

Project's Terminal Evaluation MEER/GEF/UNDP

Project 89679

**" Securing Energy Efficiency In The Ecuadorian Residential And Public Sectors –
(SECURE)"**

PIMS 5150

Terminal Evaluation Report

Developed by international consultant

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September 12th, 2017

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ABBREVIATIONS AND ACRONYMS

ALBE	Association of White Good Suppliers of Ecuador
AOP	Annual Operative Plan
BNF	National Development Bank of Ecuador
CDM	Clean Development Mechanism
CIMC	Interministerial Committee for Quality
CO	Country Office (UNDP)
CO ₂	Carbon Dioxide
CO ₂ eq	Carbon Dioxide equivalent
CTCN	Climate Technology Center & Network
CTO	Operative Technical Committee
DFCH	Hydroelectric Generation Development
DMEE	Maximum Energy Efficiency Emblem
EA	Executing Agency
EE	Energy Efficiency
EES	Energy Efficiency Standards
FE	Final Evaluation
Final FIDE	Electric Energy Saving Trust
FOCAM	Climate Change Mitigation Capacities Development Project
GEF	Global Environmental Facility
GHG	Green House Gas
GOE	Government of Ecuador
GPR	Results-based Government
IA	Implementing Agency
	Spanish Institute for Diversification and Efficient use of Energy
INEN	National Institute for Normalization of Ecuador
INER	National Institute for Energy Efficiency and Renewable Energy
KWh	kilowatt (kW)-hour
LFM	Logical Framework Matrix
LPG	Liquefied Petrol Gas
M&E	Monitoring and Evaluation
MAE	Ministry of Environment
MCPEC	Coordinating Ministry of Production, Labour and Competitiveness
MEER	Ministry of Electricity and Renewable Energy
MF	Ministry of Finance
MICSE	Coordinating Ministry for Strategic Sectors
MIDUVI	Ministry of Urban Development and Housing
MIPRO	Ministry of Industry and Productivity
MRV	Measuring, Reporting and Verification
MW	Megawatt (1 x 10 ³ kW)
MWh	Megawatt (MW)-hours (1 x 10 ³ kWh)
NAMA	Nationally Appropriate Mitigation Action
NIM	National Implementing Modality
OAE	Ecuadorian Accreditation Organization
ODS	Ozone Depleting Substances
OG&EE	Electric Generation and Energy Efficiency Optimization
PEC	Cooking Efficiency Programme

PIR	Project Implementation Review
PLANEE	NationalEnergy Efficiency Plan
PMT	Project Management Team
PNBV	National Development Plan (Plan Nacional del Buen Vivir in Spanish)
	National Energy Conservation Programme
PRODOC	Project's Document
PSC	Project Steering Committee
PTB	The National Metrology Institute Of Germany
RENOVA	National Refrigerator Substitution Programme
RTE	Technical Regulation (voluntary)
S&L	Standards and labels
SENAE	Ecuadorian Customs Service
SERCOP	National Service for Public Contracting
SNAP	National Secretariat of Public Administration
SRF	Strategic Results Framework
SSCC-MAE	Ministry of Environment -Undersecretariat for Climate Change
TNA	Technology Needs Assessmet
TNCCC	Third National Communication on Climate Change
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nation Framework Convention for Climate Change
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
W	Watt

MEER/GEF/UNDP Project " Securing energy efficiency in the Ecuadorian residential and public sectors – (SECURE)"

1- EXECUTIVE RESUME

Project's Brief Description :

" Securing energy efficiency in the Ecuadorian residential and public sectors – (SECURE)" Project was executed between July 2014 and June 2017. The United Nations Development Programme (UNDP) was the implementation agency for the Global Environmental Fund (GEF) and the executing organization was the Ministry of Electricity and Renewable Energy (MEER) of Ecuador.

Ecuador's government actively aims to the adoption of low energy consuming technologies by the residential, public, commercial and industrial sectors by monitoring actions such as: (i) Politic measures including laws and decrees for the replacement of obsolete technologies from the public sector; (ii) The development of energy efficiency standards (EES) and minimum performance requirements for specific products sold in the national market; (iii) Programmes for voluntary replacement of household appliances which are subsidized by the government, including the National Programme for Refrigerator replacement (RENOVA); and (iv) Technical assistance programmes and campaigns aimed at awareness-raising, financed by the National Government and Multilateral Organizations. In this sense, the Project aims to increase the use of low energy-consuming household appliances in the residential sectors as well as to contribute to the energy efficiency (EE) increment and climate change mitigation.

SECURE Project's goal is to contribute to the reduction of greenhouse effect gases (GHG) by SUPPORTING the implementation of energy-efficient and low energy-consuming appliances in the residential and public sectors.

The Project seeks to complement and enhance the base line activities by providing the stakeholders of technical assistance. To this effect, it focuses on four main aspects: (a) National Laboratories and professional infrastructure strengthening to verify the household appliances compliance with the EE applicable standards; (b) Government's appliances replacement programme, RENOVA Programme, support; (c) long term sustainability enhancement; and (d) the application of EE standards to the public sector's procurement guidelines. Thus, the SECURE Project was structured into four (4) outcomes (O):

O.1: Governance structure for energy efficiency policy has been enhanced

O.2: Designated national laboratories are prepared to verify the household appliances compliance with the EE applicable standards.

O.3: RENOVA's institutional and technical capacities have been enhanced in order to guarantee the replacement of obsolete household refrigerators for more energy- efficient units.

O.4: The Project's Monitoring and Evaluation Plan (M&E) has been executed.

SECURE Project's synoptic chart:

Project's title:	" Securing energy efficiency in the Ecuadorian residential and public sectors – (SECURE)"			
I FMAM's Project identification:	5114		<i>At approval (USD)</i>	<i>At termination (USD)</i>
UNDP's Project identification:	89679	FMAM funding:	1'776.484	1'776.484

Country:	Ecuador	UNDP:	50.000	50.000
Region:	Latin America	Government:	22'587.600	40'228.038,40
Area of interest:	Climate Change	In species: (GOE):	2'412.400	1'100.305,10
Focal Area's Objective (OP/SP)	CCM-2: foster the industrial and construction energy efficiency market transformation.	Total Co Funding:	25'800.000	41'378.343,50
Executing Agencies:	Ministry of Electricity and Renewable Energy (MEER).	Total Project's cost	27'576.484	43'154.827,50
Other involved partners:	Ministry of Productivity and Industry; Coordinating Ministry for Strategic Sectors (MICSE)	Project's document signature (Projects beginning date):		01/07/2014
		Closure date (operative):	Proposed: 30/06/2017	30/06/2017
Finalevaluation expected date				30/06/2017
Finalevaluation real date				30/09/2017

Final Evaluation Objective:

This consultancy's purpose has been to assess the SECURE Project objectives and outcomes achievement regarding the work plan and the respective annual operative plans that were approved by the Project's Steering Committee.

As required by the ToR guide, the projects execution was examined and appraised. The appraisal elements were (1) key aspects of the Project, (2) the Project's sustainability, (3) the Project's relevance, and (4) the Project's impact. Rating was based in the scales established by the UNDP's evaluation guide. The main aspects that were appraised were; (i) conceptualization and design, (ii) stakeholders participation in the Project's formulation, (iii) implementation approach, (iv) monitoring and evaluation, (v) stakeholder's participation in the Project's implementation, and (vi) outputs, outcomes and objective's achievement. Each of these aspects was rated according to the ToR's six (6) points scale; highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory and highly unsatisfactory. Sustainability was rated by a four (4) point scale: (i) likely, (ii) moderately likely, (iii) moderately unlikely, and (iv) unlikely. Project's relevance was rated with a two (2) point scale: (i) relevant and (ii) not relevant.

Key Conclusions:

- The SECURE Project is **aligned to the National policies and priorities**, as well as energy sector's guidelines for it contributes to renewable energy and efficient- energy use actions. The Project is also **relevant regarding GEF's policies**, especially those on climate change and GHG reduction.
- SECURE Project has **participated and led several interinstitutional work spaces**.
- SECURE Project **has devised technical documents** such as " Energy Prospective Study 2012-2040", which resulted in the creation of a Technical Committee and the inclusion of the Study's scenarios in the National Plan for Energy Efficiency.
- Approximately **17 technical regulations** for main equipment (stoves, heaters, refrigerators, etc) have been updated.
- It is considered that resources have been used in a satisfactory way (S). By June 2017, a total of USD 1.512.531 had been executed, which represent an 85% of the Projects funding by GEF. By September 2017 a total of USD 1.675.531 has been executed, which represent 94% of GEF's funding. Finally, the total execution at the Project's termination, including the budget allocated for the Project's exit

strategy (which represents the pending 6% of the Project's budget, meaning approximately USD 101.168), will be of 100%.

- It is to be said that the remaining funds are being executed and there are pending compromises which are related to the Project's closure activities. The Project's Steering Committee has analyzed such activities and recommended that the Project should advance with those processes outside the Project's period.
- **Country's governance and legal structure to adopt energy- efficient appliances** in the public and residential sectors has been strengthened by creating operative committees. The participation of other stakeholders without a direct role on EE was pursued since they are considered strategic partners to include EE in their institution's policies, plans and regulations. By public officer's training in the enforcement of EE standards a contribution to this governance structure was made. The residential EE's NAMA development and approval is one of the outputs that contributed to the legal structure strengthening.
- Planned trainings for the public sector workforce were completed involving 400 officers and technicians from over 37 public institutions. These trainings included EE standards enforcement, guidelines and practices for the public and residential sectors. **The Project quadruplicated the expected progress/level.**
- A National Appropriate Mitigation Action (NAMA) was defined along with the Renewable Energy and Energy Efficiency Sub secretariat as a mitigation measure to climate change based on the public and residential sector's EE. The NAMA is in technical revision and validation by the Environmental National Authority for its further delivery to the UNFCCC.
- The Project contributed to strengthen 4 national laboratories: 3 from the National Institute for Energy Efficiency and Renewable Energy (INER) (for public lighting, induction stoves and water heaters); and 1 laboratory from the Ecuador's National Standardization Service (INEN) (for refrigerators).
- The Project has devised a proposal for implementing a EE specialized "laboratory network", so as to capitalize national infrastructure and achieve the tests that are established in the Ecuador's Technical Regulations, optimizing services and promoting knowledge exchange.
- Through SECURE Project, **RENOVA's institutional and technical capacity was enhanced** by training actions and fieldtrips to electric companies, agencies and missions. This included, among other activities, the development of an implementation and financing method proposal for RENOVA's second stage.
- Supporting RENOVA contributed to the appliances replacement in families of more than 30 thousand homes per year. As of RENOVA's inception, until 2016, a total of 30.011 refrigerators per year were replaced, which represent a 71,45% increase regarding the expected goal. Additionally, 3.137 refrigerators were replaced from June 2016 to June 2017 as an outcome of regular equipment replacement.
- The Project also included the Maximum Energy Efficiency Emblem (DMEE) which is an innovative EE certification scheme for the country and is a baseline to ensure EE performance. The Project accomplished the Ministerial Agreement subscription which formalizes DMEE, making this initiative a key instrument to boost EE public policies that will also contribute to the Project's outcomes sustainability.
- A DMEE implementation plan was devised as a Project's outcome in order to allow the Ecuador Quality System's public institutions to assume an active role in the implementation of EE in the public and residential sectors, contributing to the market's transformation towards more efficient appliances and increasing energy saving and associated emissions mitigation.

The Plan has been implemented 100%, the DMEE's structure and scheme were socialized among the SEC's public institutions, private institutions, appliances manufacturers and importers.

Technical committees were formed to specify limits and regulations regarding the appliances included in the DMEE. Technical requirements and general procedures were devised for the DMEE's license and its formalization was concluded with the Ministerial Agreement N° 001-2017.

In this scenario, twelve (12) public officers, representatives from OAE, and other institutions related to the approval evaluation, were trained in DMEE scheme operation, the home's internal refrigerator production, ISO 50001 certification and energy management systems.

