BASE

DE-RISKING INVESTMENTS IN ENERGY EFFICIENCY FOR SMEs:

THE ENERGY SAVINGS INSURANCE MODEL

WHITE PAPER

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ABOUT BASE FOUNDATION

The Basel Agency for Sustainable Energy (BASE) is a Swiss not-for-profit foundation and Specialized Partner of the United Nations Environment. The expertise and mission of BASE is in developing innovative, actionable financial strategies and market-driven solutions to unlock investment in climate change solutions. BASE builds bridges between sectors and actors at the nexus between climate solutions, finance and international development. The actionable solutions that the foundation designs, develops and implements seek to be disruptive, self-sustaining and replicable.

DESCRIPTORS

SECTOR	Climate Finance
REGION	Global
KEYWORDS	Energy efficiency, renewable energy, small and medium enterprises, energy transition, decarbonisation, sustainable finance, energy performance contract, guaranteed energy savings, energy savings insurance, surety bond, bank guarantee, innovative business model, climate change mitigation, climate change adaptation
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LIST OF ABBREVIATIONS AND DEFINITIONS:

ADB	Asian Development Bank
B2B	Business to Business
BANDESAL	Banco de Desarrollo de la República de El Salvador
BASE	Basel Agency for Sustainable Energy
BTU	British thermal units
CTF	Clean Technology Fund
EE	Energy Efficiency
EeaS	Energy Efficiency as a Service
EPC	Energy Performance Contract
ESCO	Energy Service Companies
ESI	Energy Savings Insurance (the insurance product)
ESI Model	The combination of the elements (contract, ESI, validation, financing)
ESI Programme	The rollout of the ESI model in a (new) country
FI	Financial Institution
FIRA	Fideicomisos Instituidos en Relación con la Agricultura
GCF	Green Climate Fund
GHG	Greenhouse Gases
GWh	Gigawatt hour
IDB	Inter-American Development Bank
IPMVP	International Performance Measurement and Verification Protocol
ISO	International Organization for Standardization
kWh	Kilowatt hour
LPG	Liquified Petroleum Gas
MDB	Multilateral Development Banks
NGO	Non-Governmental Organisation
PaaS	Product as a Service
PV	Photovoltaic
SIE	The Moroccan Super ESCO
SME	Small and Medium Enterprise
tCO2eq	Tons of CO2 equivalent
UNEP	United Nation Environment Programme

EXECUTIVE SUMMARY

Energy efficiency is considered the 'first fuel' of the energy transition, as one of the easiest and most cost-effective ways to reduce CO2 emissions, while bringing users crucial financial benefits[1]. High-performing technologies have significant potential to decarbonise business activities, however various barriers hinder their broader adoption, and at the core of this challenge is limited access to finance. Catalysing financing, notably towards small and medium-sized enterprises (SMEs) which constitute the core of most economies, can be of transformative power not only for climate mitigation but also to strengthen country and community-level resilience against global warming.

To address this challenge while significantly enhancing companies' financial health, in 2015 BASE and the Inter-American Development Bank (IDB) developed the Energy Savings Insurance (ESI) model. The ESI model aims to drive investments in energy-efficient systems by small and medium-sized businesses by building trust among key actors and addressing the main market obstacles commonly encountered, such as uncertainty about the achievement of future energy savings, and limited access to financial resources. The ESI model was initially introduced in Latin America and later brought to several countries worldwide.

The flagship characteristic of the ESI model stems from the insurance product it leverages, to guarantee businesses energy savings upon the installation of a new energy-efficient system.

The model does so through elements complementary to the insurance, such as a standardised contract that establishes clear commitments between technology providers and businesses, an independent technical validation process to ensure project performance, financing options such as green loans, and an online platform to streamline information and documentation exchange among stakeholders.

The ESI model has been tested and implemented in multiple countries, showcasing the high potential to mobilise investments, achieve energy savings and foster more sustainable practices. The model has also demonstrated its high adaptability to various contexts and capability to drive further investments in energy efficiency.

This white paper provides an overview of the ESI model and its purpose and explores the nuts and bolts that make it work and deliver benefits for all involved stakeholders. The paper also takes the opportunity to review the journey of the ESI model through multiple programmes around the world, and outlining pathways for adaptation and scalability.

INTRODUCTION

The concept of an insurance-based model to help drive investments in energy-efficient systems by Small and Medium-sized businesses first emerged in Latin America. BASE shaped this idea into the ESI model and set it into motion with the IDB in Colombia and Mexico. After raising interest among stakeholders in other parts of the region, the ESI model was brought to El Salvador, Nicaragua, Brazil, Peru, Chile, Argentina, and Paraguay.

Following its success in Latin America, the ESI model made its way to Europe in 2018 through funding by the European Commission Horizon 2020 Research and Innovation Programme. Currently, ESI Europe is present in Croatia, Greece, Italy, Portugal, Slovakia and Spain. Worldwide, (taking into account additional collaboration and funding) it has also been implemented in Mongolia, and Morocco.

At an individual level, the energy consumption of small businesses and significance of any energy efficiency improvements may appear negligible in comparison to larger industries. However, when considered collectively, SMEs constitute 90 percent of businesses worldwide and are therefore highly relevant for energy efficiency investments[2].

Overall, the International Energy Agency (IEA) estimates that energy efficiency can deliver 40 percent[3] of the GHG emissions reductions required under the Paris Agreement.
But in 2023, investments in energy efficiency are set to only reach USD 377 billion, a slight decrease compared to 2022 and falling far short of the requirements for climate mitigation goals[4].
To increase those numbers and adopt highly efficient new systems, SMEs still need to overcome a plethora of challenges, such as higher upfront costs, competing investment opportunities, and low trust in energy-saving claims that hold them back from prioritising energy efficiency considerations in their operations.

Therefore, the ESI model was created to increase trust in investment in energy-efficient systems and solutions. Through its financial and non-financial elements, the model is designed to build transparency and credibility among key actors, reduce the risk for SMEs to invest in energy efficiency, and therefore scale up such investments in the overall market. Consequently, the model alleviates financial institutions' risk when funding energy-efficiency projects, as ESI projects grant the user of the insured equipment added protection.

Moreover, the model aims to facilitate the flow of financing for relevant technology solutions and to address the largely untapped market potential of energy efficiency for SMEs. The ESI model is adaptable to market and technologies presenting interest and potential for energy savings. As a fully market-driven model, it does not necessitate additional non-debt financing, such as grants or subsidies.

MARKET OPPORTUNITIES: WHY ESI?

Small and medium-sized enterprises represent a substantial market opportunity for energy-efficiency improvements. However, this opportunity remains largely untapped of its full potential as several barriers inhibit investments.

Indeed, efficient systems usually consist of state-of-the-art appliances requiring higher upfront costs, and SMEs are typically price-sensitive clients. While suppliers generally emphasise in their sales pitch the potential long-term gains from reduced energy consumption, clients often remain sceptical due to the uncertainty of whether savings will be achieved to the extent promised.

Newer and better-performing technologies may face significant trust issues among potential users, stemming from a limited understanding of the technical specifications and details associated with performance.

Competing investment priorities are another factor hindering the shift to more efficient systems. While facing different investment opportunities and needs, a business may choose to make upgrades that could increase sales or that are customer-facing, instead of decreasing operational costs.

For decision-makers, the risk-return trade-off is one of the essential components of each investment decision. This means low levels of uncertainty (perceived low risk) are associated with expected lower returns, and high levels of uncertainty (perceived high risk) are associated with expected higher returns.

