus they can be useful in addressing potential disputes on the performance of a project between the investor and the provider (IDB, 2014a).

¹² The certification process will provide an incentive to all companies lacking the expertise or professionalism required to participate to the program, so that they can take part to an expanding market (Fiorello H. LaGuardia Foundation, 2014).

¹³ For example, guarantee instruments developed by Brazil EEGM include both a Comprehensive Risk Guarantee and a Technical Risk Guarantee, thus covering a wider set of risks including both creditworthiness and performance/technical risks.

to address the supply side of finance.¹⁴ While access to long-term debt may not be available in all countries targeted by the instrument, additional analysis may be required to determine whether supply of credit should be among the instruments supporting the risk mitigation package.

- ☒ **Initial investment cost barriers:** Even with the instrument, initial procurement and installation costs may continue to hamper demand for energy efficiency projects. Complementary financial measures such as incentives, grants, or credit lines have helped launch similar programs, for example in Colombia¹⁵ and are proposed on a temporary basis to support the first phase of implementation in Mexico.¹⁶
- ☒ **Inertia on the demand side for energy efficiency:** Although energy efficiency represents a significant opportunity to reduce risks and improve financial returns, firms do not typically consider 'cost reductions' as an investment opportunity in the same way they think of expanded operations (IDB, 2014a). For this reason, complementing the instrument with initiatives that address the demand side,¹⁷ for example, through campaigns that inform end-users of the potential savings on offer (IDB, 2014a) and marketing support, particularly for small contractors (Parhelion, 2014), could help overcome investment inertia. In Mexico, for example, part of the ESI package includes activities that promote targeted outreach through the organization of promotional events and the establishment of strategic alliances with food-processing associations, technology and energy service providers and domestic financial institutions.

IMPLEMENTATION AND RELATED CHALLENGES

Implementation prospects in Mexico are good given the existing policy framework, the identification of an implementing agency, and the already extensive efforts geared toward launching a pilot by April 2015. In other potential contexts, a host of issues that would need to be addressed may increase lead times, including identifying appropriate implementing entities.

The proponent is currently at an advance stage of planning a fast-track pilot in Mexico. The Danish Government, together with IDB, aims to use the program to demonstrate the mobilization potential and feasibility of the instrument (Fiorello H. LaGuardia Foundation, 2014).

IMPLEMENTATION - National development banks have been identified as suitable implementing institutions where these are well established and capable, as is the case in many Latin American countries. NDBs have intimate knowledge of investment conditions on the ground, provide long-term funding and have credibility and convening power in relation to other key market participants - in particular tier 1 commercial banks, which are key to the program. Furthermore, their mandate is aligned with economic and sustainable development objectives. National banks are also experienced in working with international development banks and in coordinating projects from development to execution, convening other key market participants (Fiorello H. LaGuardia Foundation, 2014).

Fideicomisos Instituidos en Relación con la Agricultura (FIRA), the Agricultural Development Bank of Mexico, has been identified as the local DFI partner and implementing institution. FIRA has good credentials as it is currently implementing an Energy Efficiency Financing Strategy for the Food Processing Industry, and is interested in supporting the design of specific risk transfer mechanisms as part of a holistic approach to market development in the agro-industry (IDB, 2014a). Collaboration with FIRA also allows use of existing energy efficiency verification and lending system (D'Addario, 2014).

Two to three months are needed for the development of the instrument concept, while six to 12 months are required to finalize institutional arrangements before the pilot can commence (IDB, 2014a; Working Group, 2014). This timeline includes agreements with the host country authorities, multilateral development banks, other potential international donors, the national development bank, local insurance companies and banks, an international reinsurer, and independent validators and verifiers, and the development of standardized contracts. In Mexico the proponent has already made contact with potential stakeholders, secured initial funding from the Clean Technology Fund, and bilateral support from Denmark for setting up of the pilot program has also been identified (Fiorello H. LaGuardia

14 IDB always includes credit lines as it works with development banks, and they already have existing credit lines in place to support different types of projects: If banks need funding – and commercial banks usually ask for funding from development banks to support their medium-long term financing – IDB would provide adequate resources (IDB, 2014a). Even in more developed contexts there are dedicated funds that have been set up to finance energy efficiency projects (Parhelion, 2014).

15 In Colombia's Energy Efficiency Financing Program for the Services Sector, for example, long term financing is made available to lower upfront costs, while third party validation activities are paid through grant money (from CTF); in the U.S., policy initiatives have driven this activity and certainly this has produced good conditions for introduction and uptake of the Energi product (Parhelion, 2014).

16 Under the current proposal it is suggested that DANIDA underwrites the initial EE assessments for selected projects and subsidize insurance premiums for SME EE equipment suppliers during the pilot phase, seeking support of multi-lateral/national development bank should the initiative be scaled up (Fiorello H. LaGuardia Foundation, 2014).

17 Early attempts in Mexico and Colombia failed because they have been limited to providing supply of financing, without addressing the demand side (IDB, 2014a).

Foundation, 2014).¹⁸ In the next six months the detailed design of the insurance instrument and the supporting standard contracts, project validation procedures, monitoring protocols, will be finalized. In parallel outreach activities and agreements will be made between FIRA and financial actors and third party validator and verifier. This will enable a full launch by April 2015 that will include a batch of fast-tracked plot projects.

The proponent has also outlined a plan for the scaling up of the initiative outside Mexico, backed by the willingness of IDB in integrating the initiative in its regional programs, which may be linked up with initiatives in other regions.