- Additionally the Project's exit strategy includes a communication plan to position the DMEE and raise awareness among the general public about the advantages and benefits of the appliances handled by DMEE.
- The Project **achieved the expected objectives and in some aspects, much more was accomplished**. As an example, a larger group of people was trained through on-line tools (virtual seminars). Moreover, the objective was to certificate at least one laboratory by the Ecuadorian Accreditation Organization, yet, four national laboratories were benefited by the Project.
- Altogether, the **Project's indicators values were exceeded**. The 19 indicators (4 for objectives and 15 for the four outcomes) presented in the Logical Framework Matrix (LFM) enable an efficient and detailed evaluation of outcomes and achievements for this Final evaluation (FE).
- The Project accomplished to increase the use of low energy-consuming appliances in the public and residential sector, thus **contributing to an EE relevant increment and to climate change mitigation**.
- MEER's efficient performance implementing SECURE Project results a key aspect in order to access future multilateral cooperation sources such as GEF.

Main recommendations:

For Outcome 1: The MEER is a key stakeholder in the definition of the country's energy efficiency policies which contribute to climate change (CC) mitigation. In this context initiatives to attend the application of the funds allocated to CC mitigation and adaptation, are designed. For this reason it is important to institutionalize working initiatives with cooperation and external funding at MEER. These initiatives could be supported by countries where this type of cooperation is a priority such as Germany or Australia or also Green Climate Fund (GCF) and Climate Change Adaptation Fund (AF). It is recommended that MEER seeks technical support from the Ministry of Environment's Climate Change Sub secretariat in order to integrate contents from ongoing or new projects to be developed at MEER in the CC related National Plans.

It is considered that there is enough potential for the development of GHG reduction and CC adaptation projects. The institutionalization consolidation achieved by SECURE Project is recommended as well as continuing with actions in order to visualize opportunities.

For Outcome 2: National laboratories (in certifying process) have increased their capacity to execute verification and EE standard compliance tests for appliances within its reach, which is a fundamental pillar for DMEE initiative's implementation. It is also recommended to evaluate the DMEE's impact in the consumption market in order to quantify how many people replaced their appliances, establishing a consumption base line with and without the label, so as to determinate the final energy savings for DMEE initiative.

For Outcome 3: RENOVA's ability to guarantee the obsolete household refrigerator's replacement for units with better EE has been enhanced. It is recommended to develop mechanisms that will maintain these institutional and technical achievements through time, as well as encouraging RENOVA Programme's second stage including the replacement of different appliances and designing strategies that orientate to the programmes self-financing and co-funding.

For Outcome 4: It is recommended that the systematization of SECURE Project's experiences is shared with other regional countries through a Regional Workshop, for example the international experiences of Mexico or Brazil, focusing on South-South cooperation. It is also recommended that the application of the

Results-based Government (GPR) tool is documented and systematized by all the institutions of Ecuador's national government acting as a model to replicate/adopt by other countries in the Region in similar aspects as those addressed by the Project.

For the Project's implementation and adaptive management: Since the Project has accomplished some achievements that are worthy of analyzing, communicating and implementing in the social communication campaigns, it is recommended that a "gender strategic focus" is developed even if it has not been included in the Project's design. The Project made a significant impact including new figures such as ElecGalápagos campaign, where, besides the incorporation of a male super heroes, a woman EE superhero was included. Additionally there's been a considerable participation of women such as technicians, scientists and experts in the supported laboratories' technologies.

The achievements made by such specialists during the Project are to be highlighted. It is recommended that women's participation in the training sessions that were carried out in the National Secretariat for Public Administration, as well as the engineers and technicians' role in laboratories and companies are analyzed.

The implementation of the GPR tool is recommended as well as its update at the Project's third year of execution (at the end of the Project in 2017, in order to reach an integral implementation of the tool throughout the Project's complete cycle and complete the M&E Plan).

For Sustainability: Through the Ministerial Agreement, DMEE has been positioned as a government policy. Considering Galapagos's intervention, it is recommended to continue with a minimum technical team that can carry out information and awareness-raising campaigns for the general public through schools, videos. It is also important in sustainability terms, to train employees at customer service and analyze if ElecGalápagos experience is replicable using the elaborated products.

Main Lessons Learned:

Hereunder, **main Lessons Learned** are presented, much of which have been gathered by the Project and portrayed in the **Lessons Learned Systematization and Documentation document**.¹

- i) "Participative work allows the inclusion of institutional stakeholders in a frame of orderly, formal and continuous work. It is important to generate an agenda to contribute in the decision-making and public policies formulation: one of the Project's objective is to strengthen governance and legal structure by developing and implementing plans and policies. To this effect the stakeholders identification and the awareness-raising among decision makers is a key aspect.
- ii) "**Starting from a diagnose and analyzing the initial situation** allows to define a strategic work route. The Project has analyzed some diagnoses which enabled to focus and plan activities in a correct manner".
- iii) "**Counting with strategic partners.** Interinstitutional collaboration allows to coordinate efforts. By making use of the closer institutions capacities and strengthening the working synergy among institutions, the Project achieved efficient interinstitutional work processes and accomplished better outcomes."
- iv) "**Build over the built.** Parting from a barrier and problems-to-solve assessment resulted a key factor. Nevertheless, another important factor that acted as a catalyst of SECURE Project's satisfactory outcomes, was building over the already built. This resulted very relevant when planning training

¹ Document of the methodology used and draft of the proposed document containing the information gathered, organized and systematized of the lessons learned from the SECURE Project (conducted by the consultant Laura Melisa Salgado Tapia in June 2017).

sessions for public officers in EE aspects and overcoming the proposed goals with a lower resource investment.

- v) **“Capitalize international experiences** and international cooperation reduce failure risks and provides lessons from similar experiences.”
- vi) **“Foresight.** An intervention is successful if it grows in time. Developing foresight, the Project provides a long term transformation for the energy sector towards the use of efficient appliances and technologies in Ecuador.”
- vii) **Involving the private sector.** The State’s work along with companies that can lead to better EE initiatives raises the chances of success regarding the proposed outcomes and significantly contributes to the achievements sustainability.

SECURE Project’s performance rating:

Project’s Performance rating			
1. Monitoring and evaluation	Rating	2. IA and EA execution:	Rating
M&E entry design	S	UNDP enforcement quality	HS
M&E Plan execution	S	Quality of execution: executing agency	HS
M&E General quality	S	Enforcement and execution general quality	HS
3. Outcome’s evaluation	RRating	4. Sustainability	Rating
Relevance	R	Financial resources:	L
Effectiveness	HS	Socio-politic:	L
Efficiency	S	Institutional framework and governance:	L
General rating for Project’s outcomes	HS	Environmental:	L
		Sustainability general probability:	L

Performance Rating

Theme	Rating
Formulation pertinence (conceptualization and design)	HS
Stakeholder’s participation in the Projects formulation	HS
National Ownership	HS
Implementation focus	S
M&E	S
IA y EA’s execution	HS
Gender inclusion	HS
Climate Change Mainstreaming	S

Outcome’s achievement Rating

Outcomes	Rating
1. The governance and legal framework for adopting the use of EE appliances in the public and residential sectors, has been strengthened.	HS
2. Designated national test laboratories have been prepared to verify compliance of household appliances with applicable EE standards.	HS
3. The institutional and technical capacity of the RENOVA Programme has been strengthened to ensure the replacement of obsolete household refrigerators by energy-efficient units .	S

4. The M&E plan for the Project has been executed.	S
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Efficiency, performance and achievements rating uses a 6 (six) points scale: highly satisfactory (HS), satisfactory (S), moderately satisfactory (MS), moderately unsatisfactory (MU), unsatisfactory (U) and highly unsatisfactory (HU). In order to evaluate sustainability a four (4) point scale is applied: likely (L) insignificant risks for sustainability, moderately likely (ML) moderated risks, moderately unlikely (MU) significant risks, and unlikely (U) severe risks. For the relevance evaluation: relevant [®], not relevant (NR). For evaluating impact: significant (S), minimum (M) and not significant (NS).

2- INTRODUCCIÓN.

The “Securing energy efficiency in the Ecuadorian residential and public sectors - SECURE” Project was carried out according to the ToR’s (**Annex 1**) specifications, the UNDP’s FINAL Evaluations Guide for projects funded by GEF and the technical and methodological proposal elaborated by consultant Sandra Cesilini and in articulation and coordination with MEER and the country’s UNDP office. The TE involved key stakeholders, beneficiaries, executors, counterparts that were identified in the Project’s document (PRODOC) as well as those that became involved during the Project’s development and have been considered relevant for this TE (See Initial Report of this TE).

2.1. FINAL EVALUATION’S PURPOSE AND OBJECTIVES:

A collaborative and participative approach was encouraged during evaluation. In this context, the objective of this consultancy has been to evaluate SECURE Project’s objectives and outcomes accomplishment regarding the work plan and the respective annual working plans approved by the Project’s Steering Committee and UNDP.

For this purpose the Project’s achieved outcomes were analyzed and documented, impacts, their sustainability and lessons learnt were determined. In addition to the conclusions and recommendation’s feedback to the executors and beneficiaries, it aims to offer decision- making tools for government officers and UNDP staff, members of government and other stakeholders about the convenience to carry on with the implementation of this kind of projects and which would be a possible design for further operations. As in every Final Evaluation, the following complementary purposes were considered: (a) Foster accountability and transparency at evaluating and reviewing the Project’s progress on achievements and outcomes; identify the main Learnt Lessons that can be diffused among relevant GEF projects and that can help to improve future UNDP/GEF initiatives’ selection, design and implementation, and (c) deliver observations and feedback regarding key aspects that require attention and are recurrent in the portfolio and their improvement.

Matrix N-1. SECURE Project's Logical Framework Matrix

Strategies		Indicators	Base line	Target (at the end of the Project)	Means of verification	Assumptions
<p>Project's objective: increase the share of energy-efficient electric appliances in the residential and public sectors.</p>		Number of households participating in RENOVA Programme (hh/year)	Approx. 19,000 households per year	42,000 households per year	Official documents from RENOVA/ MEER; Final evaluation	
		Extent of change in energy efficiency coverage by users and specific sectors	0 MWh reduced as outcome of project	Extent of change in energy efficiency coverage by users and specific sectors	0 MWh reduced as outcome of project	
		Number of laboratories accredited by OAE (for EE compliance verification of household appliances)	No laboratory fully accredited for EE(0)	At least one (1) laboratory fully accredited	Project reports, visual inspection, official documents, independent verification.	
		NAMA on EE for residential sector	No NAMA (0)	NAMA on EE for residential sector designed and approved (1)	Project reports, official documents	
<p>Outcome 1 : The governance and legal framework for adopting the use of EE appliances in the public and residential</p>	<p>1.1 An enhanced governance structure for energy efficiency policy has been designed and implemented.</p>	<p>(a) EE committees in line ministries in place; (b) Number of sector plans or policies covering EE issues.</p>	<p>Decreases in place. (a) No committees (0); (b) None (0)</p>	<p>(a) EE committees operational in at least four (4) ministries and three (3) municipalities; (b)</p>	<p>Official publications, project reports</p>	<p>Sustained government commitment to strengthen policy framework and sector governance; Effective communication between ministries</p>

sectors, has been strengthened.				EE included in at least three (3) sector plans or policies..		
	1.2 Government staff and public officers (100 persons) are trained on the application of EE standards and practices for the public and residential sector.	(a) Number of public officers trained; (b) Number of entities involved.	(a) 0 people; (b) 0 entities	(a) 100 people; (b) 10 entities	Project reports, interviews	Sustained government commitment to strengthen policy framework and sector governance
	1.3 Energy-efficient technologies and appliances in the public and residential sectors are receiving financial support through the implementation of one or more NAMAs.	NAMA on EE for residential sector	No NAMA (0)	NAMA on EE for residential sector designed and approved (1)	Official publications, project reports	Sustained government commitment to strengthen policy framework and sector governance
	1.4 Technical assistance is provided to increase the competences of the public entities involved with the implementation and enforcement of EE standards.	enforcement plans and protocols in place	No (0) plans in place	One or more plans designed and implemented	Official reports, resolutions, work plans; project reports	Sustained government commitment to strengthen policy framework and sector governance; Effective communication between stakeholders
Outcome 2: Designated national test laboratories have been prepared to	2.1 Laboratory facilities (at least 1) of the National Institute for Normalization (INEN)	Number of laboratories accredited for EE compliance	No (0) laboratories fully accredited.	At least one (1) laboratory fully accredited.	Project reports, visual inspection, official documents, independent verification e	Appropriate equipment is successfully procured;