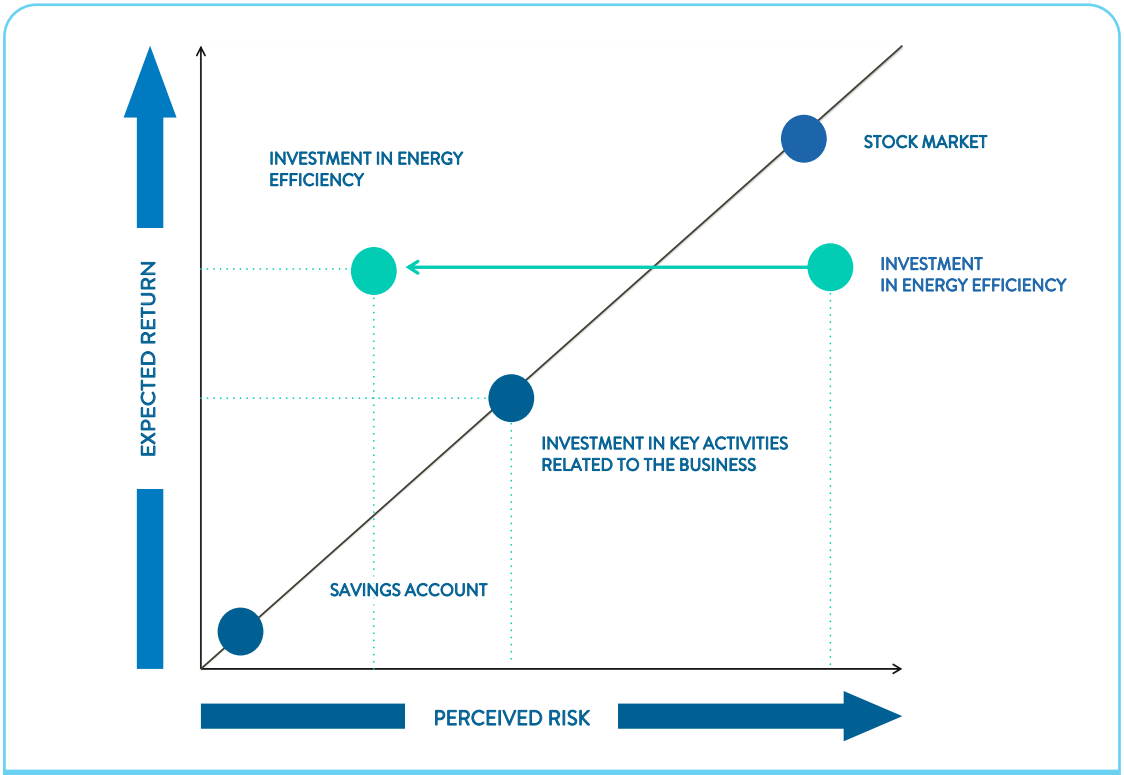


Figure 1: SMEs' decision-making process in investing in energy efficiency.
Scaling energy efficiency investments among SMEs requires mitigating their perceived risk by increasing transparency and their trust in the expected returns of their investment.

Energy efficiency projects currently face high levels of perceived risk, which are not outweighed by expected rewards (i.e. savings). Thus the risk-return expectation is not able to compete with other investment opportunities where investors better understand the risk-return trade-off.

Finally, smaller enterprises often have limited financial resources and access to credit. This amplifies the investment challenge that decision-makers face when considering new energy-efficiency solutions.

In summary

Challenges of SMEs investing in energy efficiency

Difficulties to scale energy efficiency investments by SMEs is due to:

- High upfront costs
- Competing investment opportunities vs limited budget
- Perception of high risk leading to expectation of high returns
- Difficulty accessing finance

ABOUT THE ESI MODEL

A) Elements

The ESI model comprises financial and non-financial elements designed to work together to build trust and credibility among key actors and to reduce the risk for SMEs to invest in energy efficiency, which can be described as follows:

Standardised Contract
A standardised and simplified contract sets a clear and transparent framework for negotiations between technology providers offering their efficient solutions and the companies, typically SMEs, willing to upgrade their equipment or system. It defines the energy savings commitment of the technology provider and how these savings are measured, validated, guaranteed and insured.

Technical Validation
An independent technical validation process is put in place to overcome the perceived high risk of the performance of energy efficiency projects. A credible validation entity evaluates the capacity of the project to deliver the promised energy savings, verifies installation, and acts as an arbitrator if required.

Energy Savings Insurance
The energy savings insurance is the key element of the ESI model, as the differentiator compared to other business models.

With a risk coverage product (typically a surety bond or a bank guarantee), companies investing in energy efficiency are insured against their technology provider failing to fulfil the contractual obligations regarding energy savings. The insurance creates trust in energy efficiency and also reduces the credit risk of the company, especially for SMEs, when accessing finance for the investment.

Financing
Existing financial instruments, such as green loans, or new financing products are linked to energy efficiency projects using the ESI model. This can result in competitive credit conditions, suitable tenors and support to access collateral, which can help SMEs in particular, to access financing for energy-efficient technology solutions.

Online platform
As an additional element acompanying the four others, the online platform is developed to track energy savings and to facilitate the exchange of information and documents between stakeholders. It is a web-based portal, accessible via a secure password, which records each step of the process, providing perfect transparency on every operation, including the performance of the energy efficiency project and energy savings, while guaranteeing users' privacy and control over data.

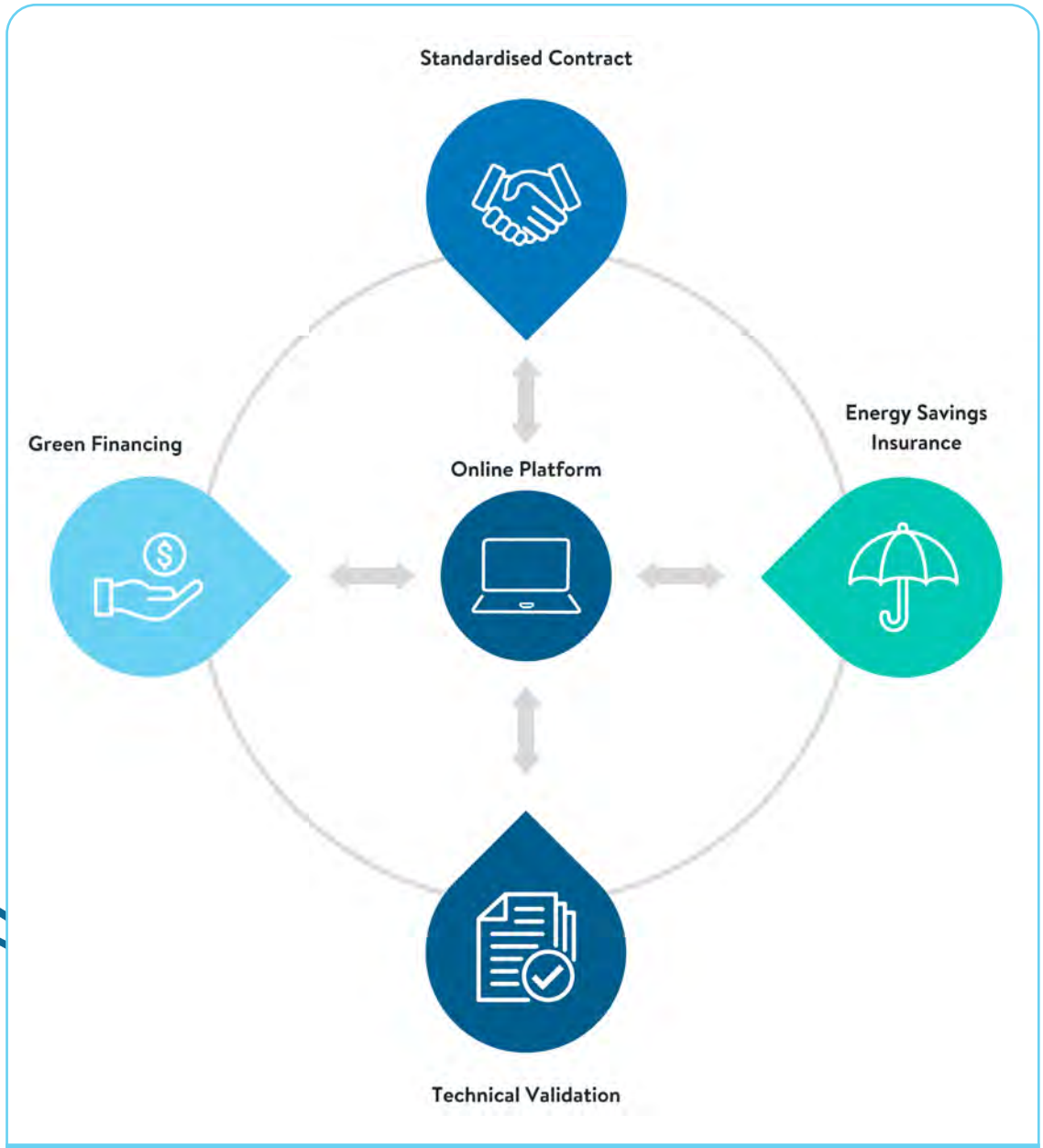


Figure 2: Elements composing the ESI model.

The unique combination of the five elements makes ESI a key business model to unlock the uptake of energy-efficient technologies, differentiating it from other types of energy performance contracts (EPCs).