IMPLEMENTATION CHALLENGES

Many potential general implementation challenges related to the instrument have already been addressed in readying the instrument for a pilot in the case of Mexico. However these may be material in other contexts and include:

- ☒ **Entry cost barriers for banks and local insurers associated to the development of a new business line**, such as the identification of internal human and financial resources, training, and the creation and commercialization of new financial products, could make local financial institutions and insurers reluctant to engage in the market. Targeted capacity building to help banks and local insurers improve their understanding of the energy efficiency market, increasing their capacity to assess cash flows and technology-specific risks and develop dedicated energy efficiency product lines to address the specific costs, returns and payback of financial products. Experienced reinsurers, financial intermediaries and technology providers could be especially useful in this regard.
- ☒ **Equipment suppliers and energy service providers may be discouraged from participating in the program by stricter compliance requirements and higher costs.** A critical mass of energy service enterprises and energy equipment suppliers must participate in the program in order to stimulate and support related demand for energy efficiency projects. Nevertheless their participation may be initially hampered by stricter requirements, such as certification processes, undertaking audits, and the need to bear part of the risks by including a performance guarantee clause to construction completion contracts. There is evidence that contractors/energy services providers in fact are generally reluctant to take out the insurance as they see it as an unnecessary cost and in certain

cases get away with providing guarantees without the insurance component (Parhelion, 2014). Financial support and other tools to help with certification and for the payment of the insurance premium would help to minimize these perceived disincentives.

Local insurance companies are more comfortable insuring equipment, rather than complex programs. The concept of insuring energy savings could be outside the comfort zone of local insurers who may prefer to cover a specific piece of equipment rather than a project/program. The pilot in Mexico addresses this barrier by focusing on a select number of technologies that allow for standardized contracts, assessment of savings, and monitoring/verification. In addition, engaging experienced re-insurers that offer similar products (e.g. Hannover Re, Munich Re, Energi) to work with local insurers could inject new capacity and encourage local insurers to expand their coverage.

- ☒ **A workable insurance product needs a liability related to the performance, but defining new types of guarantee contracts may be complex and take time.** To be an effective risk mitigation tool, the insurance contract would need to measure the level or liability of each party. However, performance contracts may not be widely known or legally sanctioned in markets where there is no significant ESCO activity and creating new types of contracts (e.g. Energy Performance Contracts) may require administrative and/or regulatory endorsement to be recognized by local authorities or civil codes. To this end the pilot proposes using existing contract types that are broadly recognized and accepted by the local market and adding clauses that guarantee the performance of the project (IDB, 2014a), can reduce time and complexity and also simplify the process of designing the insurance component.
- ☒ **Transaction costs can limit the application of the instrument to large energy efficiency initiatives, limiting its potential for scaling up.** Transaction costs related to energy efficiency investment may still be relatively significant for investments below a certain project threshold, creating operational difficulties for energy service and equipment providers who may be discouraged by long application processes for relatively small projects. Financial institutions and insurers could also be discouraged by transaction costs associated with managing multiple small-size transactions. Introducing simple standardized formats for contractual arrangements between clients and service providers that are tailored to the energy efficiency projects eligible under the program and include the necessary financial and technical information for the verifier and financial institution to make the stipulated technical and financial evaluations could reduce application burdens and help to stimulate scale-up (Fiorello H. LaGuardia Foundation, 2014). Aggregating projects could also help to spread

¹⁸ The money is used for the following activities: marketing study, development of contractual instrument, verification mechanism, development of the instrument, and a pilot program. The complementary Danish funding will i.a. enable early learning to be extracted for use in wider scaling up of the initiative in Latin America and other regions. (Fiorello H. LaGuardia Foundation, 2014)

transaction costs across a number of similar projects, making overall costs acceptable (Parhelion, 2014)(IDB, 2014c).

- ☒ **Fitting the instrument into existing policy frameworks, ensuring it is complemented by supporting instruments adds complexity for implementation beyond pilot phase.** In order to be successful, the insurance instrument needs to be part of a holistic energy efficiency framework that offers an integrated package of measures, including appropriate finance support. This adds complexity to the implementation arrangements required for setting up the instrument and may impact on replication potential. Here, identifying an institution to take responsibility for the promoting and coordinating of a programmatic approach to energy efficiency financing could help to ensure the right actors are engaged and that their interests are well aligned. National or sectoral banks supported by other vehicle institutions such as government ministries, the central bank; ESCOs or manufacturers associations, could potentially play such a role.

PRIVATE FINANCE MOBILIZATION POTENTIAL AND OTHER POSSIBLE IMPACTS (SCALE AND SCOPE)

In Mexico, the instrument could help energy efficiency equipment providers increase sales by 10-20%, resulting in a total additional investment in energy efficiency of about USD 30-80 million through 2020, of which USD 20-60 million would be private money.

Total market potential for energy efficiency investment through 2030, estimated for the BRICS and Next 11 countries in the sectors covered by the instrument, accounts for about USD 10-100 billion, corresponding to annual emission reductions of 27-234 MtCO₂.

UNSUBSIDIZED FINANCIAL PERFORMANCE

The instrument has the potential to transition towards a purely private market after initial public support is phased out. For energy efficiency investments, the IFC estimates that the simple payback period in Mexico is two and half to three years (IFC, 2012). A more detailed assessment of the financial performance of energy efficiency projects in the absence of the instrument for the case of boiler installations, estimates an IRR of 23% with a payback period of less than four years (Fiorello H. LaGuardia Foundation, 2014).

CATALYTIC AND TRANSFORMATIVE POTENTIAL

We assessed the private finance mobilized by the instrument in

the period 2015-2020 and associated public support needed focusing on Mexico, the country in which the pilot is set to be implemented.