verify compliance of household appliances with applicable EE standards.	have been upgraded to verify compliance of household appliances and lighting with EE standards..	verification of household appliances.				Laboratories have genuine interest to be accredited in EE; Supporting baseline activities are effectively implemented..
	2.2 Technical staff (15 persons) from INEN and other designated laboratories have become trained to verify compliance of electric household appliances and lighting with applicable EE standards.	(a) Number of laboratory staff and energy professionals duly trained; (b) Number of laboratory staff certified to perform EE compliance verification tests; (c) Number of designated laboratories with skilled staff..	(a) No trained laboratory staff (0); (b) No certified staff (0); (c) No laboratories with skilled staff (0).	(a) fifteen (15) people; (b) nine (9) staff; (c) at least one (1) laboratory..	Qualification certificates of trained staff, project reports, project evaluations	Laboratories have genuine interest to be accredited in EE; Project activities can be implemented according to plan.
	2.3 Work groups (at least 3) within INEN have been strengthened by making available technical staff (4 person-years) and expertise to support development of national EE standards under the baseline program.	(a) staff hired by Project (person-years); (b) staff continued after Project Termination; (c) number of workgroups on EE standards for household appliances..	(a) 0 person-years; (b) 0 people; (c) 0 workgroups	(a) 4 person-years; (b) at least one (1) person; (c) at least three (3) workgroups	Project reports, minutes of working groups; contracts of staff hired by INEN	Sustained government commitment to develop EE standards and provide institutional support to INEN; Project activities can be implemented according to plan.
Outcome 3: The institutional and technical capacity of the RENOVA Programme has been	3.1 The managerial and technical capacity of the RENOVA Management has been expanded (with 3 person-years),	(a) staff hired for RENOVA Management (person-years); (b) software-based MRV	(a) no staff hired (0); (b) no MRV tool (0)	(a) one consultant hired (3 person-years); (b) MRV tool implemented (1)	Project reports; official reports from MEER/RENOVA; contracts of staff hired by MEER; field	Sustained government commitment to RENOVA; Project activities can be implemented according to plan.

strengthened to ensure the replacement of obsolete household refrigerators by energy-efficient units.	including the implementation of an effective MRV system.	tool designed, procured and implemented			visits, independent evaluation	
	3.2 Training and technical backstopping are provided (by 1 part-time consultant) to national electricity distribution companies to reach their substitution targets under the RENOVA Programme	((a) increased substitution rate by least-performing electricity companies (replaced refrigerators per year); (b) number of electricity companies recurring to technical backstopping	(a) continuation of baseline performance ; (b) electricity companies not actively seeking support (0)	(a) at least 20% enhancement of least-performing companies compared to baseline (refr/years); (b) ten (10) companies seeking regular support to improve business	Project reports; official reports from MEER/RENOVA; independent evaluation	Sustained government commitment to RENOVA; Effective communication with electricity distribution companies
	3.3 The recycling processes for obsolete household refrigerators have been strengthened in collaboration with MIPRO and recycling agents.	(a) recycling capacity for household refrigerators; (b) percentage of ODS refrigerant recovered and/or destroyed.	(a) recycling capacity approx. 20,000 units; (b) estimated below 50 (%)	(a) recycling capacity for at least 60,000 units per year; (b) contracts with two (2) companies; (c) at least 95% of ODS recovered..	Project reports, official documents, independent verification	Project activities can be implemented as planned; Selected private companies have sustained interested to deliver environmental services..
	3.4 Residential customers and public officers have become aware of the benefits and potential of EE appliances through a promotional and educational campaign.	Awareness-raising campaign on EE by MEER, MIPRO and MAE.	No campaign (0)	Campaign designed and implemented (1)	Project reports, interviews and surveys; ex-post evaluation	Project activities can be implemented as planned;

	3.5 A total of 42,000 EE household refrigerators have been purchased by customers eligible under the RENOVA Programme, including the environmentally responsible recycling of obsolete equipment and removal and/or destruction of harmful refrigerants.	(a) Number of households participating in RENOVA Programme (hh/year); (b) Number of obsolete units retired from the market	((a) Approx. 18,000 households per year; (b) 18,000 (estimated)	(a) 42,000 households/year; (b) 42,000 units..	Official documents from RENOVA/ MEER; terminalevaluation	Sustained government commitment to RENOVA; Project activities can be implemented according to plan.
Outcome 4: The Monitoring & Evaluation plan for the Project has been executed.	4.1 A detailed M&E Plan, including progress indicators and targets, has been agreed upon and is implemented.	((a) Inception workshop; (b) Annual progress monitoring reports	a) No inception workshop held (0); (b) No progress reports	(a) Inception workshop held (1); (b) Progress monitored and reported annually (3).	Project reports, inception reports.	Sector stakeholders show sustained commitment to the objectives of the Project; Envisaged activities can be executed as planned
	4.2 The project Terminal Evaluation has been conducted	Evaluation Report	No evaluation report (0)	Terminal Evaluation report completed (1)	Evaluation report	Envisaged activities can be executed as planned.
	4.3 The Project has been audited, and lessons learnt have been collected and disseminated.	Report with lessons learnt	No report (0)	Report with lessons learnt (1)	Project's report, terminal evaluation	Envisaged activities can be executed as planned.

2.2. EVALUATION'S SCOPE AND METHODOLOGY;

The evaluation applied a multiple methodology, with a participative, human rights and gender, multi stakeholder, sector and scope (national/local) approach carefully following the ToR's proposal and in the technical proposal. The evaluation implied a documental analysis, interviews, surveys and focal groups during the field visits and their subsequent analysis. General TE's activities are described below based on outcomes achievement.

- Identification and revision based on the evidence collected from all pertinent means of information: It included key stakeholders and/or focal groups from individual or group beneficiaries, implemented experiences and documents produced during the Projects' preparation and implementation. This first stage responded to a desk - study phase where a stakeholders' map was established (Annex II), all the legal and institutional document were analyzed in the Project's context in order to become familiar with guidelines and legal and institutional framework (Annex III). Furthermore, preparatory meetings were held with the Project's Coordinator and his team at UNDP offices in Ecuador so as to approach the following matters: (i) accurately establish the consultancy's objective and determine the institutional context in which it will be developed, including means and conditions of information access, as well as identifying key informants from different regions and departments; (ii) Sketch the main questions and establish the appropriate information gathering techniques; and (iii) adjust the methodological instruments and tools for data gathering, as well as their accessibility and data processing. A data collection was undertaken according to the participants and stakeholders' universe (stakeholders mapping, workshops, experiences recompilation from multilateral cooperation, government and corporative institutions and, in a lower scale, from academic institutions).
- Instruments' development: questionnaires and/or interview guides: The instruments for data gathering used during individual or focal groups interviews were prepared to answer the general aspects reviewed by the TE. The interview guides were included in the Initial Report and validated by the Project's Team (Annex IV).
- Initial Report formulation (Product 1): The Initial Report included a work methodology proposal, a list of interviews to be carried out and of the documents to be analyzed during the TE. An adjusted consultancy matrix was presented along with a TE activities chronogram, which were validated by Ecuador's UNDP Office and the Project's team, concluding the desk-study phase (**Annex V**).
- Field Visits: The locations specified in the ToRs (**Quito and Galápagos**) were visited between July 3rd and July 7th 2017. Interviews and group meetings were held in public offices and beneficiaries visits (such as INER laboratories, Galápagos Provincial Energy Company (Elecgalápagos) and hotel businessmen which are benefited by the Project) to answer the aspects reached by the TE. The field mission itinerary is found in **Annex VI**.
- Contact, collaborative and participative interviews with key stakeholders and focal groups according to M&E UNDP - GEF's policy. Interviews were held based on a multi-actor, gender, human rights and territorial level (national/local) approach. Thirty two people were thoroughly interviewed (Project's coordinator, UNDP members, ministry and national entities representatives at local level, companies, beneficiaries) as well as 2 focal groups with the Project's staff (Annex VII). This scanning enabled to gather as much information as possible regarding the opinions and experiences from the target group and the

stakeholders that attended the Project's implementation process. To the stakeholder's interviews a brief electronic survey was added.²

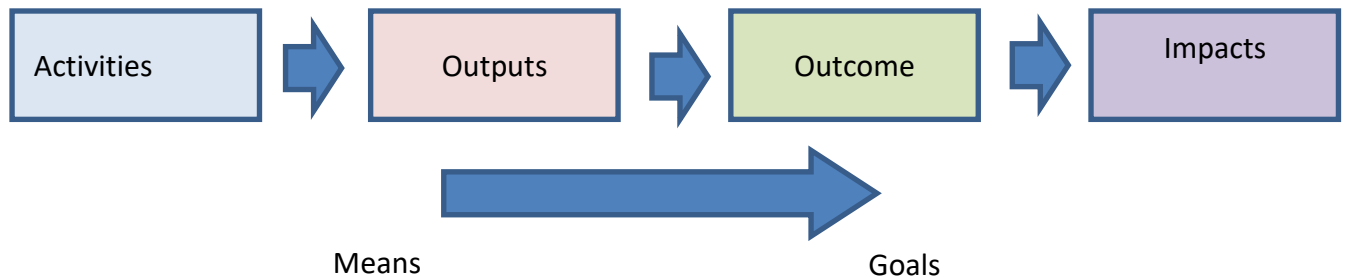
➤ Findings presentation at the missions conclusion (Output 2); oral transmission of the interviews' preliminary outcomes: on July 4th findings were presented as well as conclusions and preliminary outcomes (Annex VIII) through a video conference.

- Precedent revision, stakeholder's interviews and stakeholders/Project's beneficiaries group meetings outcomes analyses and systematization, answers follow-up. outcome
- Reports formulation and presentation (draft and final versions) (Output 3 and Output 4).
- Comments to the Final Report revision and incorporation.
- Final report and Executive Resume formulation in English (Output 5).
- Project's monitoring tool design (Output 6).
- Management's answers matrix (Output 7).

2.3. REVIEW OF OUTCOMES TO IMPACTS - ROTI:

GEF's projects are designed according to the Logical Framework Method, which's Matrix is a simplified version of the Theory of Change, with the following hierarchy (Fig 1).

Figure 1. Project's generic outcome chain which underlies the Theory of Change's approach.



Generally, GEF's projects Terminal Evaluations focus mainly on the three first steps of Logical Framework: project's **activities** generate a series of **outputs** that will contribute to the **outcome's** accomplishment.

Outcome's sustainability, being this the probability that an intervention will still offer benefits after its termination, is also evaluated. Additionally, environmental, financial and social sustainability are considered.³

On the other hand, ROTI's method focuses on the last step in order to understand precisely the final impact's achievement.

A ROTI analysis was conducted on Regional UNDP's demand for this SECURE Project's Terminal Evaluation, **even if it doesn't qualify as a full size Project.**

²Self-administered surveys: In principle, it is planned to use this tool only if virtual locations of the project to be agreed are to be covered by virtual means, which are not covered by the field visit, where the collaborators will be requested to collaborate for the elaboration of the contact list.

³ Guide for final evaluations of UNDP-supported and GEF-funded projects.

According to the ROTI's Handbook, there are two different practical procedures for its implementation: ROTI based on secondary information analysis (project's documents) and ROTI based on first-hand information (gathered after the project's termination). The first option (ROTI based on secondary information) was chosen for this TE considering that it is suitable for situations where the process of converting the project's outcomes into impacts is in an incipient stage, such as SECURE Project.

Even if this procedure is, as mentioned before, based on the analysis of the documentation produced during the project's implementation, in this case the information will be complemented with that one gathered during stakeholder's interviews and field visits.

The different stages of this method are detailed below:

- 1) **Expected impacts identification:** During this stage expected impacts are identified as an ultimate outcome from the project's implementation and its achievements through the project's documentation analysis and the information gathered during stakeholder's interviews and field visits.
- 2) **Project's logic verification:** During this phase, the Project's logical framework is reviewed and outcomes are verified as well as its adequacy regarding the expected effects. For that purpose, the presented documentation is considered (Project's document, Project's Implementation Review (PIR) along with the stakeholder's interviews and the information gathered during field visits.
- 3) **Outcome to Impact Analysis:** During this last phase, logical steps, associated factors and necessary conditions to achieve the expected impacts are identified and assessed, providing an indirect measurement of the Project's impacts. Additionally Intermediate Statuses (transition between outcomes and impacts, which is necessary to achieve the expected impact) are determined. Finally, a ROTI matrix will be developed.