B) Actors

A diverse range of actors come together for the implementation of the ESI model in a win-win constellation for all. Furthermore, there is an overarching benefit that all actors contribute to sustainability, the delivery of the energy transition and the promotion of climate change solutions.

The main actors are as follows:

Technology Provider
A supplier of energy-efficient technologies, interested in gaining competitive advantage, increasing sales and diversifying their clientele, by offering trust and security to their clients through the ESI model. The technology provider should have the ability to install and maintain the equipment at the client's premises.

Client
Companies, SMEs, or the public sector, who would like to invest in energy-efficient technologies to increase productivity while reducing their energy bills, and with an interest in becoming frontrunners of green initiatives.

Validation Entity
A trustworthy and credible validation entity that acts as both an evaluator and validator of the energy efficiency project and plays the arbiter role in case of disagreement between clients and technology providers. This is also an important entity with regard to triggering insurance coverage.

Insurance Company
A local insurance company that offers a guarantee cover for contractual obligations or surety bonds in the market and would like to extend their existing business line to cover the energy efficiency sector. The untapped market potential of energy efficiency identified for SMEs suggests a promising focus area for insurance companies.

Finance Institution
A local commercial bank interested in driving the market for sustainable initiatives and seeking solutions to support clients and decarbonise their portfolio. Using the ESI model can mobilise green products through a secure solution that de-risks a client's investment in energy efficiency through an energy savings guarantee.

Facilitator
An organisation with extensive knowledge of the ESI model and its implementation. The facilitator advocates its benefits and brings all required stakeholders together for the rollout of the model under an ESI programme and within an energy efficiency project.

Insights from BASE's experience #1

BASE as a facilitator

BASE acts as a facilitator of the ESI model around the world. With its 8 years of expertise in assessing the feasibility of and implementing the ESI model in more than 17 countries worldwide[5], BASE has accumulated a wealth of experience in successfully adapting the model to different regions and markets.

As lead coordinator, BASE collaborates closely with local partner NGOs, public agencies, consultants or companies in the engagement of the different stakeholders required to roll out the ESI model. In previous implementations, local partners have included organisations nationally promoting energy efficiency, and individual consultants in the field of sustainable energy.

C) Workflow

I) Step-by-step guide

Preparation phase
A provider of energy-efficient technologies* makes an offer tailored to the needs of its client, including a guarantee on expected energy savings. The commitment on the energy savings and the elements of the ESI model are included within a simple, standardised contract.

Technical validation of the savings/project

Contract signature

Issuance of the insurance certificate

Contract activation
A third-party validation entity evaluates the project's committed energy savings. The insurance company issues the insurance certificate that covers the validated energy savings and the contract is activated.

Financing

Equipment Installation

Implementation phase
The technology provider instals the new energy-efficient system and the validation entity verifies and validates that the installation is in accordance with the contract.

Validation of the installation

Insurance Coverage
If the savings are not achieved, and the technology provider is unable to fulfil their contractual obligation, the insurance covers the promised savings.

*Providers should be evaluated by the insurance company before offering ESI for the first time.

Operation and monitoring phase
The operation of the new equipment results in reduced energy costs, improved performance and higher productivity and sustainability. Maintenance undertaken by the technology provider ensures optimal operation of the equipment.

The energy savings are measured and annually reported by the technology provider via a simple online system for verification and approval. In case of disagreement on the savings achieved, the validation entity steps in and acts as an arbiter.

Validation of the monitoring (year 1)
Arbitration, if required

Coordination of communications with the online platform

Each year of contract length, the assessment of energy savings is conducted, validated, and discrepancies (if any) are covered

II) Costs

The size of energy efficiency investments varies significantly depending on the technology and scope of the project. Aiming for the mobilisation of investments from SMEs suggests considering projects with a value of up to EUR 1,000,000, although it should be noted there is no upper limit on the use of the ESI model.

The two main costs in relation to the ESI model are the insurance and technical validation fees. Both costs can be added to the overall cost of the investment. These normally represent a very small percentage of the total investment cost, easily absorbed by a client seeking further assurance on their investment.

In the case of the insurance fee, the premium is a percentage of the total insured amount, which is paid once for the duration of the insurance coverage as reflected in the standardised contract. This term is limited in practice by insurance industry policies or country regulations and can vary from three to five years. This fee typically ranges from 1.5 to 2 percent of the insured amount, depending on the financial strength of the technology provider or contractor requesting the insurance coverage.

The validation costs are usually not affected by the type of technology. They depend mainly on the location of the project and the service fee of the validation entities engaged in the ESI programmes. In Europe, the amounts charged varied between EUR 1,450 and EUR 2,800 per project, including the ex-ante validation of the project, installation validation and the first-year savings reporting validation. This suggests a range of 2-5 percent of the investment for the additional elements guaranteeing future energy savings, when considering an average-sized investment of EUR 100,000. Whilst there is no minimum or maximum project size for the application of the ESI model, the investment amount should be large enough to easily absorb these two main costs.

To address these additional costs, favourable financing conditions of a green loan can be crucial to fine-tune the model and balance it out financially. When it comes to smaller-sized projects (e.g. household appliances and equipment upgrades), the disadvantage of applying the ESI model lies in the additional costs that

Insights from BASE's experience #2

Range of fees over different implementations:

	Insurance	Validation Entity
Europe	1.5-3% of the insured amount	1,450 - 2,800€
Mongolia	1.5% of the insured amount	550-750€

the validation and the insurance represent, significantly increasing the total cost of the project.

In practice, this brings the suggested minimum investment amount to around EUR 20,000 for projects in markets such as Latin America or Mongolia, and around EUR 50,000 in the case of Europe. Defining the average investment size per project across all markets is challenging. However, it is likely that a representative range would fall between EUR 100,000 and EUR 400,000.

III) Financial Structure

Mobilising investments in energy efficiency can be tackled from many angles and driven by different stakeholders in the ecosystem. Nevertheless, the client is the primary decision-maker when it comes to the investment and opting for an energy-efficiency upgrade of their business. The client hires a technology provider for the said investment, and signs the ESI standardised contract with them. In parallel, the client secures a green loan from a local financial institution offering green products.

On the other side, the technology provider hires the entity responsible for the technical validation of the project and secures the performance insurance of the project (ESI), where the beneficiary of the insurance is the client.

Under the ESI model, the savings generated by the investment benefit the client solely, making their business more competitive, profitable, and supporting the repayment of the green loan obtained from the financial institution. Figure 3 illustrates in detail how the financial flow among these stakeholders looks like.

Financial institutions can provide energy efficiency or green loans through programmes supported by Multilateral Development Banks (MDBs, such as the Inter-American Development Bank or Asian Development Bank (ADB)) or international funds with aligned purposes (such as the Green Climate Fund (GCF)). Local insurance companies can also access the support of reinsurance companies, who are already familiar with the ESI model. Furthermore, the financial structure of the ESI model is flexible enough to adapt to existing (or new) incentives for energy efficiency investments or guarantee schemes for SMEs.

Insights from BASE's experience #3

Partners of the ESI model around the world

The implementation of the ESI programme in Latin America was led by the Inter-American Development Bank (IDB) with the support of funds from the Danish Government and engaged local development and commercial banks and local insurance companies. The implementation of the ESI model in Mongolia is being supported by funds from the Green Climate Fund to the local bank XacBank.

MunichRE and SwissRE have been closely following the rollout of diverse ESI programmes in Latin America and Europe.