PRIVATE FINANCE MOBILIZED

Our findings suggest that the instrument would be an effective tool to mobilize private climate finance. In pilot phase, in the agro-industry sector in Mexico, the instrument could mobilize USD 20-60 million above the investment baseline up to 2020, or USD 4-12 million every year. In general, private businesses in Mexico expect that the proposed instrument will increase sales, with boiler vendors estimating 10-20% increase on current trends as an immediate reaction to the implementation of the instrument (D'Addario, 2014). If the pilot is extended to the industrial and commercial sectors, energy efficiency investment could increase above current market trends to up to USD 70-1,000 million through 2020.

In the absence of internationally recognized indicators to compare countries' relative energy efficiency levels and energy efficiency financial flows (IEA, 2012), our estimates used assumptions and proxies for the baseline and market potential based on savings achievable in the country in the specified sectors and assumptions on the market penetration of projects as well on the public contribution needed. Final uptake of the instrument is subject to significant uncertainties, including the rate of successful deployment before 2020 (see Annex III for more details on methodologies).

PUBLIC SUPPORT NEEDED

We estimate a need of up to USD 25million consisting almost entirely of a credit line for long-term loans and to a lesser extent a grant supporting the payment of the insurance premium, with the public role diminishing after the pilot's second year (see Annex III for details on assumptions used for the estimate).

The current overall commitment for the pilot phase corresponds to USD 22million. The Clean Technology Fund (CTF) has committed a grant of about USD 2million for program set-up costs in Mexico, including resources for building appropriate capacity and demand-side incentives (Fiorello H. LaGuardia Foundation, 2014). Through co-financing of the project as part of the FIRA initiative, the proponents expect the IDB to mobilize the additional USD 20million in lending (CTF, 2014).

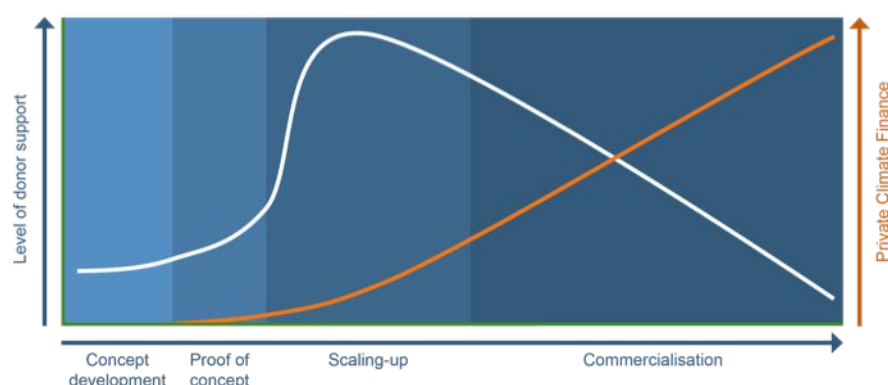
Eventually, the proponents expect banks to become familiar enough with energy efficiency to assume technology risk. In the long run the instrument could essentially be scaled-up to full commercialization, thus public money will gradually diminish over time as the market matures and reaches full commercialization. The peak of donor involvement would be reached during the scaling-up phase of the initiative, when donor support will be needed for the simultaneous roll out of the instrument in multiple countries and industries (see Figure 2).

MARKET AND MITIGATION POTENTIAL BEYOND THE MEXICO PILOT

The total market potential for energy efficiency investment

Figure 2: Projecting Public and Private Investment in ESI over Time

Source: Fiorello H. LaGuardia Foundation, 2014



up to 2030 in the BRICS and 'Next 11'¹⁹ countries and in the sectors covered by the instrument ranges between USD 10 and 100 billion, corresponding to potential annual emission reductions of 27-234 MtCO₂.²⁰ The industrial sector is where most of reductions can be pursued (around 60% of saving potential in the period). To put the number in perspective, BNEF (2014b) estimates an overall global energy efficiency market in 2013 of more than USD 30 billion (excluding the residential sector), while the IEA (2014c) predicts global annual investment in energy efficiency for the industrial sector will be between USD 25 and 50 billion in the period 2015-2030.

Our estimate assumes a market penetration of 5-40% given the higher uncertainty related to implementing the initiative in other contexts beyond Mexico. We also assumed that the instrument will be promoted with the initial support of the public sector in the form of a two years pilot program including long-term credit-lines (see Annex III for more details). The actual potential of the instrument will also depend on different context-related conditions such as the existence of a supporting framework at country-level, including robust performance contracts, and the availability of credit-lines for the financing of the projects.

LOCAL DEVELOPMENT IMPACTS

Positive indirect impacts are likely to be mainly socio-economic, with minor negative indirect impacts. The instrument could contribute to the development of the technical services and technology sectors for energy efficiency, with the creation of new jobs in the manufacturing, commercialization, and installation of energy efficiency equipment;²¹ in energy consulting services

¹⁹ BRICS and 'Next 11' are the emerging countries with the largest energy efficiency potential, however for its scaling-up phase up to 2030, the instrument could also target other emerging economies.

²⁰ We have calculated CO₂ emissions based on the 2009-2011 average for the National grid emission factor (gCO₂/kWh).

²¹ A new business line for technology providers (air conditioning, boilers, and efficient engines) could be created, where equipment is sold on the basis of energy saved rather than on replacement.

and third party auditors;²² and in internal training offer and third party advisor accreditation. These new sectors could lead to job creation.

The instrument could enhance the competitiveness of SMEs by reducing energy costs; and create market opportunities for local financial institutions traditionally adverse to energy efficiency lending due to their limited knowledge of technologies and potential economic returns.