2.4. TERMINAL EVALUATION STRUCTURE:

As required in the ToR's guide, the Project's execution was assessed and rated according to the following elements: (1) Project's M&, (2) Project's execution and coordination, (3) Project's outcomes, and (4) Project's sustainability.

Rating has been based in the scales established in the UNDP-GEF ^{Terminal} Evaluations Guide.

The following aspects have been evaluated: (i) M&E during the Project's design and execution; (ii) UNDP's performance during implementation; (iii) Executive Agency's coordination; (iv) outcomes' relevance, effectiveness and efficiency; (v) financial, socio-politic, institutional and environmental sustainability; (vi) stakeholder's participation during the Project's implementation and; (vii) objectives, outcomes and outputs' achievement.

For the outcomes, efficiency, effectiveness, M&E, UNDP's and Executive Agency's coordinating and execution a 6 (six) points scale was employed: Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MI), Unsatisfactory (I) and Highly Unsatisfactory (HI). For sustainability's evaluation a 4 (four) value scale was implemented: Likely (L) insignificant risk for sustainability; Moderately Likely (ML) Moderate Risks; Moderately Unlikely (MU) significant risks and Unlikely (U) severe risks. For relevance evaluation: Relevant [®] and Not Relevant (NR). For evaluating impact; Significant (S), Minimum (M) and Not Significant (NS).

In the Terminal Evaluation, key analysis criteria or group of evaluation criteria were applied, for projects and programmes (pertinence, design's internal and external coherence, impact/effect, effectiveness, efficiency and sustainability); which are also applied by UNDP in GEF funded projects and by the principle that considers evaluation as a part of the projects and programmes' permanent actions and not a static external element.

As it was detailed in the Initial Report, the methodological approach was focused on participation, gender sensitivity, human rights, Theory of Change and Knowledge Management.

3- PROJECT'S DESCRIPTION AND IT'S CONTEXT

Project's starting point and duration Energy Efficiency (EE) can be defined as a measure to achieve a more effective use of energy and decrease world's consumption, reducing the energy sector's emissions.

According to Articles 313, 314, 413 y 414 from Ecuador's National Constitution, EE is a National Government's priority. Moreover, the National Development Plan (National Plan for Good Living 2013-2017) explicitly prioritizes EE in its Objective 7: To warrantee Nature's rights and promote regional and global sustainability through policies.

In this sense, the Project aims to increase the use of low energy-consuming appliances in the residential and public sectors and to contribute to an increase in EE and climate change mitigation.

3.2. PROBLEMS THAT THE PROJECT AIMS TO SOLVE:

As it is mentioned in the "Problem Definition" section of the Project's Document, Ecuador's Government has actively worked in pursuit of low energy-consuming technologies adoption from the public, residential, commercial and industrial sectors. For that purpose, different lines of action have been established, such as: (i) regulations for the replacement of obsolete technologies from the public sector; (ii) development of energy standards and minimum performance requirements for specific products sold in the national market; (iii) voluntary programmes, such as RENOVA, for government subsidized appliances' substitution; and (iv) Technical assistance projects and awareness-raising campaigns which were funded by the national Government and Multilateral Organizations.

The main reasons that promote these government policies include, among others: (a) Attain a greater energy security by reducing dependence on imported fossil fuels; (b) Make a progress in the creation of economic competitiveness stimulation through technology innovation; and (c) encourage voluntary GHG global emissions reduction.

On the other hand, low energy-consuming technologies contribute to energy's cost reduction, which benefits the final user as well as the State (who significantly subsidizes electricity and Liquefied Petroleum Gas (LPG) for residential use).

However, as it is stated in the PRODOC, there are numerous barriers that obstruct markets total transformation towards a generalized use of low energy consuming and low associated emissions technologies. In this sense, the identified barriers are related to: i) Scarce actualized and complete information on energy's final use; ii) The incipient and growing group of EE regulations for electrical appliances in Ecuador; iii) Country's Laboratories lack of capacity to conduct performance verification tests regarding EE; and iv) Human resources with basic skills in EE technology. These barriers are also related to the country's general technological development. In spite of the recent progress towards strengthening the sector's institutions, including the creation of the Ministry of Renewable Energy and Electricity on 2007, governance is still a problem, especially considering that EE is a transversal issue. Consequently, the electric appliances available in the market, not always comply with the desired mandatory standards; RENOVA's established objectives aren't fully achieved; actors do not respond adequately to the EE regulations; the new energy standards cannot evolve as fast as expected or aren't fully adapted to the local situation; the intervening institutions lack the necessary capacity and coordination to ensure the EE standards fulfilment.⁴

3.3. PROJECT'S SPECIFIC OBJECTIVES AND DEVELOPMENT OBJECTIVE

SECURE Project's objective is to "increase the share of energy-efficient electric appliances in the residential and public sectors, on the understanding that this will contribute to GHG emissions reduction".⁵

⁴ Source: Aseguramiento de la eficiencia energética en los sectores público y residencial del Ecuador (SECURE). Documento de Proyecto. PRODOC pp. 14 y 15

⁵ Source: Aseguramiento de la eficiencia energética en los sectores público y residencial del Ecuador (SECURE). Documento de Proyecto. PRODOC pp. 19

In order to comply with the plan, the Project focused in four pillars: (a) National laboratories and professional infrastructure strengthening to comply and verify appliances' EE; (b) Substitution programmes support such as RENOVA, (c) enhancement of long term sustainability conditions; and (d) EE criteria inclusion in the public sector's procurement of goods and services guidelines.

Project's components:

SECURE Project has four components:

- I. Governance and legal structure strengthening;
- II. National test laboratories' technical support;
- III. RENOVA Programme for refrigerator substitution strengthening;
- IV. Monitoring and evaluation (M&E).

3.4. DEFINED BASE INDICATORS:

Ecuador has a strong commitment with low energy-consuming appliances introduction in the residential sector, which translates into a solid base line for this Project. In this sense, the country counts with programmes that support low income families for inefficient electricity-consuming appliances substitution by low energy-consuming appliances.

As a Project's base line, RENOVA Programme for household refrigerator replacement counted with a USD 177,5 million budget and its objective was the replacement of 330 thousand units in the whole country. Additionally, the Government is encouraging an ambitious programme for energy efficiency standards (EES) design and validation, to be complied by a considerable range of electric appliances.

Also, Ecuador's Ministry of Industry and Productivity (MIPRO) has designated resources in order to strengthen national laboratories to conduct tests that include appliances' energy consumption. This initiative is of great support for current standards compliance verification infrastructure, contributing to electric appliances' manufacture structure's continuous upgrading being this a significant pillar for improving Ecuador's production quality and its projection overseas.

Considering regulatory aspects, the country counts with a series of decrees and resolutions related to the use of low energy-consuming equipment, urging the public agencies to implement efficient consuming technologies and practices and enhance EE. Nevertheless, and besides the accomplished achievements and the political support that these initiatives count with, there are still barriers that obstruct these actions' effectiveness. In this sense, and considering these challenges, SECURE Project emerges as an important encouragement to continue the trail established by Ecuador.

In the Project's framework, and aiming to measure the degree of progress and finally the expected achievements, a set of indicators has been determined within its LFM.

In these sense, and in the Project's Objective (increase the share of energy- efficient electric appliances in the public and residential sectors) framework the following indicators have been defined in order to measure their progress degree: (i) Number of households participating in RENOVA Programme (hh/year); (ii) Extent of change in energy efficiency coverage by users and specific sectors; (iii) Number of laboratories accredited by OAE (for EE compliance verification of household appliances); and (iv) NAMA on EE for residential sector.

Each of these indicators counts with its respective base line and target at Project's termination. Furthermore, each of the Project's outcomes has an indicator, including an initial status (base line) and the expected target for this initiative's execution (See: Matrix N-1. Project's Logical Framework Matrix).

3.5. MAIN STAKEHOLDERS

The stakeholders considered as a priority for the Project's design and execution are described in the Project's Document. From their role in the Project, they contribute to this TE by providing their vision, background, experiences, good practices and lessons regarding general aspects and scopes considered in the evaluation.⁶

For didactic purposes stakeholders are listed under the established institutional structure for SECURE Project's implementation and sustainability in the following matrix with a multi actor, sector and level approach.

Matrix N-2. Key stakeholders in accordance with SECURE Project's institutional structure.

Level	Role	Stakeholder	Function
Politic	Responsible of the highest level in order to warrantee that the Project is implemented according to national policies and standards and will represent the Project in tripartite annual meetings. Member of the Project's Steering Committee (PSC).	Ministry of Electricity and Renewable Energy (MEER)	Will assume responsibility for the Project's execution in coordination with the Coordinating Ministry of Strategic Sectors.
	Member of the Project's Steering Committee (PSC).	Coordinating Ministry for Strategic Sectors. (MICSE)	Will assume responsibility for the Project's execution in coordination with MEER.
Executive	Key partner in the RENOVA Programme. Member of the Projects Steering Committee.	Ministry of Industry and Production (MIPRO)	The three Ministries, MEER, MICSE y MIPRO; as well as UNDP will constitute the Project's Steering Committee as shown in the graphic below.
	Implementing Agency Besides being the GEF's Implementing Agency, UNPD's offices in Quito will support the Project as a know-how provider. Member of the Project's Steering Committee.	UNDP Ecuador/ GEF	Is responsible for the Project's financial administration and expected outcomes achievement before GEF's Council. UNDP, as the development global network of UN, is the organization that advocates for change and connects countries to the necessary knowledge, experience and resources in order to help people have a better life.
Operative	The Project's Management Team (PMT) consists on a Project Coordinator	Project's Management Team (PMT)	The PMT responsibilities include, among others: (i) Project's management and execution; (ii) coordinate

⁶General aspects of PE; Aspects of the strategy; Project design and Outcomes and matrix of logical framework; Progress towards results; Project implementation and adaptive management; Financing and co financing; Monitoring and evaluation systems at the project level; Commitment of the counterparts; Report evaluation; Partners and Sustainability.

	(CP), Technical Administrative Assistant and Communication and Marketing Analyst.		financial resources and procurements management; (iii) present reports on resources and achieved outcomes management; (iv) reports development for PSC, UNDP and GEF; and (vi) M&E and Project's outcomes dissemination.
	Energy sector technician, Climate Change technician, Laboratories EE regulations technician, EE regulations and standards technician, Recycling technician, Energy technician for RENOVA Programme.	Component 1, Component 2 and Component 3 Working Groups.	Implement SECURE Project's three components.

3.6. PROJECT'S EXPECTED OUTCOMES:

Outcome 1:	The governance and legal framework for adopting the use of EE appliances in the public and residential sectors, has been strengthened
Outcome 2:	Designated national test laboratories have been prepared to verify compliance of household appliances with applicable EE standards
Outcome 3:	The institutional and technical capacity of the RENOVA Programme has been strengthened to ensure the replacement of obsolete household refrigerators by energy-efficient
Outcome 4:	The Monitoring & Evaluation plan for the Project has been

4- FINDINGS

Following, the conducted activities for this consultancy are described. Its strategy and data gathering construction have been detailed in the corresponding methodological chapter.

This TE section's specific objectives are: i) Become familiar with stakeholder's vision of the Project; ii) examine the Project's pertinence and coherence, and particularly if it achieves the final objectives; iii) explore if the designed mechanisms and instruments are efficient and effective in their purpose, specially: activities' effectiveness and efficiency, quality, quantity and acceptability of the services provided; probable impacts; iv) Identify the Projects strengths and weaknesses; v) inquire about good practices and lessons; vi) determine the Project's stakeholders' appropriation extent; vii) understand stakeholder's vision on the presented activities' sustainability.

4.1. OUTCOME FRAMEWORK ANALYSIS

4.1.1. Project's design

Project's formulation and design pertinence was assessed (meaning that the conducted activities' substantial definitions were valued, as well as the pertinence and coherence of existing norms, objectives, measures and means that rule and orientate it); and the degree in which the Project's objectives were coherent with the interests and needs of people, Ecuador's needs and GEF's objectives.