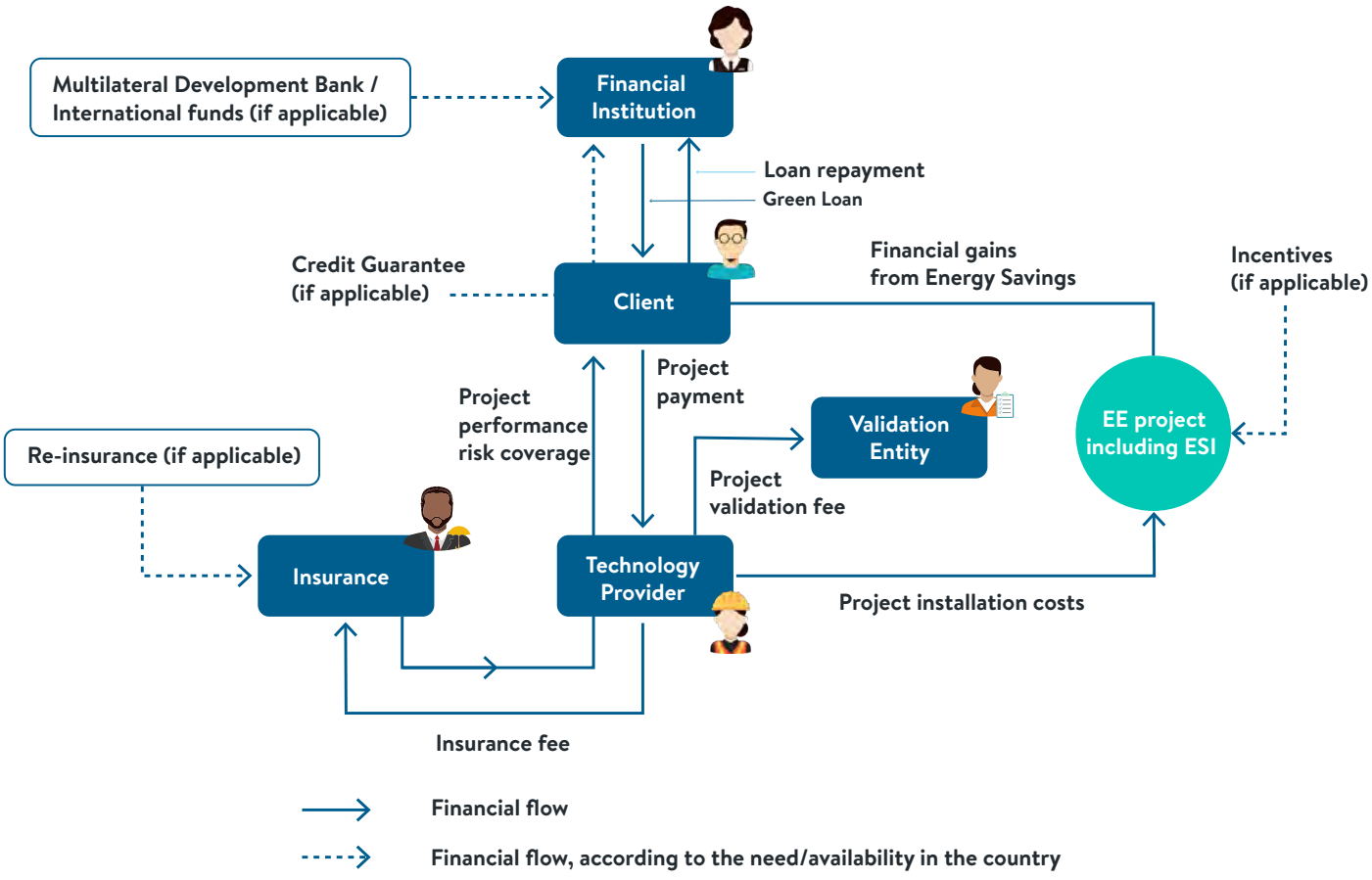


Figure 3: Financing structure of an ESI project

BENEFITS: WHY IS THE ESI MODEL A WIN FOR ALL?

Mainstreaming the ESI model can enable SMEs (clients) and technology providers to significantly reduce the investment risks associated with energy efficiency, stimulating the demand for projects, and leveraging interest and market motivation to mobilise stakeholders.

Concretely, for **clients** such as SMEs, the adoption of an energy-efficient system enables significant financial gains, reducing energy bills, maintenance costs and downtime losses. On top of this, the ESI model brings a certain peace of mind, as both technical and financial risks are drastically reduced by the elements of the ESI model. Indeed, if promised energy savings are not met, a partner insurance company will reimburse the difference if the provider doesn't.

Furthermore, all projects implementing the ESI model are validated by an independent technical entity to confirm their savings potential.

Additionally, the roll out of the ESI programme creates partnerships with participating financial institutions, allowing easier access to green financing lines at attractive conditions. Therefore, clients can acquire state-of-the-art technology for enhanced energy efficiency, productivity and competitiveness through better loan conditions.

Moreover, upgrading to such equipment helps to ensure clients comply with climate change regulations, energy efficiency standards, and contribute to environmental sustainability by reducing energy consumption and therefore overall greenhouse gas emissions.

For **technology providers**, the model can significantly increase sales by offering a whole range of advantages to potential clients. In addition to the product's energy efficiency, it differentiates its services from the standard competition.

Offering an energy savings guarantee can attract a broader range of clientele, including the risk-averse, by positively influencing their decision-making process.

The model ensures stronger trust in the purchase of energy-efficient technologies through the validation of the projected and actual savings by an independent technical entity, further unlocking selling opportunities. Moreover, through partnerships with financial institutions, clients can access green loans from banks, allowing for the entire project payment to be settled with the technology provider when the installation is completed.

Finally, beyond making energy-efficient investments more appealing to the market, and increasing trust in energy efficient technologies, the model also simplifies negotiations thanks to standardised contracts and tried-and-tested methodologies.

In addition to the advantages provided to clients and technology providers, the ESI model is beneficial to other essential stakeholders such as financial institutions and insurance companies.

Regarding **financial institutions**, enhanced trust in energy-efficient investment among SMEs has the potential to significantly increase the number of projects undertaken by this sector, thereby accelerating green lending activities through lowered risks. Investments characterised by an insurance on the committed energy savings, reduce the risk of default on loan repayments.

Moreover, the ESI online platform makes it possible for banks to easily and transparently monitor the performance of those projects within their portfolio. Therefore, this solution provides financial institutions with direct and measurable contributions toward sustainability and emission reduction objectives, by encouraging the expansion of green portfolios and decarbonisation of their clients' activities.

Regarding the **insurance** sector, working with the unique ESI model can support growth, especially in the energy sector. It can give rise to the opening of new business lines in surety for transactions between private sector actors while strengthening the relationships with existing technology provider clients.

Finally, as a benefit common to all stakeholders, ESI enables insurance companies to easily and safely increase their contribution to sustainability and the promotion of climate change solutions.

Beyond the advantages for the aforementioned stakeholders, it is worth recognising that the ESI model can strengthen awareness of the importance of energy efficiency measures and their associated benefits.

The creation of an enabling environment for energy efficiency projects alongside the increased capacity of all stakeholders involved (financiers, insurers, technology providers, insurers and validation entities) contributes to increasing investment in energy efficiency more generally.

This supports the overall reduction of energy consumption and greenhouse gas emissions, which has a global impact.

In summary

Clients win:

- All benefits that come with an energy efficiency upgrade, (reduced energy bills, downtime, maintenance cost)
- Peace of mind from guaranteed savings, backed by an external third-party
- Access to (green) finance in favourable conditions
- Decarbonised activity

Technology providers wins:

- Increased sales due to enhanced trust in high-energy efficient systems
- Diversifying their clientele
- Differentiating from competition

Financial institutions win:

- Deploying green solutions for SMEs
- De-Risking clientele's investment in energy efficiency
- Direct and measurable contribution of green loans
- Decarbonisation of clients' activities (i.e. bank's portfolio)

Insurance company win:

- New application of surety bond in private sector actors transaction
- Active participation in support of sustainability and decarbonisation
- Strengthen relationship with technology providers

Wins for the rest of the world:

- Creation of an enabling environment for energy efficiency investment
- GHG emission avoidance from energy efficiency measures

ROLLING OUT THE ESI MODEL

A) Implementation in practice

The implementation of the ESI model in new markets, referred to in this paper as the rolling out of an ESI programme, is done through the support of a facilitator and typically involves the following stages:

- **Market assessment:**

The objective of this stage is to gather information on the existing policy and regulatory framework in relation to both energy and insurance, the energy efficiency financing landscape, and to identify the key sectors and potential clients that can best benefit from the implementation of the ESI model. The identification of priority sectors in the market, allows the facilitator and local partners to draft an initial strategy for the introduction of the ESI model in a more resource-efficient way.

An initial assessment and quantification of the market potential for energy efficiency investments by SMEs in prioritised sectors is also important information for engagement with stakeholders such as financial institutions and insurance companies. In the implementation phase, facilitators should monitor the market to be able to react to possible new applications and interested sectors that were not initially prioritised, in order to tap into the larger market potential of the ESI model.

- **Development and/or adaptation of methodologies for validation and verification of savings:**

The contracting of a recognisable and trusted validation entity in the market is a fundamental element to the successful implementation of the ESI model, as this offers credibility and security to all actors involved in the application of the model.