Negative indirect impacts are likely to be limited, mostly related to the disposal of the equipment – although this may be regulated under the intervention package – and to the loss of mitigation capacity of energy efficiency measures due to behavioral or market responses leading to an increased demand and use of energy (Rebound Effect).

CONCLUSIONS AND NEXT STEPS

Backed by a comprehensive package of support measures for energy efficiency, the introduction of a risk mitigation instrument (insurance) for energy savings could effectively address technical and financial risks and enhance access to financing for SMEs in developing countries with targeted regulatory frameworks. The aim of the instrument is to foster energy efficient investment from SMEs, by ensuring that energy efficiency projects will generate financial savings, thus building trust between the client and supplier. The initiative would introduce an energy savings insurance product for the first time in targeted developing markets as a complementary tool to other energy efficiency initiatives, building on the experience of existing similar instruments which offer comprehensive integrated packages of insurance with financial support (such as long-term credit lines), and mechanisms to improve the reliability of energy service providers.

The instrument would likely provide significant financial leverage and target markets with a high potential for both investment and mitigation. In Mexico's agro-industry sector alone, making this instrument available could catalyze new investments valued at up to 20% increase above estimated market trends. Total market potential for energy efficiency investment in BRICs and 'Next 11' countries up to 2030 in the sectors covered by the instrument could reach between USD 10-100 billion, corresponding to annual emission reductions of 27-234 MtCO₂. Co-benefits include its contribution to the development of several technical services and technological solutions for energy efficiency, with the ensuing creation of new jobs in technical and financial service sectors.

²² External verifiers contracted by insurances or banks to review the technical quality of the project proposals, making a technical assessment if the proposed measures and technologies are appropriate and can generate the savings estimated by the technical services provider.

The steps toward a pilot in Mexico are already well underway, but challenges may arise especially in relation to the scaling up in different contexts.

The proponent has designed the instrument's business model and developed a roadmap for a pilot in Mexico. In other contexts, the identification of an implementing agency (usually a national development bank), which is able and willing to pursue a holistic approach where the insurance tool is paired with a comprehensive package of instruments, may prove more challenging. Proponents suggest focusing next on the Latin America and Caribbean region with IDB as a coordinator of a regional platform. In parallel, interested implementing in other regions may appear, and additional donor financing could be made available to expand the reach to additional sectors and countries/regions.

The next steps for the longer-term life of the instrument include the following:

- ☒ Assess the initial performance of the pilot business model and identify adjustment needs
- ☒ Secure international donors to provide strategic complementary support to the program by fast-tracking pilot investments in different regions and demonstrating the effectiveness of the mechanism in the context of a regional upscaling initiative.

INDICATOR ASSESSMENT SUMMARY

CRITERIA	INDICATOR	ASSESSMENT	COMMENTS/RATIONALE
Innovative	Addresses: Uncertainty of financial returns	Moderate/ High	Uncertainty of financial returns for the investor is reduced by the insurance. Although final coverage also depends on the utilization of the equipment by the investor.
	Addresses: Technical risk	High	Third party energy efficiency experts validate the vendors and the project proposal, ensuring that they are strong from a technical perspective.
	Addresses: Investors' creditworthiness	Moderate/ Low	More certain returns lower loan default risks, indirectly increasing investors' creditworthiness for banks, but strength of balance sheets remains a factor.
	Addresses: Availability of long-term debt	Moderate	Availability of long-term debt is addressed by supporting the insurance instrument with credit lines made available to national development banks. Conditions may not always be found in all developing countries targeted by the instrument.
	Addresses: Initial investment cost barriers	Moderate	The risk of limited market uptake due to upfront investment barriers is addressed with the introduction of temporary financial support measures. Support conditions may not always be found in all developing countries targeted by the instrument.
	Addresses: Inertia on the demand side	Moderate/ High	Despite reduced investment risks and higher availability of financing, inertia may still limit the uptake of energy efficiency investment. However, demand is addressed through targeted outreach to key business stakeholders.
	Instrument Innovation	Moderate/ High	The initiative introduces, for the first time, energy savings insurance product in developing economies, seen as a complementary tool to other energy efficiency programs.
Actionable	Time to implementation	6-12 months	Implementing the instrument requires finalization of institutional arrangements between the host country and the donors, the national development bank, local insurance companies, an international reinsurer, and independent validators and verifiers, as well as the development of standardized contracts.
	Strength of implementation plan	High	The design of the instrument's business model and the development of a roadmap for a pilot have been defined, identifying key actors and assessing the quantitative commitment required for program set up.
	Strength of implementing organization	High	The proponent identifies national development banks as the implementing institution. For the pilot, the potential local partner is FIRA, the Agricultural Development Bank of Mexico, which already has experience with energy efficiency and interest in supporting risk mitigation instrument.
	Fit to national policy environment	Moderate/ High	Based on pilot in Mexico, the instruments fits very well with the existing policy framework, and could be very well integrated with initiatives that are currently being launched to promote energy efficiency measures in selected target groups. Fit with national policies in the scaling up phase needs to be tested more carefully.