On the other hand, the Project's relevance was analyzed according to national priorities and context, and if the undertaken practices have contributed or can contribute to strengthen the Project's objective.

The Project's formulation and design proved to be pertinent, coherent with people's interests, Ecuador's needs and GEF's objectives. In this sense, EE is a National Government priority (stated in Ecuador's National Constitution); and in the National Development Plan (National Plan for Good Living 2013 - 2017), which explicitly prioritizes EE in its Objective 7: To warrantee Nature's rights and promote regional and global sustainability through policies.

It's objective, as well as the proposed (and achieved) outcomes have high relevance in the country's priorities, and the Project, supported by MEER as its main government partner, UNDP and other interested parts, have accomplished contributions that strengthen its context, and contribute to face climate change.

By strengthening RENOVA Programme, the Project contributed to the replacement of more than 30 thousand refrigerators per year for models with a greater EE, having also a 154 thousand MWh reduction at June 2017; which represents a significant increase in EE of the specific users and sectors. Given the gap between RENOVA Programme's termination and SECURE Project's execution, funds have been reallocated for EE initiatives at Galapagos, by extending RENOVA's plan execution for equipment replacement in the insular region in addition to studies and EE promotion measures.

The Project accomplished a Ministerial Agreement subscription which formalizes a maximum energy efficiency label named "Maximum Energy Efficiency Label", being a key instrument to foster EE public policies, that also contribute to the Project's Outcomes sustainability. The enhancement of National Test Laboratories' structure for the compliance evaluation regarding the Ecuadorian Technical Regulations (RTE) was also accomplished.

At intergovernmental level, the Project's participation in the CIMC was fundamental for the Committee's members commitment. The Project is actively dedicated to develop the National Quality Plan, coordinated by the Ministry of Industry and Productivity, so as to fully warrantee EE's concrete measures inclusion.

The Project also participated in the MIPRO – PTB (Physikalisch-Technische Bundesanstalt) Project's Steering Committee in the technical bilateral cooperation Project between Ecuador and Germany's context. This Committee was constituted by members of MIPRO, MEER, INER, OAE, INEN and the private sector. Such cooperation is orientated to strengthen quality infrastructure and was acknowledge as a success in terms of interinstitutional coordination.

Government officer's trainings were completed and involved nearly four hundred (400) officers and technicians from over thirty seven (37) government agencies which received training regarding EE standards enforcement, regulations, practices for the public and residential sectors (for example, "Energy efficiency: everyone's commitment" was held in Quito and Galápagos Islands). Additionally, the Project provided training on medium and long term energy planning and econometric modelling tools (EVIEWES). Through these training sessions, sector technicians received inputs to develop evaluation methods and forecast energy's offer and demand, relevant for EE policies formulation.

Thus, the Project quadruplicated the progress/level in training sessions for public officers, government technicians and public agencies concerning the expected target.

As for the National Test Laboratories' infrastructure consolidation, an exhaustive analysis was performed on the available laboratories from the public and private sectors (specially private universities), finally agreements were established with INEN e INER. In this context, the Project strengthened four (4) laboratories

in four EE test lines: a) refrigeration (INEN); b) lighting (INER); c) induction stoves (INER) and d) water heaters (INER); these last two don't have precedent in the country.

In this scenario, the Project devised a proposal in order to form a "laboratory network" specialized on EE seeking to benefit from the national infrastructure in order to comply with the test established in the Ecuador's Technical Regulations, optimize services and foster knowledge Exchange.

Finally, two Project's outcomes stand out: NAMA's record documents and proposal, which were officially presented to SSCC-MAE.. Such proposal estimates to achieve a 1,92 Mt CO²-eq emission reduction during the 2017-2021 implementation period.

From the exposed above, the Project's design is considered **Highly Satisfactory (HS)**.

4.1.2. Logical Framework Matrix (LFM) and Outcome Framework

During the TE the LFM and the expected outcomes framework were analyzed. The work was based on the PRODOC's LFM information, the 2016-2017 PIR and the information gathered during the TE (July 2017) in order to analyze progress and the Project's objectives and outcomes achievement.

Both the LFM and the expected outcomes framework are considered Highly Satisfactory (HS) for documentation and evaluation of the Project's progress towards its objective, as well as the expected outcomes which, generally, exceed the target value of the proposed Project's indicators. Thus, through the 19 indicators (4 for objective and 15 for four outcomes) defined in the LFM, it is possible to verify outcomes and achievements' effectiveness and details for this TE.

Regarding the Project's Objective: increase the share of energy-efficient electric appliances in the residential and public sectors.

At Project's termination, a number of 42 thousand households per year were expected to participate in RENOVA Programme. This Programme was created by Presidential Decree N° 742 on April 2011 with a 5 year period, which first phase ended in 2016.

At present, a total of 30 thousand refrigerators were replaced per year, which represents a 71,45% progress towards the expected objective. Additionally, 3.137 refrigerators have been replaced between June 2016 and June 2017.

Regarding EE's coverage change (improvements) scope by end users and specific sectors (measured in reduced MWh as a Project's outcome): through RENOVA's strengthening, a 154 thousand MWh reduction was attained by June 2017. Given that RENOVA's Programme Phase 1 concluded on may 2016, and because of politic decisions, Phase 2 has not been addressed, with the Steering Committee's approval, the Project decided to boost EE focused activities at Galápagos. The use of greater EE appliances promoting activities were held in the Islands, accomplishing a 200 MWh reduction between December 2016 and January 2017. These activities held at Galápagos were approved by the Steering Committee in order to extend component/outcome 3 activities and achieve the expected outcomes.

Considering that Ecuador's laboratories capacity to certify imported or national appliances and lighting equipment's EE requirements was inadequate when the Project started, a target was set to accredit/certify at least one laboratory by OAE. The Project has exceeded the expected target, benefiting four National Laboratories in two National Institutions, two of which are expected to be certified on July/ August 2017 and the other two will be appropriately accredited to execute tests and orientated towards a future certification.

The phases to accredit/ certify a laboratory were divided into five stages with an individual percentage weight of 20%, which is reflected in the following progress status: 1) INER lighting laboratory, with a 9% progress (expected to certify August 2017); 2) INEN refrigerator laboratory, with a 9% progress (expected to certify August 2017);

August 2017); 3) INEN stove laboratory, with a 70% progress (the Project was responsible for acquiring the necessary equipments for the laboratory's accreditation, the beneficiary will be responsible for staff's training and accreditation); and 4) INER water heaters laboratory with a 60% progress (the Project's Steering Committee and MEER recommend to continue with the laboratories' accreditation process).

Regarding the Nationally Appropriate Mitigation Actions a NAMA on EE was designed and approved, reaching 100% progress on the proposed target. This was implemented in three stages: 1) Initial information gathering for NAMA; 2) NAMA's concept and NAMA NINO document development; and 3) NAMA on EE for public and residential sector design and enactment, according to the county's action line on this matter.

This document/proposal is a part of the effort done to replace refrigerators, stoves, water heaters and residential/public lighting in order to decrease energy's consumption and related CO₂ emissions; expecting a 1,92 Mt CO₂-eq reduction.

NAMA on EE's document was validated by MEER on May 2017 and was sent to MAE for their consent. Furthermore, through this proposal the Project aims to achieve the Focal Point registration in Ecuador before the United Nation Framework Convention on Climate Change (UNFCCC).

Regarding Outcomes 1, 2 and 3:

A detailed analysis of the progress regarding Outcome 1 (The governance and legal framework for adopting the use of EE appliances in the public and residential sectors, has been strengthened); Outcome 2 (Designated national test laboratories have been prepared to verify compliance of household appliances with applicable EE standards) and Outcome 3 (The institutional and technical capacity of the RENOVA Programme has been strengthened to ensure the replacement of obsolete household refrigerators by energy-efficient units) through the indicators detailed in the LFM and measured by the 15 outcome indicators (also in the LFM) is presented in **Annex IX**.

Regarding Project's Outcome 4: The Monitoring & Evaluation plan for the Project has been executed.

The Project's M&E Plan was developed according to the following:⁷

- i. **Inception Workshop:** SECURE Project's Inception Workshop was carried out on March 2015 with representation of the main institutions that form part in the Project's organizational structure. Through this activity, the following targets were reached: i) raise awareness among all the Project's partners about its objectives and scope; ii) Discuss functions, obligations and responsibilities within the Project's decision-making structure; iii) Deliver the First Annual Operative Plan; Review the Operative and M&E Plan's main indicators, objectives and verification means of their implementation⁸.
- ii. **Project's progress annual report (M&E):** For the Project's supervision, MEER recommended SECURE Project to be included in the "State Projects and Programmes supervision and monitoring virtual platform". GPR is a tool to guide government implemented project's actions towards national objectives and concrete outcomes' consecution that enhance budget's execution. The use of this platform represented no cost for the Project. On the Project's Steering Committee Plenary Session on September 2015, the first Project's Progress Report in this format - GPR -, which represented a significant contribution for the Project's partners in order to become familiar with the Project's state of progress regarding it's execution and strengthen their participation. This tool – GPR – was applied during the first and second year of execution (2014-2015 and 2015-2016). It is necessary to know the outcomes for the third year of execution at the Project's termination (2017) in order to reach an integral implementation of the tool during the Project's complete cycle and complete the M&E Plan's provisions. ¹⁶.

⁷ See Secc. PROJECT'S STRATEGIC RESULTS FRAMEWORK pp. 30 a 32 and M&E FRAMEWORK pp. 38 a 42 del PRODOC.

⁸ Project Implementation Report (PIR, 2016), Proyecto Aseguramiento de la eficiencia energética en los sectores público y residencial del Ecuador (SECURE), October 2017

- iii. **A Lessons Learnt Report:** This report was developed before the Project's termination. The Project counts with a Lessons Learnt Systematization and Documentation document (at the moment of this TE this report is in its design and printing phase).⁹
- iv. Monthly and quarterly progress reports presented and approved by MEER and UNDP.

4.2. ASSUMPTIONS AND RISKS:

In the Project's Document a series of Assumptions and Risks were identified, which their occurrence, or not, would impact on the Project's expected outcomes achievement. On that basis, this section presents an analysis of those assumptions and risks and the impact they had on the Project's execution (if they did).

Additionally, Project's mitigation and adaptation actions held out in order to minimize negative impacts in case some of the defined risk took place were identified.

To that respect, in secc. H. *Critical Risk Management* from the Project Implementation Review (see pages 25 and 26 PIR 2016) from June 2016, indicates that: *"Given the country's current economic situation, particularly the reduction of government's income due to petrol's price decrease, public investment project's necessary funding or co-funding has been affected. Under this scenario, there is a risk for RENOVA programme continuity. Actually (June 2016), RENOVA Programme is self financed by beneficiaries' loans recovery as well as renovation programme's income"*.

In response to this statement it is pointed out that: *"The Project worked on a methodological proposal for funding the programme in the 2016-2020 period, in order to reduce governments fiscal effort increasing loan's interest rates as established by Ecuador's Central Bank and to quantify energy savings, demands, fuel and economic benefits for end users and for the State. This proposal has been accepted by the MEER Sub secretariat and is actually in revision by the MEER Ministry and the Republic's Vice-president. Their decision will determine RENOVA Programme's continuity. On the contrary, progress on Component 3 outcomes will be affected"*.

Finally, even if the PIR 2016 states that *"Energy and CO2 emissions indicators reflect a successful management on behalf of RENOVA Programme and SECURE Project"*, it is remarked that *"On the other hand, it is important to mention that the full accomplishment of the objectives will be compromised once the government approves to implement phase 2 on refrigerators replacement"*.

Even if the above stated is part of MEER's RENOVA Programme actions, which are complemented with the Project's activities, objectives and outcomes are part of "SECURE Project's objectives; and target aimed at Outcome 3: *"RENOVA Programme's institutional and technical capacities have been strengthened in order to warrantee obsolete household refrigerators replacement for EE units"*

Even if RENOVA Programme's termination was presented as a critical risk for the Project, the situation was mitigated by the implementation of a proposal to take actions related to RENOVA Programme's objectives (as the development of a public communication campaign at Galápagos Island son October 2016 regarding the benefits of greater EE appliances adoption). Besides, the Project ends its activities with the implementation of a second public communication plan focused on promoting DMEE and thus, ensure the market's transformation towards more efficient refrigerators acquisition.