Such an entity provides clients and suppliers of energy efficiency solutions with the methodologies for the technical validation of the energy savings, as well as all the templates and forms that guide the implementation of the model. The validation methodologies used are based on internationally recognised procedures, such as the IPMVP or ISO, and are technology-specific, therefore the outcomes of the market assessment also inform this stage of the ESI model's implementation.

Typical technologies included in the ESI programme are compressed air, heating, ventilating and air-conditioning (HVAC) systems, lighting, refrigeration, boilers, electric motors/pumps, co-generation, solar water heaters and solar photovoltaics.

- **Development and/or adaptation of standardised contract:**

With the support of a local law firm experienced in the field of energy and insurance, the ESI standardised contract is developed to comply with local regulations and practices.

The contract reflects the terms of the system supply, installation and maintenance, and has additional clauses on the energy savings guarantee, and the definition of the roles of both the insurance element and validation entity.

This contract is provided to the stakeholders in the market, especially to technology providers and insurance companies for feedback. The outcome of this feedback is a standardised

contract that is balanced for all parties and easily adopted by the market. In addition, as insurance companies become more familiar with the standardised contract, they can adapt the surety product to fit the ESI model.

- **Development and/or adaptation of an online platform:**

The transfer of the step-by-step workflow onto a digitalised platform aims to simplify the communication and documentation exchange between stakeholders.

This process can be done in parallel to the engagement of stakeholders and the definition of the details of their respective roles and documentation. Ideally, a pilot project phase is also used to pilot the online platform for final adjustments and smooth operation in the market adoption phase.

Defining the ownership, operation and business model of the platform can be an important step in the rollout of an ESI programme.

- **Engagement of insurance companies and financial institutions:**

Successful implementation of the model also relies on the commitment of insurance companies and financial institutions to the adoption of the ESI model and offering their services. Insurance companies are responsible for providing surety insurance to local technology providers and contractors, strengthening their energy-saving commitments. Financial institutions, usually banks, who take part in an ESI programme can greatly support the success of the broader uptake of the model.

By requiring energy savings insurance as one of their eligibility criteria for the allocation of green loans, they also benefit from the fact that the investments in energy efficiency projects are lower risk, technically validated by external parties, and then increased demand for their financing product, which will come from the broader efforts of the ESI programme implementation.

Insights from BASE's experience #4

Online Platform in practice

ESI programme implementations around the world present different configurations for the setup of the management information system. For example, in Latin America the platform has been developed in each context to be hosted by different stakeholders: in Brazil, this was managed by the Validation Entity whilst in Mexico it was embedded into the bank's system.

In Europe, the management information system is hosted by the facilitator, BASE Foundation. It has been developed in blockchain to bring an additional level of trust and transparency for the ESI model implementation. In Mongolia, the management information system is hosted by the validation entity and is also developed in blockchain.

Insights from BASE's experience #5

Branding of ESI Europe

The ESI model elements have been developed and implemented in Europe under the brand name 'GoSafe with ESI'. The pilot stage of the implementation of the model in Italy, Portugal and Spain tested the operability of the model. The ESI Europe 2.0 project extends implementation to Croatia, Greece and Slovakia. The online platform of GoSafe with ESI is owned and operated by BASE, the lead facilitator of the ESI model in Europe.

The implementation of ESI Europe under the Horizon 2020 research and development funding of the European Commission included brand creation and training on the GoSafe model. This training initiative reached over 1,000 individuals throughout Italy, Spain, and Portugal, encompassing diverse stakeholders such as technology providers, SMEs, and financial institutions. Furthermore, nearly 1,000 participants from a European-wide audience were exposed to insights about ESI Europe and the GoSafe model with ESI through informative presentations at events and dedicated webinars.

- **Communication and training of potential users:**

The successful adoption of the ESI model in new markets is enhanced by communication and marketing activities, to inform all different stakeholders about the model and how it works, and to create momentum for its uptake.

Several different channels should be leveraged to specifically engage potential adopters (notably technology providers and clients) locally, such as fairs, workshops, sector associations and specialised magazines, as well as digital tools such as B2B platforms and social media advertising, or webinars.

Partnering with local marketing experts can also help to build a more comprehensive strategy.

- **Pilot projects:**

The pilot phase encompasses the initial projects and energy efficiency improvements in each country the ESI programme is implemented. During the pilot phase, the facilitator and local partners guide key stakeholders through the different stages of implementing the model. This ensures a seamless and straightforward application of the model in the first projects.

Technology providers and contractors committed to the ESI model may count on financial support to cover the costs of the validation of the first opportunities and contracts.

In addition, pilot projects benefit from high levels of national and international visibility provided by dissemination and information-sharing activities conducted by the facilitator and local partners.

- **Market adoption:**

The operational phase of the ESI programme is reached when the key actors involved are assessed to have gained sufficient experience in using the elements of the ESI model for energy efficiency projects, requiring less support from facilitators and local partners.

During this phase, technology providers and contractors offer end customers the insurance on guaranteed energy savings and access to green finance through financial partners. They in turn engage the services of a validation entity for the evaluation of their proposals and contracts, and incorporate the guarantee certificates obtained from the insurers.

When the commitment of the financial institutions and insurers is high, they also contribute to the acquisition of customers and opportunities to be analysed by the network of technology providers and contractors involved. At this stage, actors should be familiar with the online platform for the registration of all templates and validation forms associated with the validation of projects.

B) Key Learnings

I) The surety product

The implementation of the ESI programme in different markets requires overcoming several operational challenges and adaptations often related to the insurance product, which is the core of the model. The main challenge is related to whether or not a 'surety insurance' or similar product exists in the local regulation, to what extent it is an established product on the market, and the capacity of local insurers to use or develop it. In mature markets, surety insurance is usually an existing product primarily used in the public procurement market. An example of this application is an advanced payment guarantee (surety) that providers have to give to their contractors (public authority) when signing a contract: in case they do not fulfil their contractual obligations for the first part of the contract they need to return the first payment, usually made at the signature of the contract, to cover the initial acquisition of materials or a service.

This context is easily adaptable to the ESI model, essentially requiring the application of the same product to a different contract between two private companies. In less developed or smaller markets, surety insurance may not exist or there may be a situation where surety insurance is covered by local legislation at the regulatory level whereas in practice there are no local insurers using or offering it.

In these cases, it is advisable to explore the appetite of local insurers to offer the product with the support of reinsurance companies, as per their own appetite for the product and market.

In parallel, it is possible to bring the product to market through international brokers with local underwriters knowledgeable of the market and key actors.

In cases where applying a surety product in a specific market is challenging, it is possible to explore bank guarantees as a product to cover energy savings commitments.

This presents a disadvantage if compared to the surety product, as banks usually lock in the resources of the technology provider into an escrow account, in order to issue the bank guarantee that will have the energy efficiency client as beneficiary.

Insights from BASE's experience #6

ESI in Mongolia

In the case of Mongolia, a local insurer Tenger Insurance was able to work with the regulator to adapt local legislation, making it possible to offer an insurance product that, although in the strict legal sense is not surety insurance per se, in practice allows the ESI model to be applied in a manner identical to that used in other countries.

The Mongolian case exemplifies successful public-private collaboration for the development of a new product within a reasonable time frame of around 1 year. Such an outcome may be challenging to achieve in other markets where surety insurance needs regulatory development. Morocco and Croatia represent smaller and less mature markets where, although the surety insurance product exists at the regulatory level, in practice, insurers face difficulties in offering this in their portfolios. In this context, it is advisable to analyse the options offered by local banks such as bank guarantees.

II) The eligibility of technology providers

Once the foundations for offering surety insurance in the market have been laid, a second possible operational challenge to overcome relates to the underwriting policy offered by various insurers participating in the ESI model.

During the evaluation phase of potential pilot projects in different markets it is advisable to carry out an evaluation of the technology provider in the early commercial stages of the project. This is in order to avoid the situation where a technology provider or contractor willing to use ESI model engages with clients but is ineligible for insurance coverage because they do not meet the eligibility criteria established by the insurance companies. This early evaluation of technology providers requires some degree of flexibility on the part of the insurance companies, who may prefer to evaluate the projects once the contracts have already been signed between technology providers and their clients.

The facilitator and local partners can also support this process during the pilot project phase. While each insurance company has its internal procedures for the assessment of its clients, the facilitator can check that interested technology providers meet minimum requirements (usually common and applicable to all insurance companies involved) in a preliminary assessment.