CRITERIA	INDICATOR	ASSESSMENT	COMMENTS/RATIONALE
Catalytic	Private finance mobilized	USD 20-60 million up to 2020.	Total additional investment in energy efficiency in Mexico corresponds to about USD 30-80 million, of which USD 20-60 million private money. Part of the private business community involved in energy efficiency that has been consulted in the assessment of the model expects that the mechanism would increase sales by 10-20%.
	Public finance needed	USD 10-25 million needed up to 2020. USD 22 million committed so far (20 million being loans)	Public support needed is estimated at USD 10-25 million. The overall commitment for the pilot phase currently corresponds to USD 22 million between grant support (USD 2 million) and loan financing (USD 20 million), with public role significantly diminishing over the time.
Transformative	Market potential in 2030	USD 10-100 billion up to 2030.	The total market potential for energy efficiency investment in the sectors covered by the instrument in BRIC and Next-11 countries accounts for about USD 10-100 USD billion between now and 2030.
	Mitigation impact (potential)	27-234 MtCO _{2e} saved / year	Based on measures considered for the market potential, the abatement potential in BRIC and Next-11 countries in the sectors covered by the instrument is 27-234 MtCO ₂ per year.
	Local development impact	Development of new industry, creation of jobs	Positive indirect impacts are likely to be mainly socio-economic, with minor negative indirect impacts. The instrument could contribute to the development of several technical services and technological solutions for energy efficiency, with creation of new jobs.
	Unsubsidized financial performance	IRR 23%; payback = 2.5-4 years.	The low payback and high IRR of energy efficiency technologies, suggest that the instrument could relatively easily favor the transition towards a purely private market, after initial public support is phased out

REFERENCES

- BNEF. 2014a. "Insurance for Energy Savings (Mexico)". Bloomberg New Energy Finance.
- BNEF. 2014b. "Global Energy Efficiency Market Outlook". Bloomberg New Energy Finance.
- CTF. 2014. "Cover Page for CTF Project/Program Approval Request - Support to FIRA for the Implementation of an Energy Efficiency Financing Strategy for the Food Processing Industry".
- Clean Technology Fund, Washington, DC. Available at: <https://climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Support%20to%20FIRA%20for%20the%20Implementation%20of%20an%20EE%20Financing%20Strategy.pdf>
- CTF-IDB. 2012. "Energy efficiency financing program for the Services Sector". Clean Technology Fund and Inter-American Development bank.
- D'Addario, P. 2014. Conversation with Patrick D'Addario on 6th August 2014.
- Estados Unidos Mexicanos. 2009. "DECRETO por el que se aprueba el Programa Nacional para el Aprovechamiento Sustentable de la Energía 2009-2012". Available at: http://www.conuee.gob.mx/work/files/pronase_09_12.pdf
- Fiorello H. LaGuardia Foundation. 2014. "Insurance for Energy Savings: A Design". Fiorello H. LaGuardia Foundation. Work prepared for the Ministry of Foreign Affairs of Denmark.
- Fuller, M. 2009. "Enabling Investments in Energy Efficiency - A study of energy efficiency programs that reduce first-cost barriers in the residential sector". Study prepared for the California Institute for Energy and Environment and Efficiency Vermont. Available at: http://wpui.wisc.edu/files/webcontent/reports/Residential_Financing_White_Paper.pdf
- Gillingham, K., D. Rapson, G. Wagner. 2014. "The Rebound Effect and Energy Efficiency Policy"
- Hannover RE. 2014. Conversation with Oliver Straubenmueller on 5th August 2014.
- Hayes, S., S. Nadel, C. Granda, and K. Hotel. 2011. "What Have We Learned from Energy Efficiency Financing Programs?" American Council for an Energy-Efficient Economy, Washington, D.C. Available at: <http://pacenow.org/wp-content/uploads/2012/08/ACEEE-Sep-2011-paper.pdf>
- IDB. 2014a. Conversation with Jose J. Gomes Lorenzo, Asger Garnak, Maria E. Netto de A. C. Schneider, Maria Margarita Cabrera Botero, Alexander Vasa (Inter-American Development Bank) on the 30th July 2014.
- IDB. 2014b. "Energy-efficient technology helps firms to compete and reduce GHG emissions". Inter-American Development Bank. Available at: <http://www.iadb.org/en/topics/climate-change/mexico-energy-efficiency-ctf-energy-efficiency-program,9892.html>
- IDB. 2014c. Conversations with Patrick Doyle and Matthew McClymont (Inter-American Development Bank) on the 30th July 2014 and 12th September 2014.
- IDB. 2013. "Estudio de mercado y diseño de una estrategia y mecanismos financieros para financiar proyectos de eficiencia energética y uso racional del agua en el campo en México". Inter-American Development Bank (IDB) and Fideicomisos Instituidos en Relación con la Agricultura (FIRA).
- IDB. 2012a. "Mexico CTF-IDB Group Energy Efficiency Program, Part I". Inter-American Development Bank (IDB).
- IDB. 2012b. "CTF Energy Efficiency Financing Program for the Services Sector (CO-L1124) and Non-Reimbursable Technical Cooperation Mitigation of GHG Emissions through Energy Efficient Investments in Hotels and Clinics/Hospitals Sub-Sectors". Inter-American Development Bank. Available at: <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=37952879>
- IEA. 2014a (access). "Energy Efficiency – Policies and Measures Database". International Energy Agency. Available at: <http://www.iea.org/policiesandmeasures/energyefficiency>
- IEA. 2014b (access). "National Energy Balances". International Energy Agency. Available at: <http://www.iea.org/statistics/statisticssearch/>
- IEA. 2014c. "World Energy Investment Outlook". International Energy Agency. Available at: <http://www.iea.org/publications/freepublications/publication/weio2014.pdf>
- IEA. 2012. "Plugging the Energy Efficiency Gap with Climate Finance". International Energy Agency. Available at: <http://www.iea.org/publications/insights/insightpublications/PluggingEnergyEfficiencyGapwithClimateFinance.pdf>
- IFC. 2012. "Market Study of Sustainable Energy Finance in Mexico". International Finance Corporation. Available at: <http://www.ifc.org/wps/wcm/connect/96f316004cf49988afa3eff81ee631cc/October+2012-Market+Study+of+SEF+in+Mexico-EN.pdf?MOD=AJPERES>
- Instituto Mexicano Nacional de Ecología. 2012. "México - Quinta Comunicación Nacional ante la Convención Marco de las Naciones Unidas sobre el Cambio Climático". Available at: <http://www2.inecc.gob.mx/publicaciones/download/685.pdf>
- Neme C., M. Gottstein, and B. Hamilton. 2011. "Residential Efficiency Retrofits: A Roadmap for the Future". The Regulatory Assistance Project (RAP), Montpellier, U.S. Available at: http://www.raponline.org/docs/RAP_Neme_