4.3. OTHER PERTINENT PROJECT'S LEARNT LESSONS:

SECURE Project was formulated as an initiative that would give continuity and support to RENOVA Programme, which has been led by the government, in compliance with Ecuador's national commitments

⁹Document of the methodology used and draft of the proposed document containing the information gathered, organized and systematized of the lessons learned from the SECURE Project (conducted by the consultant Laura Melisa Salgado Tapia, in June 2017).

under Montreal Protocol. As described on the PRODOC, the programme was created in 2011 with the objective of providing low energy-consuming refrigerators for domestic use to residential end users, and simultaneously withdraw inefficient and obsolete refrigerators from the market. For this purpose, a financial grant is established for end users that is complemented with credit facilities to finance new appliances acquisition by the customer (low income population). On June 2013, RENOVA Programme was declared “Emblematic” and, in consequence, its status was upgraded to priority for the national administration. The positive experience on the articulated work between ministries (MMER, MIPRO and MCPEC, MF, MAE, MIDUVI and National Development Bank of Ecuador –BNF-) was considered for SECURE Project . The Programme had also a positive experience with national agencies.

The Climate Change Mitigation Capacities’ Development Project (FOCAM); implemented with UNDP support in Ecuador and other 25 countries worldwide, has developed a Measuring, Reporting and Verification System (MRV) for the Cooking Efficiency Programme (PEC), which shares the EE approach with SECURE Project. Work was done on the three energy NAMA: Cooking Efficiency Programme, Electric Generation and Energy Efficiency Optimization (OGE&EE), and Future Hydroelectric Generation Development (DFCH) and a national system was created in order to quantify beneficiaries, store information, generate reports and thus demonstrate the country’s efforts in the CC field. It was linked to SECURE Project especially on June 2014.

The Third National Communication on Climate Change (TNCCC) is a Project led by MAE, through the SSCC, with UNDP’s support and GEF’s funding. This document was developed between 2011-2015 and relied on information and data provided by government’s various portfolios and the civil society, including SECURE Project.

Simultaneously, the Clean Development Mechanism (CDM) was implemented by Ecuador to venture in CC struggle, by which experiences have been generated and capacities have been built. In this context, incandescent bulbs replacement in the residential sector has been a successful experience.

MEER along with United Nations Industrial Development Organization (UNIDO), implemented the “Energy Efficiency for Ecuador’s Industry” (EEI) Project, which fosters an EE culture through the adoption of normalized systems. In that scenario, ISO 50001 first certification in Ecuador’s companies was promoted. According to one of the interviews, great impacts were achieved, with a 6 million dollars reduction¹⁰.

Even if EEI Project ended in 2016, MEER decided to continue with the actions beyond the funding.

It is also important to mention that MIPRO is the focal point for Montreal Protocol’s implementation, reason for receiving UNIDO’s cooperation. Through this cooperation, ADELCA staff was trained on recycling good practices and refrigerating gases recovery. According to the Project’s Implementation Reports (PIR), at the end of RENOVA Programme, 72,3% of Ozone depleting substances (ODS) were recovered annually. Also, 105.005 kg of R2 refrigerant were recovered between June and December 2016 from the recycling of 477 refrigerators.

4.4. EXPECTED PARTICIPATION FROM STAKEHOLDERS

As described on the PRODOC, at a political level, MEER assumed the Project’s execution responsibility , in coordination with MICSE. That is to say that it assumed the responsibility of warranting that SECURE Project’s implementation would follow national standards and politic. It is remarkable that, since it’s conception, the Project has been developed considering RENOVA Programme’s successful experience regarding collaborative and inter-sectorial work with other stakeholders. For that reason the involvement of other stakeholders without a direct role on EE was pursued for being considered strategic partners to include EE in their institution’s policies, plans and regulations and thus, contribute to the Project’s objectives accomplishment. Even if it was difficult at first to articulate so many institutions, joint and coordinated work was accomplished for the final customer’s benefit. In this sense, MIPRO –RENOVA Programme key partner – also assumed a strategic role in the Project, given its competence in market control. The three Ministries – MEER, MICSE and MIPRO – as well as UNDP conformed the Project’s Steering Committee.

Regarding the component concerning governance and legal structure, interinstitutional work fostered the participation in operative committees and EE committee’s conformation. This component has been executed

¹⁰ Source: MEER’s EE National Directorate

through the central government portfolio. In a joint work with Ecuador's Quality System, on November 2015 the initiative was introduced and 2 lines were presented: 1. Energy Efficiency Minimums and 2. The idea of maximum Energy Efficiency incentive. The devised proposal suggested the inclusion, as a National Quality Plan's policy, of the following disposition "Gradually increase maximum energy efficiency electric appliances and equipment's share and /or commercialization in the national market, as a consequence of quality chain's capacities and technological modernization and strengthening", which was discussed and validated within the Interministerial Quality Committee,

Moreover, for capacities' strengthening and training on EE standards enforcement actions, INER's abilities and installed structure were capitalized through the cooperation agreement with this institution, in order to provide virtual training to public officers. Thus, INER's virtual training platform enabled to increase the number of people trained.

The National Secretariat for Public Administration participated as well in SECURE Project by contributing in the development of the questionnaire that allowed to trace the base line to identify the training's target group. The Energy Efficiency Committee's conformation constitutes another example of the successful interinstitutional experience being constituted by MEER, INEN, OAE, MIPRO, National Service for Public Contracting (SERCOP).

Concerning Component 2, MEER subscribed two cooperation agreements in order to support the national test laboratories to verify EE standard's compliance in household appliances. On April 2016, MEER subscribed an "Interinstitutional Cooperation Framework Agreement" with INEN to the ends of supporting refrigerator's laboratory's updating and technical staff training. Additionally, the "MEER/INEN Interinstitutional Cooperation Specific Agreement" where infrastructure, equipment and training investments were detailed was subscribed.

On June 2016 an "Interinstitutional Cooperation Agreement" was signed with INER in order to support lighting technology and public lighting laboratory's accreditation and staff training. As described in the Systematization and Lessons Learnt Document¹¹ and as mentioned during interviews, SECURE Project's technical staff has participated in "more than 9 working groups set up by INEN". Also, this has opened new spaces: for example, it is mentioned that INER laboratory was focused on investigation activities, and with SECURE Projects assistance, work capacity has increased, which gave place to offering specialized services to the national and foreign market.

Regarding RENOVA Programme strengthening, the Project included the electric companies' agencies through operative staff's training. Given that RENOVA's second phase has not been approved, the Project decided to spend the informative-educational campaigns allocating funds to promote efficient equipment's commercialization in Ecuador, and technical staff training at Galápagos Islands. A public consultation took place that involved manufacturers, companies, academy, in order to incorporate stakeholders and as a strategy for outcome's sustainability. For the training needs assessment, Galápagos Government Council, Elecgalapagos and Galapagos National Park were involved.

In addition to the stakeholders involved in the Project (see Matrix N-2), other partners and strategic allies linked to the Project are listed below:

Matrix N-3: Partners and Strategic Allies

Level	Role	Stakeholder	Function
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¹¹Document of the methodology used and draft of the proposed document containing the information collected, organized and systematized of the lessons learned from the SECURE Project (conducted by the consultant Laura Melisa Salgado Tapia, in June 2017).

Partners and Strategic Allies	National Technical Agency, responsible for Normalization, technical regulation and metrology	National Institute for Normalization of Ecuador –INEN	SECURE Project beneficiary to upgrade verification laboratories' infrastructure and strengthen technical staff skills. Additionally forming part of technical working groups, EE national standards development in concordance with the framework programme.
	Institution responsible for strengthening the country's quality infrastructure by certifying evaluation organisms' technical competence.	Ecuadorian Accreditation Organization - OAE	Works along SECURE Project in pre selected laboratories' accreditation and in Maximum Energy Efficiency label's development.
	SENAE is in charge of providing customs services, at all stages, for the country. SERCOP regulates government's hiring and procurement management.	Ecuadorian Customs Service (SENAE) and National Service for Public Contracting (SERCOP)	Secure Project works with these institutions in order to incorporate DMEE as an importing criteria and for the sector's public procurement of goods and services
	This institution advises presidency regarding general State policies adoption and execution, especially concerning public administration in order to strengthen public management procedures.	National Secretariat of Public Administration (SNAP)	Supported the execution of the national training programme, enabling to reach more than one thousand (1.000) officers in order to identify Central Government's training requirements and, additionally provide three training/diffusion sessions on EE, which will be reinforced or multiplied by virtual training developed by INER, another national agency.
	Investigation and scientific knowledge production regarding EE and renewable energy.	National Institute for Energy Efficiency and Renewable Energy – (INER)	INER inaugurated the first "Lighting Technology Laboratory" for public lighting, for developing process to evaluate EE in the country's lighting systems. SECURE Project has worked on 4 testing lines of 2 public institutions, promoting NTE INEN ISO/IEC 17025:2006 certification.
	Responsible for validation processes and awarding the "Sello FIDE" distinctive to the products with greater energy saving in the electric sector.	Electric Energy Saving Trust– FIDE (México D.F.)	Technical assistance meetings for DMEE's implementation plan development.
This institution is responsible for promoting metrology for science, technology and society.	The National Metrology	Has confirmed its support to the Project for national laboratories' strengthening and experts	

Partners and Strategic Allies		Institute Of Germany . (PTB)	mentoring in Quality Infrastructure (IC) projects in Latin America and the Caribbean and access to the exchange platform for Ecuador IC community.
	Institution responsible for diffusion, education, technical assistance, specific programme development and funding technology innovation projects related to energy efficiency, renewable energies and other low-carbon technologies.	Spain's Institute for diversification and energy's efficient use (IDAE).	Have supported SECURE Project for using technical contents of their guides and articles for didactic material development to be disseminated in training sessions of Government staff regarding EE.
	Alliance that will provide both the country and the Project, access to international technical cooperation network.	Efficient Equipment Global Alliance (Paris, France).	Through SECURE Project, MEER's incorporation to efficient appliances and equipments Global Alliance from United Nations Environment Programme (UNEP-Paris).
	Technical assistance in Maximum Energy Saving Labels implementation.	Procel Emblem Experience (Rio de Janeiro, Brazil)	Technical assistance was received on behalf of INMETRO's Executive Director's assistant and EletroBras ex official regarding working groups' conformation for regulatory analysis and EE standards definition, for laboratories' equipment procurement orientation.
	Maximum Energy Efficiency Label which includes national manufacturers and importers.	Private sector	In its first stage the following have been involved: Indurama/induglob, Mabe, Panasonic, Ecuador's White Goods Industrial's Association (ALBE).
	Diffusion and awareness raising campaigns concerning EE: auditions, social network, stands, video-spots and training.	Galápagos Islands Institutions . Public and Private sectors.	MEER, along with Elecgalápagos(, started in 2016 an EE campaign in the Province. Auditions were conducted to: Elecgalápagos, Galápagos Special Regime Government Council, Galápagos national Park, Bio-security regulation and control Agency, Quatentten for Galápagos, fishing, hotel and residential sectors. Stands were installed in the three Elecgalapagos collection agencies for citizens to collect their LED bulbs kit.

4.5. REPLICATION APPROACH

In this section, the possibilities of replicating the Project's progress and achievements, both in the country and other scenarios with similar challenges and implementation context, is analyzed with special attention in the accomplished impacts and synergies with other sector's initiatives.

The Project has considerable useful elements for national and international field. The measures presented in the PRODOC in order to ensure the Project's replicability were even increased with the shares effort of the different government institutions and international partners and allies.

SECURE Project generated important applicable lessons regarding adaptation condition's implementation using all the available resources, from the scientific-technological instrument (SECURE Project's NAMA) to political will.

The Ministerial Agreement subscription, from which DMEE is issued has been the tangible outcome on governance progress and Interministerial coordination work. The understanding and coordination between the involved stakeholders, by interinstitutional working committees implementation is a replicable and relevant practice. In fact, MEER has replicated this practice in other politic instruments development.