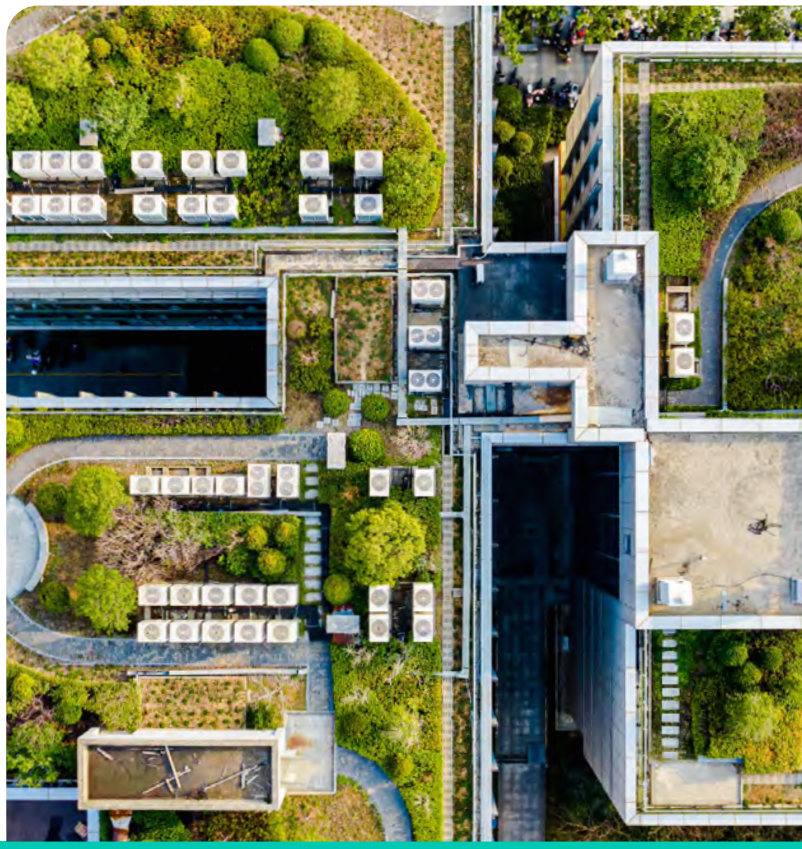
Preliminary assessments are designed to function more as a pre-filter, aiding the identification of the most promising technology providers and opportunities. Non-compliance with a single criterion does not automatically render a provider ineligible according to the insurers' criteria. Once the operational phase is reached, this risk is minimised as most new projects will stem from eligible technology providers.

III) Integrating the financing element

The financing element of the ESI model has shown to be a relevant drive for the implementation and market adoption of the model in a country. Integrating the ESI model as a requirement of a green loan, for example, has shown to drive the market, as financial institutions very often do already require guarantees and/or insurance within transactions.

On the other hand, a green loan that is combined with concessional finance support that enables good credit conditions can be the balance point for the final clients to make the decision of adding the ESI elements to the project, which also represents extra costs.

Therefore, having a sound financing structure for the ESI programme is key, identifying the respective existing instruments and stakeholders within the country, which will also support the broader uptake of the model.



IV) Placing the ESI model in an energy efficiency financing landscape

An array of business models and financing mechanisms have been explored and are being tested to enable the adoption of energy efficiency in spite of the higher cost of state-of-the-art systems. Direct commercial loans constitute the most commonly used financing mechanism that can, in principle, finance energy efficiency projects.

Enterprises (in particular SMEs) often face limited access to loans and tend to prioritise investments in core business activities over energy efficiency improvements[6]. Green credit lines offering below-market interest rates for projects responding to certain sustainability criteria can facilitate access to capital for sustainable energy installations.

However, in several cases direct or soft loans alone are not enough to encourage investments in energy efficiency, highlighting the need for complementary mechanisms.

Overview of energy efficiency Financing Mechanism

A number of contracting and financing mechanisms exist in the energy efficiency landscape. These are commonly referred to as Energy Performance Contracts (EPCs) and are typically offered by Energy Service Companies (ESCOs) created to fund energy efficiency upgrades through cost savings, therefore aligning with provider incentives to achieve maximum efficiency. This is the narrow definition of an ESCO, which has been recently broadened to also refer to an enterprise in the field of energy efficiency projects that can offer different types of contracting possibilities for clients.

The two most prevalent contracting models are[7]:

1. Shared savings model: ESCOs invest in the project and receive a predetermined share of cost savings as remuneration. They assume performance and credit risks and acquire financing themselves. Customers are charged and pay for the energy-efficiency project according to the savings achieved, making the measurement and verification process key to adoption. The challenge for ESCOs in offering this contracting model is access to finance, as they need to keep investments and cash flow in balance for the number of projects they offer.

2. Guaranteed savings models, Customers obtain financing from financial institutions, assuming investment repayment risk. ESCOs delivering the equipment are paid contractually determined fees (often a full payment upon project installation) and guarantee a certain level of energy savings to clients, covering the difference if underperformance occurs. Should the savings be insufficient to cover the client's debt, the ESCO has to cover the difference. If savings exceed the guaranteed level, then the customer pays an agreed-upon percentage of the savings to the ESCO.

The ESI model falls under the definition of a guaranteed savings contracting but presents the addition of the surety insurance and external validation process as core elements.

Other contracting models include:

Pay-per-use models, also known as Product-as-a-Service (PaaS) or servitisation, also effectively mitigate the upfront costs of adopting cleaner energy systems, as under such model the equipment is installed at the client's premises which is solely charged based on the utilisation of the system. The solution provider retains the ownership and remains responsible for the maintenance, therefore incentivising optimal upkeep which would maximise its performance. Therefore, Energy Efficiency-as-a-service (EeaaS) can be particularly fitting for companies looking to decarbonise their operations with no capital expenses and responsibility when it comes to their energy systems, for those who wish to keep control over their periodic payments by managing usage, and for those who are not willing or able to acquire assets or where off-balance solutions are preferred.

Leasing models typically involve a client paying monthly instalments for the use of equipment with a buyout option. This is a financial strategy that can be more suited to customers lacking initial capital but willing or preferring to own the equipment and assume operation and maintenance. The unknown variable for this type of model is the lack of assurance that leased equipment is the most efficient on the market, and uncertainty surrounding the generated energy savings from switching or replacing equipment.

The financing mechanisms outlined, in particular EPCs, are compatible with public financing incentives such as subsidy programmes, which offer direct funding under set criteria to reduce the cost of energy efficiency upgrades. Indeed, subsidy programmes are often targeted at a specific technology or energy system. Lowering the financial risk of one system can create opportunities to upgrade other types of equipment with the models described above.

SOURCE	TYPE
Banking institutions	Credit
	Leasing
Private equity Funds	Credit
	Equity
	Convertible debt
ESCOs (Energy Service Companies)	Performance-based financing
Insurance	Risk mitigation instruments
Guarantee institution	Credit guarantees
Crowd funding platforms	Crowd-finance
On-bill financing and rebates (e.g. USA)	On-bill financing and rebates (e.g. USA)

Figure 4: Common types of financing and funding sources for commercial sector energy efficiency. Figure from BASE report: Manual of Financing Mechanisms and Business Models for Energy Efficiency

V) Mobilising the first adopters of the ESI model

The ESI model has been successfully implemented in Latin America and more recently is being tested across different European and Asian countries. Entering new markets often involves introducing the model to new stakeholders, different cultures, and new environments.

Therefore additional work is required to tailor the model to contextual nuances, and provide the right incentives to mobilise first adopters. Facilitators must carefully assess and understand the market typology and behaviours of the main stakeholders (especially SMEs and technology providers) in an implementing country, and design a scheme of incentives to attract the frontrunners into investing in energy-efficient systems through the ESI model.

These incentives can relate to different aspects, for example covering the fees for the validation services and insurance product, providing free legal services, making use of a well-established network of stakeholders to promote businesses, or fast-track connections to a local bank providing competitive green loans.

Insights from BASE's experience #7

Perks of using GoSafe with ESI

In the case of ESI Europe 2.0, a value package was created for technology providers and SMEs aiming to attract the first stakeholders to use the ESI model (GoSafe with ESI solution) for their energy-efficiency project.

The value package included:

- Free Validation Services
- Free Legal Services
- Free promotion through a marketing product of choice
- Free support from facilitators throughout project implementation
- Promotion of Business through partners' channels
- Facilitation of interactions with an Insurance Company or Bank for faster and improved service

ESI PROGRAMMES AROUND THE WORLD

Latin America

The concept of Energy Savings Insurance was developed in Latin America in 2015, where some of the main barriers hindering the adoption of energy-efficient technologies were identified as the lack of trust in the actual energy savings different technologies could provide, and the prioritisation of short term profitability.