ResidentialEfficiencyRetrofits_2011_05.pdf

Parhelion. 2014. Conversations with Chris Villiers on 27th July 2014, 16th September 2014 and 18th September 2014.

Secretaría de Energía. 2014. "Programa Nacional para el Aprovechamiento Sustentable de la Energía 2014-2018"

Secretaría de Energía. 2012. "Programa Nacional para el Aprovechamiento Sustentable de la Energía 2009-2012"

SEMARNAT, SENER, DANIDA, and MCEB. 2014. "Program Document Climate Change Mitigation and Energy Program Mexico". Mexican Ministry of Environment and Natural Resources (SEMARNAT), Mexican Ministry of Energy (SENER), Danish Ministry of Foreign Affairs (DANIDA), Danish Ministry of Climate, Energy and Building (MCEB). Available at: http://www.ens.dk/sites/ens.dk/files/climate-co2/low-carbon-transition-unit/bilateral-energy-sector-projects/Climate_and_energy_Mexico/program_document_climate_change_mitigation_and_energy_program_mexico_final.pdf

Working Group. 2014. Conversation with the Working Group on 31st July 2014.

York D., M. Molina, M. Neubauer, S. Nowak, S. Nadel, A. Chittum, N. Elliott, K. Farley, B. Foster, H. Sachs, and P. Witte. 2013. "Frontiers of Energy Efficiency: Next Generation Programs Reach for High Energy Savings". American Council for an Energy-Efficient Economy, Washington, D.C. Available at: <http://www.aceee.org/sites/default/files/publications/researchreports/u131.pdf>

ANNEX 1 - List of initiatives undertaken in Mexico on energy efficiency

TYPE OF PROGRAM	OBJECTIVES	TARGETED ENERGY DEMAND SECTORS	TARGETED ENERGY EFFICIENCY MEASURES	TARGETED AUDIENCE	IMPLEMENTATION STATUS
Energy Savings Insurance					
<p>Proponent: Danish Energy Agency</p> <p>Description: The instrument instrument aims at targeting SMEs in selected sectors which do not have the technical capacity to assess energy efficiency investment, and in countries where ESCO markets are not very well developed. The business model envisaged is a standard insurance product covering projected energy savings for specifically defined and verifiable energy efficiency measures.</p>					
Insurance mechanism	Emissions reduction through EE projects.	Industry, commercial sector, service sector, agro-industry sector	High-efficiency industrial motors, Cogeneration, Efficient air conditioning, Distributed compressed air, Efficient lighting systems, Preheating with solar thermal, Efficient boilers, Pumping systems	SMEs	Under development
Energy Efficiency Program, Part I					
<p>Proponent: CTF-IDB</p> <p>Description: The program promotes scaling up the supply of EE financing products and services by local financial intermediaries in Mexico, by providing them with the financial, knowledge and technical cooperation (TC) needed to develop necessary knowledge and build a track-record of such investments. The investment capital and technical cooperation funds will be provided by the CTF, IDB, commercial banks, donors, and bilateral agencies. The program is at design stage.</p>					
Financial, knowledge and technical cooperation program	Enable supply of EE financing products and services by local financial intermediaries.	Industry, Commercial sector, Service sector	High-efficiency industrial motors, Cogeneration, Efficient air conditioning, Efficient lighting systems.	SMEs	Approved in 2012 but still not implemented
ECOCASA Program-Energy Efficiency Program Part II					
<p>Proponent: CTF-IDB</p> <p>Description: The program goal is contribute to the efforts of Mexico to reduce greenhouse gas (GHG) emissions of the residential sector. This would be achieved by increasing the production of low-carbon housing by financing developers through Sociedad Hipotecaria Federal (Federal Mortgage Society) and by increasing the supply of mortgages for low carbon housing by providing resources for LFI to fund mortgage loans for non-affiliated workers.</p>					
Financing program: Mortgages program for low carbon housing.	Emissions reductions for the residential sector.	Residential sector	Efficient air conditioning, Refrigeration, Home appliances, Electronics	Households	Implemented