Although RENOVA Programme terminated on May 2016, new politic instruments have been developed, as DMEE, that will keep boosting initiatives for inefficient electricity-consuming equipment replacement. Through SECURE Project work has been done to position DMEE by implementing informative and educational campaigns, particularly its Pilot Plan focused on refrigerators. As a replicable experience, it is noticed that DMEE's positioning in the national market will enable the consumer's orientation towards a better buying option, which also aims to competitiveness and promotion for a national industry upgrade to access new markets.

4.6. UNDP'S COMPARATIVE ADVANTAGE.

UNDP has, among its most relevant roles, to foster, lead and catalyze processes that would usually take longer to be established by the State and to transform concepts into operative tools. In this sense, and with Ecuador's Government active involvement, UNDP has been an important support in agenda development in order to implement programmatic issues applying human development, environmental and social sustainability to projects with which strategic issues are enhanced and strengthened.

Additionally, the following items can be mentioned regarding UNDP's added value:

- i) Technical support capacity for the State in procurement and hiring procedures, including tax exemptions and collaboration in international bids, reducing terms and offering trust and clear rules to potential national and international suppliers.
- ii) International compromises follow-up and opportunity to mobilize funds regarding those compromises (GEF, for example).
- iii) Generation of empirical evidence for use in the public policy cycle based on independent evaluations.
- iv) Political neutrality towards actors who have problems of mutual trust.
- v) Accountability and transparency, which are easily exposed before public opinion.
- vi) Possibility of international projection of experiences under the UNDP umbrella and of receiving expertise developed in other parts of the world (potential Knowledge Bank).
- vii) Multi-level advocacy / influence using its own policy framework (such as the UN framework, UNDAF by period) with both civil society and private enterprises and at all levels of the public sector.

4.7. LINKS BETWEEN THE PROJECT AND OTHER INTERVENTIONS WITHIN THE SECTOR

In general, from document analysis and interviews, it can be observed that there was a good technical articulation with and between national counterparts, as well as a significant synergy with other initiatives with interference in the Project's intervention sector. Some points to highlight are:

- i) A good technical articulation with the national counterparts is evident.

- ii) In recent years, UNDP is a key strategic player in the country, with technical solvency and a proactive role; and collaborates in mobilizing funds (e.g. channelling funds from the GEF).
- iii) There is a joint effort with other initiatives.

International cooperation has coincided with UNDP in initiatives that have been able to have synergies with the SECURE Project.

During the DMEE development process, the SECURE Project carried out a search and analysis of similar programmes that were operating in other countries such as the experiences of Mexico (FIDE Label - Trust for the Saving of Electric Energy), Brazil with PROCEL (National Energy Conservation Programme) of INMETRO (Ministry of Mines and Energy and the National Institute of Metrology) and the United States with its Energy Star Programme from the Department of Energy and the Environmental Protection Agency. After analyzing these successful initiatives, the Project approached seeking the cooperation and exchange with actors of such Programmes. Thus, the technical advisory received by the advisor of the INMETRO Executive Director, which was an important input for the development of the DMEE, stands out.

On the other hand, it was identified as an opportunity to include the MEER as part of UNEP's "Global Alliance of Efficient Products and Equipment" initiative, which will allow technical collaboration, information and support in obtaining financing to promote actions towards the transition to efficient appliances and equipment.

Finally, in a joint work with the MEER, it was sought to position the importance of continuing to strengthen the laboratories through a cooperation project with The National Metrology Institute Of Germany .

4.8. MANAGEMENT AGREEMENTS

This section has assessed aspects that are extremely important for the successful implementation of a project and for the achievement of the presented objectives and outcomes. In the first instance, the management and modality of the Project's implementation and execution agencies were analyzed and evaluated.

As it was mentioned in the Management Arrangements of the Project Document, the implementation was carried out under the National Implementation Modality (NIM), which favors the National Agencies that execute the initiative ownership.

To this end, roles and responsibilities were defined at different levels:

- - **Political:** The Ministry of Electricity and Renewable Energy assumed responsibility for the implementation of the Project, with the highest level of responsibility to ensure that the implementation of the Project follows national policy and standards.
- - **Executive:** A Steering Committee was formed in which MEER, MIPRO, MICSE and UNDP participated. The main role of this Committee was to provide the strategic political and technical vision for the Project, and responsible for the operational implementation. In this regard, it was responsible for providing political and strategic support; evaluate and analyze the progress of activities, as well as the need for reprogramming them; define guidelines for the implementation of SECURE Project; their follow-up and monitoring.
- - **Operational:** The Project Management Team (PMT) was housed in the MEER. Under the responsibility of a Coordinator, that unit was responsible for the day-to-day operations of the Project, following the UNDP-GEF administrative accounting procedures for the disbursement of funds, and the objectives and outcomes follow-up as agreed in the Project's work plan.

Working Groups were established to implement the Project's components and to support the different activities.

Regarding the technical and financial management of the Project, the MEER, as Implementing Partner and Project Leader, was in charge of the project management. The UNDP country office, at MEER's request,

provided support to the national implementation of the Project in operational matters. Likewise, the role of UNDP, as the GEF Implementing Agency, played a key role in ensuring the quality of implementation, providing technical assistance, and ensuring the proper use of funds allocated to the project in its role of fiduciary entity.

From the analysis of the reviewed documentation and the interviews, it has been established that the management arrangements were adequate within the framework of this initiative. The importance of the active and joint participation of the different governmental actors has also been emphasized several times, leaving for the next phase the possibility of including others such as the MAE.

5- PROJECT'S IMPLEMENTATION

5.1. MANAGEMENT ADAPTATION

When analyzing and evaluating the strategies and actions taken during the implementation, to achieve an effective adaptation to the changes given during their execution, these are considered adequate and **Satisfactory (S)**. This made it possible to ensure the contributions of the Project to consolidate an effective inter-institutional coordination in order to improve EE in Ecuador.

An example of this is the strategies developed to face RENOVA Programme termination (which was considered a critical risk for the Project in 2016). This was mitigated through the implementation of a proposal to take measures in line with the objectives of the RENOVA Programme (see Section 4.2 of this document), which were then endorsed by the MEER.

It is also important to highlight the adaptive performance of the Project through the Ecuadorian Quality System which, with MEER support and coordination, allowed it to participate in the CIMC in 2015 and 2016-2017 and be included in the National Quality Plan.

The DMEE initiative, adopted by the then President of CIMC, was an excellent example of how to strengthen existing institutional arrangements, highlighting the rights and duties of each member of that Commission. By engaging the private sector, the DMEE initiative will make it possible (to favor national producers and importers) to upgrade their manufacturing technologies and thereby enhance their EE.

5.2. ASSOCIATIVE AGREEMENTS

From the analysis of the association agreements established for the implementation of the Project, as well as its contributions to the achievement of the objectives of the project, it appears that:

Please note that the SECURE Project has fostered close coordination between the MAE and the MEER achieving work's articulation between these institutions in three priority lines of action:

- Within the framework of the design and development of a Nationally Appropriate Mitigation Action (NAMA), the project articulated actions with other programmes and projects such as the FOCAM, the Third National Communication on Climate Change Mitigation Climate Change (TNCCC), the Low Emissions Strengthening Programme (LECB), the Biennial Update on Climate Change (BUR), among others
- The second line of action was to work with the Green Point initiative and the Sustainable Procurement Initiative, involving the MAE, SERCOP and UNEP.
- The third line of action, enabled interaction with the MAE SSCC-, for the application in the Climate Technology Center & Network (CTCN) of technical assistance project: "Strengthening national capacities for verification of energy efficiency compliance for electrical appliances in the Ecuadorian market".

5.3. "M&E FEEDBACK ON ADAPTATIVE MANAGEMENT ACTIVITIES"

The M & E Plan implemented within the framework of the SECURE Project was carried out through the GPR tool, given that two bids were launched for the implementation of M & E (one aimed at companies and another directed at individuals), which were declared deserted. Given these antecedents, the MEER strategically took the decision to strengthen the team's capacities to respond effectively to the GPR rather than generating a new M & E system for the Project. The use of the GPR tool has been adequate in terms of its contributions to achieve an adaptive management of the Project during its execution

MEER's recommendation to include the Project in the "Virtual platform for State projects and programmes monitoring and supervision" and the application of the GPR tool were adopted. This represented no cost to the Project and strengthened the participation of the Project's team and partners.

Completed the third year of execution, at Project Termination (2017), it will be important to integrate the outcomes of the last year implementation, so as to achieve an integral implementation of the tool throughout the Project's cycle and complete the envisaged M & E Plan.

5.4. PROJECT'S FINANCIAL ANALYSIS

The funds provided by the GEF are non-reimbursable, and the executing entity (MEER) is responsible for the proper use of these resources, as well as the fulfilment of the activities committed in the work plan.

The following is a summary of the allocation of financial resources as initially established in PRODOC (**Table 1**). According to it, the MEER would contribute USD 22.587.600, through RENOVA (grants and loans) and another USD 2.412.400 in kind. For its part, MIPRO would contribute another USD 750.000 in kind. Finally, UNDP would make a contribution of USD 50,000 in kind.

In this sense, 88% of the resources (USD 24.364.084) would be cash contributions, of which USD 1.776.484 correspond to what is co-financed by the GEF. For its part, the National Government would contribute, in kind, practically the remaining 12% (USD 3.212.400).

Table 1. Allocation of resources by source of funding (in USD, according to PRODOC).

Funding source	Cash	In kind
FMAM	1.776.484	--
MEER (RENOVA: cash subvention)	9.660.000	
MEER (RENOVA: cash loan)	12.927.600	
MEER		2.412.400
MIPRO		750.000
UNDP		50.000
Total	24.364.084 (88%)	3.212.400 (12%)

Table 2 presents a summary of the allocation by PRODOC of financial resources for the GEF, and how they have been implemented. On September 2017 a 94% of GEF's funds have been executed, with a total of USD 1.675.316 executed. Completing the Exit Strategy allocated funds (USD 101.168) the execution will be of a 100% at the end of the Project.

Table 2. GEF's resource allocation for key activities and execution (in UDS), including remaining compromises. Project at December 2017

Outcomes	Total Budget in USD	Execution at September 2017		Exit Strategy allocated funds		Total Execution at Project's conclusion including exit strategy in USD
		USD	%	USD	%	
1- The governance and legal framework for adopting the use of EE appliances in the public and residential sectors, has been strengthened.	372.000	354.128	95	17.872	5	372.000 ¹
2- Designated national test laboratories have been prepared to verify compliance of household appliances with applicable EE standards	780.000	720.719	92	59.281	8	780.000 ²
3- The institutional and technical capacity of the RENOVA programme has been strengthened to ensure the replacement of obsolete household refrigerators by energy-efficient units	480.718	465.770	97	14.948	3	480.718 ³
4- The M&E plan for the Project has been executed.	58.000	48.932	84	9.068	16	58.000 ⁴
Project management	85.766	85.766	100	0	0	85.766
Totals	1.776.484	1.675.316	94	101.168	6	1.776.484

Envisaged activities: ¹ Mobile application (app) for DMEE. Launching event of DMEE, Project's video and DMEE presentation. ² DMEE promotional material, additional items for the 4th strengthen laboratory (Central testing bank) purchase, ³ Communication campaign on DMEE design, closing mission and ⁴ M&E and closing activities.

Table 3 shows the co-financing, in kind and in cash, made by each counterpart. The MEER will close these figures at the date of issuance and signature of the report.

Table 3. Co-financing (en USD).