Colombia:

The first projects were deployed in partnership with the Inter-American Development Bank in Colombia[8]. Bancoldex's ESI programme, supported by IDB, pioneered the ESI model to support investments in energy efficiency in the SME sector. A mix of validation methodologies, structuring energy savings agreements, an energy insurance policy and a credit line offered by Bancoldex with support from the IDB, effectively mitigated project risks and instilled investor confidence. This resulted in an increase in investments in energy efficiency using the model, initially in the health and hospitality sector and currently expanding into other sectors.

As of March 2023, the ESI in Colombia has mobilised a total investment of more than USD 28 million across 262 projects[9]. These projects span various economic sectors, including services (educational and health institutions, solar farms, hotels, logistics companies, banks, shopping centres, religious organisations, airports, and residential complexes), commercial (supermarkets, vehicle dealerships, fuel stations, clothing stores, and hardware stores), and manufacturing (food and beverage production, agriculture and livestock, plastics, glass, brick, chemical products, footwear, and textile factories). The implementation of energy generation and efficiency solutions supported by energy savings insurance has yielded promising results in these sectors.

Mexico:

An instrument related to the ESI model has been implemented in Mexico in cooperation with Fideicomisos Instituidos en Relación con la Agricultura (FIRA)[10], an agriculture-focused trust fund. The project entailed a technological guarantee provided by FIRA through a Clean Technology Fund (CTF) grant, which covers the energy savings achieved by the project. Unlike the ESI model, FIRA's initiative did not require a contract or involve an insurance company.

Instead, a hedging instrument was granted to clients which acted as a performance warranty for the committed savings or energy generation throughout the contract duration. The financing strategy combined medium and long-term loans with two risk mitigation instruments: technical project validation and a technological guarantee. Successful validation granted access to the FIRA line of credit and eligibility for the technological guarantee.

FIRA and the IDB offered incentives to investors and technology providers such as covering project validation costs and providing specialised technical advice. Priority was given to the sectors of agribusiness, such as agriculture, livestock, fishing and forestry, with targeted technologies including industrial cooling systems, compressed air systems, industrial boilers and solar water heater systems among others. As of 2021, nearly USD 3 million were consolidated through ESI projects in the country across 12 projects.

El Salvador:

The ESI programme in El Salvador was developed by the Banco de Desarrollo de la República de El Salvador (BANDESAL) and backed by both the IDB and Green Climate Fund (GCF)[11] to address the challenges of limited knowledge about energy efficiency benefits and a lack of familiarity with energy-efficient equipment and technologies. The model was designed to build confidence in the anticipated savings from energy efficiency projects.

Four pilot projects received funding, with incentives covering validation costs, contributing to insurance premium payments, and facilitating early retirement and replacement of outdated equipment. Moreover, credit lines were made available to finance energy efficiency projects, assisting financial institutions in attracting new clients. Collaborative efforts with unions played a pivotal role in generating SME interest in adopting energy efficiency projects. As of March 2023, the programme mobilised USD 21 million accross 84 energy efficiency projects.[12]

Chile:

Banco Estado's ESI programme supported by the IDB is committed to enhancing the competitiveness of businesses in Chile[13]. It effectively mitigates investment risks, encourages the adoption of energy-efficient technologies to reduce greenhouse gas emissions, and fosters an energy savings culture.

The IDB's support encompasses incentives covering validation costs, insurance premium payments, and incentives for asset retirement. A comprehensive communication strategy including dissemination events generated significant interest among companies.

Paraguay, Nicaragua, Brazil, Peru, and Argentina:

The deployment of the ESI model in different Central and Latin American countries raised significant interest on the continent, and the model has been further replicated in Paraguay[14], Brazil[15], Peru[16], and Argentina[17]. Collaborating with local banks, the financing strategy combined medium and long-term loans with three project risk mitigation instruments to support the identification and structuring of technically robust and bankable projects: a standard contract, technical validation, and the ESI.

Europe

Starting in 2018, the implementation of the ESI model in Europe comprised two phases.

Initially, building on achievements and successes observed in Latin America, the first project funded by the European Commission Horizon 2020 (H2020) programme enabled the model to be brought to Spain, Italy and Portugal. In 2021 the model was introduced to three further countries, Croatia, Greece, and Slovakia.

One of the core objectives of the H2020 programme was to develop an enabling environment for SMEs to adopt low-carbon technologies. The ESI Europe project therefore targets SMEs, recognising their potential to generate significant energy savings and the reduction of greenhouse gas emissions.

Italy, Portugal, and Spain:

To introduce the ESI model in Europe, BASE collaborated with local partner organisations. A market assessment was conducted to understand the technologies with the greatest market potential for the application of the ESI model. These were identified asLED lighting, industrial refrigeration, co-generation, solar PV systems, air conditioning systems, air compressors, boilers, and electric motors.

The most responsive sectors to the model were hotels, food processing facilities and corporate offices. A project pipeline of EUR 12.5 million across Italy, Spain and Portugal was identified.

Approximately 2,000 individuals representing technology providers, financial institutions, and SMEs took part in GoSafe with ESI capacity-building sessions. Throughout the duration of the project, targeted in-person and virtual dissemination activities reached approximately 1,000 people.

Croatia, Greece, and Slovakia:

Since 2021, BASE has been collaborating with local partner organisations to introduce the ESI model in three additional European countries. After adapting the model's elements and engaging relevant stakeholders for all three countries, the consortium aims to develop the piloting phase through Q1-Q2 of 2024.

The market assessment suggests there is the potential to mobilise around EUR 12.5 million of investment in energy efficiency projects within six years of its launch, generating corresponding primary energy savings of 42,7-gigawatt hours per year after six years of project launch, resulting in annual emissions reductions of 19,000 tCO2eq.

Africa and Asia

In 2022 BASE introduced the ESI model to new countries in Asia and Africa.

Thanks to the high adaptability of the model to new market typologies, regions and clients, BASE saw an opportunity to test the model in different economies, while collaborating with ESCOS and private and Development Banks in Morocco and Mongolia respectively.

Mongolia

BASE actively collaborated with XacBank and GCF during 2022 and 2023 to develop and implement the ESI program in Mongolia. The program is currently in its pilot phase and has achieved successful implementation in two photovoltaic projects, on the rooftop of XacBank's headquarters in Ulaanbaatar, and the rooftop of an E-Mart supermarket.

In navigating Mongolia's unique regulatory landscape, local insurance company Tenger Insurance faced a significant hurdle in devising an energy insurance policy due to the absence of surety insurance regulations. However, despite the challenge, an energy insurance policy was created tailored to the Mongolian market and aligned with existing regulatory frameworks. XacBank has embraced an inclusive approach to implementing the model, allowing other banks in Mongolia the opportunity to integrate it into their operations.

This opens avenues for further growth and development. The ESI project is integral to XacBank's larger green finance initiative, projected to attract approximately USD 60 million in investments for energy-efficient projects in Mongolia over the next 5 to 7 years.

Morocco

In March 2022, BASE and SIE, the Moroccan Super ESCO, partnered to bring the ESI model to Morocco and facilitate the implementation of energy efficiency projects by SMEs. According to market research, around 7000 small and medium-sized enterprises have high energy use in the country, signalling strong potential for the adoption and implementation of the ESI model.

The project estimated that 1500 energy efficiency projects for SMEs, representing around 20 percent of the potential market in Morocco, would generate 1.450 GWh of energy savings and 960,000 tCO2e of the country's GHG emissions reductions in the first 6 years of operation over a 15-year equipment operation window.

CASE STUDIES

Hotel Villa Martha, Colombia

Context

In 2018, the team behind the Villa Martha Hotel in Cartagena, Colombia explored the installation of solar panels as part of their sustainability strategy and commitments. Due to the lack of information and transparency regarding investments in energy efficiency by businesses, the Hotel collaborated with the Inter-American Development Bank, Energitel, and Asotelca, the association representing hoteliers on the Atlantic coast of Colombia, to develop a solution that would bring more visibility to and confidence in the potential utility savings that clean energy could provide. An alliance with Bancóldex and the IDB was established to work towards environmental protection and develop an energy efficiency insurance policy. These collaborations laid the foundations for the introduction of the ESI model in Colombia, which ultimately aimed to provide incentives and generate trust among investors and technology providers.