TYPE OF PROGRAM	OBJECTIVES	TARGETED ENERGY DEMAND SECTORS	TARGETED ENERGY EFFICIENCY MEASURES	TARGETED AUDIENCE	IMPLEMENTATION STATUS
Banorte EE					
<p>Proponent: IFC supported by the Canada Climate Change Fund.</p> <p>Description: The proposed project is a risk sharing facility with Banco Mercantil del Norte (Banorte, the Bank) to cover a total loan portfolio of up to USD 100 million in eligible SME energy efficiency transactions in Mexico. Eligible transactions include energy efficiency, renewable energy and cleaner production projects improving energy use of SME companies in Mexico.</p>					
Financing program	Allocation of a total loan portfolio in eligible SME energy efficiency transactions.	Commercial sector	Energy efficiency technologies, Clean production, Renewable energy.	SMEs	Approved on August 30, 2011 but still not implemented.
FIRA - First Program for the Financing of Investment and Productive Reconversion Projects in Mexico's Rural Sector					
<p>Proponent: CTF-IDB/FIRA</p> <p>Description: The Program aims to support the efforts of the Government to promote a more efficient use of natural resources in the Mexican rural sector. Its purpose is to channel funding through FIRA's financial intermediaries so that these institutions in turn can grant medium and long-term loans to food processing companies and agricultural producers interested in undertaking investment projects that promote a more efficient use of energy and water, respectively. This would be achieved by pursuing increase investments in energy efficiency and rational use of water; and build up the capacities of FIRA and other relevant market actors on the structuring, financing, monitoring and evaluation of competitiveness-enhancing, environmentally-friendly projects (CTF, 2014).</p>					
Financial and insurance program	To support promoting energy efficiency and rational use of resources in the food industry sector. Includes the design of risk transfer instruments; and protocols to monitor results.	Agricultural processing, Industry Sector (limited at Food industry).	High-efficiency industrial motors (including water pumps, air compressors), Efficient air conditioning, Efficient lighting systems.	SMEs	Approved in 2014, but still not implemented.
NAFIN - Energy efficiency financing Program for SMEs					
<p>Proponent: Carbon Trust, IDB, SENER</p> <p>Description: Program under development providing financing for energy efficiency in small and medium sized companies in Mexico. The program will operate through NAFIN as financial intermediary for soft-loans and technical assistance to companies interested in improving its energy efficiency, focusing more on the hotel industry (SEMARNAT, SENER, DANIDA, and MCEB, 2014).</p>					
Financing program	Carbon Trust's Energy efficiency programme for SMEs. Proposed financial allocation of USD 26 million.	Service Sector (Hotels)	No information available.	SMEs	Under development

ANNEX II – List of existing similar initiatives and instrument around the world

The table below summarizes comparable initiatives targeting the loan market for energy efficiency interventions, mainly in developing countries.

NAME OF INSTRUMENT	COUNTRY	PROVIDER	DESCRIPTION
Energy Savings Warranty	Global	Energi/ Hannover Re	Hannover Re, a leading international reinsurance company working with Energi Insurance Services (Peabody, MA) has launched an Energy Savings Insurance product for ESCOs known as the “Energy Savings Warranty.”
Insuring energy efficiency	Global	Munich RE / Hartford Steam Boiler	At the beginning of 2014 Hartford Steam Boiler (HSB) introduced insurance coverage for the efficiency of energy-saving measures for buildings. With this insurance, such investments pay off better than ever for investors, building owners and their energy services companies.
EE Guarantee Mechanism (EEGM)	Brazil	IDB, with the UNDP and the GEF	The IDB Private Sector-UNDP Energy Efficiency Guarantee Program is an innovative program that provides both performance and credit guarantees for 80% of EE project costs in commercial buildings (up to \$800K per project). It can be used by ESCOs to obtain loans from banks (e.g. USD 1.6 million to the Brazilian ESCO, APS Soluções, to secure commercial bank financing for three projects); or to provide insurance of EE projects savings to end users (building owners), under ESCO energy savings contracts. USD 25 million is available with USD 10 million from the Global Environment Facility in first loss position which covers risks and reduces costs.
Energy Efficiency Financing Program for the Services Sector	Colombia	IDB-CTF pilot in Colombia Sura/Swiss RE	The program supports Colombia’s efforts to enhance the competitiveness of the hotel and clinic/hospital sub-sectors, while reducing GHG emissions, through the piloting of an innovative financing model for EE projects. The financing model includes a performance risk insurance covering the energy efficiency interventions implemented in the buildings. The package of measures included in the program also entail: Standardized insurance contracts, M&V protocol w/third party verification, Accreditation of contractor, Equipment disposal, and Long-term debt financing. Implementation of the program will start once lending to be provided by the CTF.
FiRe – Energy efficiency work stream	China, India and Brazil (initially)	EBRD and Bloomberg	The intervention aims to deploy up to USD 5bn in energy efficiency financing for large energy intensive industries and SMEs through the active use of energy audits and the translation of technical energy savings potential into financial action. This will be achieved by developing the energy efficiency financing capacity of local banks and by providing energy audits to large energy intensive companies and SMEs.

Annex III – Methodology for the assessment of catalytic impact and market potential

Investment mobilized in Mexico: estimate for agro-industry sector (where the pilot is implemented)

IFC (2012) estimates total energy efficiency investment potential for SMEs in the agro-industry sector in 2010-2025 as equal to USD 1.6-1.9 billion (IFC, 2012). IFC focuses the analysis of investment opportunities on the SMEs sector, and on electricity-related opportunities only, estimating underlying investment required starting from energy bills savings by sectors and assuming investment payback periods of 2.5-3 years. The approach also covers efficient lighting, which is not part of the current instrument proposal.

Annual baseline investment. Fiorello H. LaGuardia Foundation (2014) assumes that 20% of the investment estimate of IFC (2012) has already been achieved by year 2014. This corresponds to about USD 65-80 million annual baseline investments, or USD 320-390 million invested up to 2020 in the absence of the instrument.

Investment potential. We assume that the remaining part (80%) of the investment potential identified by the IFC (2012) is achievable in the residual period 2015-2025. This corresponds to annual investments levels doubling market trends in the baseline, or USD 650-780 billion invested up to 2020.