"Seeing all the deforestation, everything that is happening in the world, all this global warming, we started to investigate how we could help from the Villa Martha hotel."
Gustavo Correa from Hotel Villa Martha.

Implementation of the Model

The surety product provided by insurance company Sura, played a crucial role in the implementation of the ESI model, mitigating the risks of the investment in solar photovoltaics for hotel managers. To validate the proposed investments and guarantee savings, a third-party technical validator was engaged and flexible payment conditions were offered to align with energy savings and attract investors. In this configuration, the ESI model was able to provide comprehensive coverage of 100 percent of the differences between expected and achieved energy efficiency savings.

“These projects are wonderful because with the savings they generate in energy consumption -the energy that is no longer purchased from the grid operator-, the financial instalment of the credit is covered.”
Ricardo Duque, Energy Manager at Energitel

Outcomes

Collaborations with stakeholders including the government of Denmark, the Climate Investment Funds, the IDB, and technology providers further strengthened the implementation over eight other countries in Latin America, including neighbouring Ecuador. The provision of the ESI model and on-going support to clients empowered them with the confidence and financial security to implement cleaner energy technologies.

Hotel Neiza Plaza, Colombia

Context

Hotel Neiva Plaza located in Huila, Colombia, is a renowned hotel in the region. With a strong focus on minimising environmental impact and seeking cost-saving measures, the establishment embarked on a project to address issues with its water heating system. The existing method was reliant on a 24-year-old pyro-tubular boiler that was fueled by liquefied petroleum gas (LPG). The system was generating nearly 6,000 hot water litres per day for laundry, kitchen and showers, resulting in high levels of pollution and operating costs.

"One of the concerns we, as hoteliers, have is to have an industry that is minimally polluting or harmful to the environment. A second concern that we have is searching cost savings measures while continuing to increase productivity."
Alvaro Viva Cupitre, Administrator at Hotel Neiva Plaza

Implementation of the Model

Hotel Neiva Plaza sought support from Bancoldex and the Inter-American Development Bank1[8] to ensure the success of their investment in solar water heaters via the ESI model. Collaborating with technology provider Mas Centigrados, and insurance company Sura, the hotel was able to protect their resources and guarantee the projected return on investment. Additionally, the validation entity Icontec was engaged to validate the installation and ensure compliance with industry standards.

"People are often hesitant to invest in this type of project because they may not truly believe in or trust the benefits they will receive. In the case of Hotel Neiva Plaza, we are already seeing the results of this investment we made. We took all the necessary measures to protect ourselves, seeking support from Bancoldex and the Inter-American Development Bank, as they have the experience and knowledge of how these types of projects work in the country."
Sandra Charry, at Hotel Neiva Plaza

Outcomes

The project consisted of replacing the old boiler with 22 solar collectors installed on an area of 61.7 m2 with 5 backup heat pumps, resulting in the reduction of gas consumption by 70 percent. With each collector producing between 10,000 and 12,000 British thermal units (BTU) per hour, the hotel achieved efficient heat production for a 6,000-litre tank, maintaining a temperature range of 50 to 55 degrees Celsius. The investment of USD 25,000 yielded guaranteed energy savings of approximately USD 8,000 per year, a payback period of three years.

Hospital Méderi, Colombia

Context

Hospital Méderi, the largest hospital network in Colombia, recognised the need to address its growing demand for reliable hot water across its Bogotá facility. To modernise and put in place a more sustainable solution, the hospital embarked on a project to install a new thermal system. With the support of the ESI programme, the institution aimed to find a trusted technology provider and achieve the desired outcomes.

Implementation of the Model

The project at Hospital Méderi involved the installation of 220 solar collectors on the hospital's rooftops to guarantee a continuous supply of hot water and fulfil the 24/7 needs of hot water in the patient rooms and other hospital areas. To achieve this, and in order to also ensure the successful outcomes of the project, the hospital leveraged the benefits offered by the ESI programme.

"What caught our attention about this project? It's not only the low interest rates, which are essential to us. The most important aspect of this project was that everyone involved had to guarantee the project's outcome."
Orlando Jaramillo, Chief Executive Officer at Hospital Méderi

Hospital Méderi selected Soluciones Sostenibles Energía, a solar technology provider with technical and financial expertise to deliver optimal project performance:

"The energy savings insurance programme allowed us, as technology providers, to review the way we structure our projects, thanks to the quality standards and technical aspects that we need to validate for our clients. All of this is done to ensure a level of service and estimated savings."
Mario Collazos Niño, Business Development Manager at Soluciones Sostenibles Energía

Outcomes

Through the installation of the 220 solar collectors, Hospital Méderi achieved its hot water supply requirements with an environmentally friendly solution. The integration of the solar water heaters resulted in significant cost savings and energy efficiency. With an initial investment of USD 200,000, the hospital achieved guaranteed energy savings of approximately USD 23,000 per year. This remarkable achievement led to a payback period of nine years, highlighting the long-term financial benefits of the project.

"The structured programme from the Inter-American Development Bank, the technical endorsement from Icontec, the insurance support from Sura, and the subsidised or financed rates from Bancoldex all played a crucial role in closing this project, of which we are proud today. With the solar thermal system, we made a positive impact on the air quality in Bogotá and ultimately mitigated climate change by avoiding excessive gas consumption."
- Fabian Dario Moreno, Planning Director at Hospital Méderi

The successful implementation of the solar water heaters at Hospital Méderi exemplifies the effectiveness of sustainable energy solutions in healthcare facilities. The case study of Hospital Méderi serves as a testament to the viability of such initiatives, showcasing the positive outcomes that can be achieved when institutions align their efforts towards a common goal of sustainability and efficiency.

XacBank Central Offices, Mongolia

Context

Ulaanbaatar, the capital city of Mongolia, faces severe air pollution issues causing critical health implications for residents, especially children and the elderly. XacBank, leading the ESI project for the Mongolian market, further pioneered the deployment of the model by piloting its first implementation in the country at the institution's headquarters in Ulaanbaatar.

Recognising the environmental and financial benefits of reducing the electricity consumption of the building, and more specifically addressing the energy consumption of their server room, the bank sought to implement a renewable energy solution. In 2022, the annual energy consumption of the XacBank central offices, which includes an energy intensive server room, prompted the need for a more sustainable and cost-effective approach.

Implementation of the Model

To address their energy needs, XacBank opted for solar power generation and selected a photo-voltaic system with a capacity of 19.62 kW. The solution was installed on the roof of the building located in the centre of Ulaanbaatar and designed for optimal solar exposure. Despite the city being the coldest capital in the world and suffering from thick winter fogs, Mongolia experiences an average of 250 sunny days a year[19], demonstrating an untapped potential for solar energy.

XacBank Central Offices collaborated with various stakeholders to ensure the success of the project, including Tenger Insurance supplying the insurance product and Monhorus, which provided the solar PV installation. The project required an initial investment of approximately USD 33,000.

Outcomes

The integration of the solar power generation system yielded significant results for the XacBank central offices. The annual solar energy generation is set to reach around 22,000 kWh per year, supplying approximately 20 percent of the building's internal energy needs. This substantial reduction in reliance on conventional energy sources reduces the bank's environmental footprint as well as considerable cost savings.

By harnessing renewable energy through the solar PV system, XacBank Central Offices demonstrated their commitment to sustainability and set the groundwork for future implementations of the ESI model in Mongolia. In December 2023, a second project leveraging the ESI in Ulaanbataar was announced to equip an E-Mart supermarket with a solar PV installation with an energy generation capacity of 32kW. This is expected to supply approximately 80,000 kWh annually.

CONCLUSION

The ESI model represents a powerful approach to drive energy efficiency investments and promote more sustainable practices among SMEs worldwide. By combining its financial and non-financial elements, the ESI model has demonstrated its ability to overcome market barriers, build trust, and mobilise financial resources for energy-saving projects.

One of the key strengths of the ESI model lies in its demonstrated adaptability and scalability. Its successful expansion from Latin America to Europe and other regions is a testament to its potential for further implementation around the world.

By actively involving technology providers, SMEs, validation entities, insurance companies, and financial institutions, via a facilitator, the ESI model establishes a dynamic and favourable ecosystem to accelerate the energy transition among businesses.

As the model continues to gain traction globally through projects led by BASE or other organisations, its benefits and replicable nature position it as a strong contributor to sustainable development. It empowers businesses to become key drivers of environmental stewardship and reinforces the shift to a low-carbon future.

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