Investment mobilized in Mexico: estimate for agriculture, industrial and commercial sectors

Annual baseline investment. To estimate the baseline for Mexico taking into account further progress in energy efficiency support in the commercial and industry sector, BNEF (2014a) used current energy efficiency investment intensity¹ of China and Italy - where most energy efficiency improvements have occurred in the commercial and industry sector - as proxy for estimating Mexico's investment levels in 2020 in the same sectors. Based on this approach USD 700-1,000 million is estimated as baseline investment to 2020.

Annual investment potential from electricity efficiency measures in the SME sector. IFC (2012) estimates that the potential investment up to 2025 in EE measures from SMEs in the commercial, industrial and agricultural sector ranges from USD 6,227 to USD 7,472 million, corresponding to an annual average of USD 415-500 million in the same period.

Annual investment potential for eligible energy efficiency technologies. We looked at total energy consumption from the sectors targeted by the instrument up to 2020, and applied the abatement potential of technologies eligible under the proposed instrument (Estados Unidos Mexicanos, 2009)². To estimate the underlying investment required we applied the same methodology of IFC (2012), estimating energy bill savings³ and assuming investment payback periods of 3 years. Based on this approach the total potential amount of investments up to 2020 will account for 7,920 USD million.

Global market potential

Replication of the instrument. To calculate global market potential beyond the pilot we focused on the electricity consumption in the industrial, commercial and agricultural sector in countries with the largest potential in absolute terms, such as BRICS and Next-11 where (1) energy consumption is the highest, (2) energy efficiency policy frameworks can be considered mature and, (3) the ESCO market is still at an early stage of development. Countries selected were then Brazil, Russia, India, China and South Africa, Mexico, Indonesia, Iran, Turkey and Vietnam.

Estimate for selected markets. Following a similar approach to that used for calculating Mexico's market potential, we estimated market potential based on:

- Electricity consumption trends and efficiency targets set out in national policies and strategies, main sources used being IEA (2014a) database of energy efficiency policies, IEA (2014b) National Energy Balances for the estimate of electricity consumption in 2011 and 2012, and country-specific reports;
- Country-level investment payback periods, main assumptions used being a payback period of 3 years for Mexico (IFC, 2012), payback periods of 2.5 years for China and India, payback periods of 10 years for Iran (IEA, 2014c), payback of 3 years for other countries.

Market penetration of instrument

Market penetration of the instrument is a tricky concept, depending on multiple influencing factors. Estimates about instrument penetration are affected by the time needed to get the instrument accepted by the market. While standardization may accelerate market uptake, there are parts of the energy efficiency market where the instrument will remain inapplicable, in particular smaller deals (Parhelion, 2014).

Mexico (up to 2020). We assume 10-20% of market penetration for Mexico. In general, private businesses in Mexico expect an initial market uptake of 10-20% above current trends as an immediate reaction to the implementation of the instrument (D'Addario, 2014). The business proposal of the instrument assumes that it could contribute to realizing 30% of financeable energy efficiency investment (Fiorello H. LaGuardia Foundation, 2014). Financeable EE investment corresponds, in turn, to 50% of the market for the agro-industry sector and 60% for the commercial and industry sectors, resulting in a 15% market penetration of the instrument for the agriculture sector and 18% market penetration for the industry and commercial market.

Global (up to 2030). We assume 5-40% of market penetration at global level, given the higher uncertainty related to success of the initiative in other contexts different than Mexico, but considering the longer timeframe for its implementation. Expectations and ex-post assessments regarding the market penetration of energy efficiency programs mainly concerns developed countries. Expectations of insurers for similar instruments in a developed country context, target 20-25% of the opportunities that make an enquiry about the product; standardization of the product envisaged for the proposed product (with lists of standard suppliers and technologies) could increase such market penetration to 30-40% (Parhelion, 2014). A study from the American Council for an Energy-Efficiency Economy (York et al., 2013) also assumes that participation rates in some energy efficiency categories could reach over 50% by 2030, yet highlighting the importance of time-frames in achieving those penetration rates. Experience of similar programs provides a different outcome. Hayes et al. (2011) describes the participation in 20 or so energy efficiency financing programs across the residential, commercial and industrial sectors in the U.S., identifying only two programs with participation rates above 3%, and more than half under 0.5%. Neme et al. (2011) discusses in detail rates of participation in whole-home retrofitting programs around the world estimate penetration rates of 1% per year or less and similar conclusions are reached by Fuller (2009).

Share of public support for the instrument (during the pilot phase)

For the estimate of public support we assume:

- 100% public support on interest rate payments for projects installed in the two years of duration of the pilot, with interest rate payments corresponding to 1-5% of guaranteed savings⁴, expressing the cost of performance risk and its verification.
- Credit lines provided by the public sector for the first two years of duration of the pilot, assuming that projects would be financed by private banks once confidence in energy efficiency investment is established. We assume that SMEs would apply for financial support for up to 80% of the value of the investment (CTF, 2014).

Footnotes

1 BNEF calculates "Energy Efficiency Investment Intensity (EEII)" as annual energy efficiency investment / annual energy consumption.

2 Technologies for which information was available in Pronase I for the analysis include cogeneration engines, heating /air conditioning and pumping systems.

3 Different electricity prices per sector were used: 100 USDc/KWh in the industry sector; 220 USDc/KWh in the commercial sector; 160 USDc/KWh in the service sector; 240 USDc/KWh in the agriculture sector (IFC, 2012).

4 Currently Energi charges 3-5% of the financed amount for its policy in the US. A Mexican broker estimated that a re-insured stand along insurance policy in Mexico would cost 1% of the financed amount per year (Fiorello H. LaGuardia Foundation, 2014)