Funding source	Co-financing (PRODOC)	Executed	Execution %
MEER (RENOVA, cash subvention ¹² and loan ¹³)	22.587.600	39.401.970,40	174%

¹² Government's grant to RENOVA's Program beneficiaries

¹³ BNF's soft credit facility for RENOVA's Program beneficiaries

MEER ¹⁴ (in kind)	2.412.400	1.821.800,26	75.25%
MIPRO ¹⁵ (cash)	750.000	826.068,00	110%
UNDP ¹⁶ (cash)	50.000	50.000,00	100%
TOTAL	25.800.000	42.099.838,66	160%

5.5. MONITORING AND EVALUATION

Regarding M&E's applied systems quality and utility, the tools and mechanisms established to weigh the Project's execution progress are analyzed, the following is indicated:

1. Monitoring platforms for the Government of Ecuador and UNDP projects were implemented: GPR t Platform, and the Project Implementation Review (PIR) Monitoring Platform for Project Progress Review (GEF / UNDP).
2. The project M&E scheme was satisfactory (S, see Table 4). Project supervision has been carried out with a methodological framework and appropriate and rigorous monitoring and evaluation tools and evaluation criteria, based on the previous experiences of other GEF projects, incorporating the GEF's own tools and their most up-to-date developments.
3. In addition to the UNDP's own tools, SECURE Project, like all projects of the Ecuadorian government, used the Government by Outcomes system, which is based on the Logical Framework as well as the PIR that is submitted to UNDP.
4. The monitoring work was efficient, which allowed updating the information and indicators. This has made it possible to analyze the degree of progress in achieving the expected objectives, outcomes and outputs, beyond the periodic monitoring of the activities foreseen in the PIRs and OAPs, quarterly and annual reports required by the donor.
5. The annual reports, and especially the Project Implementation reports, annual / annual APR / PIR have allowed a thorough and rigorous analysis of progress in outcomes and the identification of indicators; as well as the detection of emerging problems. These tools (APR / PIR) are relevant in their sequential application, because they are useful for monitoring project progress and contributing to the achievement of their outcomes.
6. The frequent coordination contacts of the project with the members of the work team and the partners of the project was effective. This allowed to detect in time changes in the scenario and complications and consequently to take measures in this respect.
7. The monitoring and control effort has been necessary and sufficient. It has been possible to make the information coming from diverse sources compatible, guiding the monitoring and evaluation according to the logical framework of the project. In terms of financial management, the monitoring and control has been effective, as evidenced by the positive reports of financing, co-financing and expenses by outcomes.

Table 4. Performance accountability: M&E

Monitoring and evaluation	Rating
M&E Launching design	S

¹⁴ Co financing to support staff and facilities, development policy and promotion of energy efficiency in Government, and in public enterprises and the general public.

¹⁵ INEN budget for its electric laboratory habilitation in Conocoto Ecuador

¹⁶UNDP committed \$ 50,000 of TRAC funds to support strengthening the governance structure and development of a NAMA for the sector.

M&E Plan Execution	S
M&E general quality	S

5.6. UNDP AND PARTNER'S EXECUTION DURING IMPLEMENTATION

In this section, an analysis of the relationship established by UNDP and partners regarding the execution of the Project was carried out, as well as the strategies and actions developed for its implementation.

1. The implementation of the Project is considered effective, with a highly satisfactory approach (HS, see **Table 5**), taking into account the outcomes and the first impacts achieved so far.
2. Implementation modality is national with UNDP support. This means that UNDP supports all administrative and operational processes, but the MEER is responsible for decision making and implementation.
3. At the institutional level, the coordination of the Project and the articulation between the different key actors and partners has been very satisfactory.
4. The permanent link with the various stakeholders involved by the team in charge of implementation was a very valuable instrument that can serve as a basis for maintaining the articulation between the various actors. It is therefore important to devise an effective way to keep these networks and committees functioning once the project is closed.
5. The requirements of technical and administrative standards other than the GEF and UNDP for the planning and monitoring of the Project, and the need to specify the outcomes and initial indicators for a better orientation to the execution, had a satisfactory impact on the generation of responses to the various situations that could negatively affect the execution of resources.
6. Annual Operational Plans (AOPs), as well as Annual Budgets, were prepared by the Project's technical team in consultation and approval of the Steering Committee and based on the envisaged activities with the various governmental partners, as well as with national and local authorities. These were previously analyzed and approved by UNDP. Its monitoring was established within the Monitoring and Evaluation Plan, which detailed the activities to be carried out and the agencies / agents responsible for implementation.

Table 5. Performance accountability: IA and EA execution

IA and EA execution	Rating
UNDP implementation quality	HS
EA execution quality	HS
General quality of implementation and execution	HS

6- PROJECT'S OUTCOMES

6.1. GENERAL OUTCOMES

In this section, through affirmations based on recorded facts about the reviewed documents and the conducted interviews, the outcomes achieved by the Project have been assessed.

A scale of 6 (six) points will be used: Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U) and Highly Unsatisfactory (HU)

Table 6. Progress in outcome achievement

Outcomes	Rating
1) The governance and legal framework for adopting the use of EE appliances in the public and residential sectors, has been strengthened.	HS
2) Designated national test laboratories have been prepared to verify compliance of household appliances with applicable EE standards .	HS
3) The institutional and technical capacity of the RENOVA Programme has been strengthened to ensure the replacement of obsolete household refrigerators by energy-efficient units .	S
4) The Monitoring &Evaluation plan for the Project has been executed..	S

6.2. RELEVANCE

Relevance or pertinence focuses on the extent to which a development initiative and its expected outputs and outcomes are consistent with national and local policies and priorities, as well as the beneficiaries' needs. In that sense, the Project's alignment with national and international policies has been analyzed.

Based on the gathered information, there has been congruence between the perception of what is needed in terms of EE policy development, as predicted by the SECURE Project, and the reality of what is needed from the perspective of the consulted beneficiaries and actors. In this sense, the strengthening of government officials' skills has been relevant for the development of EE policies, plans, and initiatives. In addition, it contributed to clarify the energy sector institutions competencies, and to generate inter-institutional spaces where their competences in the field are enhanced. Another of the outcomes to highlight is the scheme of the Maximum Energy Efficiency Label, as an incentive for the expansion of the national industry.

The United Nations Development Assistance Framework in Ecuador (UNDAF) is the outcome of a process of dialogue and joint work between the United Nations System (UNS) and the Government of the Republic of Ecuador where areas of cooperation to be developed over four years are defined. The UNDAF corresponding to the four-year period 2010-2014, in which the SECURE Project is framed, is a coherent and integrated proposal of the UNS to support the Ecuadorian State to achieve the objectives set forth in the National Plan for Good Living 2013-2017, the same which include the country's commitments under the Millennium Development Goals (MDGs), as well as compliance with the recommendations derived from international human rights instruments. According to the SECURE Project PRODOC, its alignment with UNDAF Outcome 5: "By 2014, competent institutions and local actors foster - and social actors have greater skills and tools to exercise their right to a healthy and safe environment and environmental sustainability, including biodiversity conservation, integrated management of natural resources and environmental management." In this sense, the training provided to officials and staff of the institutions on issues related to energy efficiency is one of the tools of the Project, which allows them to socialize and disseminate the benefits and the potential impact of the use of low energy-consuming appliances in mitigating climate change.

In addition, the SECURE Project has contributed to the achievement of the objectives set out in UNDAF 2015-2018¹⁷, specifically to Outcome Group 4, to the Direct Effect 4, with a view to strengthen institutional and citizen capacities to promote the rights of nature, creating conditions for sustainable development, and improving resilience and risk management in face of the effects of climate change and natural and man-made disasters. The Project has contributed to MEER, MIPRO and the industrial sector to have tools and methodologies to enhance energy efficiency and productivity, especially GR 19 product 4: Energy Efficiency. Ensuring Energy Efficiency in the Public and Residential Sector. In this sense, the following are identified as project products: the development of the "Energy Prospective Study in Ecuador", the design of NAMA in the

¹⁷ <http://www.un.org.ec/wp-content/uploads/2015/02/MARCO-DE-COOPERACION-NACIONES-UNIDAS-p6.pdf>

energy sector for the use of efficient equipment in the public and domestic sector; laboratory accreditation at the national level¹⁸.

6.3. EFFECTIVENESS AND EFFICIENCY

In terms of efficiency, resources are considered to have been used **satisfactorily (S)**. However, the Project has been completed without executing a percentage of allocated funds, for the execution period, which, as provided by the Steering Committee in the virtual session of May 29th, 2017, will be implemented in actions related to the Project's strategy of sustainability.

Time was identified as one of the Project's major hurdles, regarding the procurement process managed by UNDP, as they were more protracted than initially expected for tender launching and related high-value purchases to the processes of upgrading four (4) national laboratories, taking into account that the initial scope was the qualification of one (1) laboratory. In several interviews, the acquisition process was pointed out, but specifically in Carlos Dávila's interview, he pointed out that "the project's obstacles have been the natural, nothing unusual. UNDP procurement processes take time, but were finally agile, an unusual case."

In addition, another factor of incidence was to achieve consensus and articulated work between institutions. This took nearly one year, during 2015, where different workshops and instances of dialogue and articulation took place.

At the technical level, most of the team that constituted the PMT began its activities in the second year of the Project's implementation, such as specialists in regulations, laboratories, communication, climate change and training. In consulting contracting, the needs of professionals were considered in order to give the Project a greater scope. Although it was difficult, at first, to achieve outcomes, later they were recovered in terms of targets.

The Project achieved the expected objectives in a **highly satisfactory (HS)** manner, keeping in mind that most of the goals set were exceeded. For example, a greater number of trained personnel was obtained through the use of online tools (virtual seminars), making it possible to invite all public sector's staff. More than 3,000 people participated in the diagnosis of training needs, and more than 400 staff members in the trainings, which also included electric utilities and public sector users, surpassing the initial goals.

Through the Project, work has been done regarding the Maximum Energy Efficiency Label, as a premise to ensure compliance with energy efficiency, and so that equipment replacement could also be fostered from the demand side (end users). For this, there is a chain of institutions working for the DMEE. Through this initiative, training was provided to OAE technical personnel and to compliance verification institutions, both in the DMEE scheme, national household refrigeration production processes, ISO 50001 standard and energy management systems. This was a successful and innovative initiative in the country context. The DMEE has generated more outcomes than expected, and once the laboratories were strengthened, the RENOVA initiative was capitalized, being the first stage related to refrigerators.

At the Coordination level, its management has been very efficient. As mentioned in the PIR 2017, five (5) committees were formed with the participation of 7 Ministries, 6 Public Institutions and 1 Cooperative.

It is noted that the Project is very well positioned, and this has made MEER's work as an executing agency stand out, being that so far most of GEF funds on climate change mitigation have supported MAE projects. In this regard, the MEER's performance in implementing the SECURE Project is considered key to access future sources of multilateral cooperation such as the GEF.

6.4. COUNTRY OWNERSHIP

It was evaluated how highly integrated were the actions of the government in conjunction with the SECURE Project. In the case of Galápagos, it was integrated to the ElecGalápagos S.A. actions. Ecuador's Government Plan contemplates the continuity of the actions and achievements of the Project. This is a fundamental aspect that has a profound relevance on sustainability and long-term impacts.

¹⁸ UNDAF's Annual Operative Plan (POA) 2015-2018, January 2017.

Regarding the private sector's participation in the Project, for example, the DMEE initiative was devised to favor both national producers and importers, and promote the incursion into new manufacturing technologies and thus have higher EE in the equipments.

Among the force elements of the Project, the interviewees highlighted the importance of the interinstitutional work carried out; the formation and functioning of the committees has been very fruitful. For example, agreements have been established within the framework of the project, such as the Ministerial Agreement formalizing the DMEE (No. 001/2017), which has contributed to its position as a government policy on EE. Agreements were established between the ministries involved, during the project start-up workshop, to be executed as the creation of inter-institutional working committees, which is considered a replicable and relevant practice. A synthesis of what has hitherto been expressed is that, in general, interviewees consider that future actions should provide more human and material resources and time to strengthen work in the community and promote public-private articulation.

During the second half of the project execution, the legal framework regarding energy efficiency and governance has been materialized.

6.5. MAINSTREAMING

Progress of the Project's achievements mainstreaming was evaluated and how to generalize its ownership. This was achieved through various activities, such as training of public sector personnel, the development of NAMA, among others.

This is another fundamental aspect that has a profound relevance on sustainability and long-term impacts. National regulations (including Galapagos) were incorporated, in accordance with the PRODOC guidelines.

Among the communication actions carried out, the Galapagos Islands stand out as a successful strategy in terms of community ownership and involvement in the issue, as described above in Matrix-N3. The community has incorporated very important conservation practices for future generations. It is key that this knowledge is appropriated and permanently installed in the community, in order to guarantee its sustainability.

Regarding recommendations for future projects, it is recommended to establish a gender focus strategy in social communication campaigns, as well as to highlight the achievements of the women scientists involved in the project, and the analysis of the participation of women in the training performed at the SNAP level.

Table 7. Projects Performance Rating

Issue	Rating
Formulation pertinence (conceptualization and design)	HS
Stakeholder's participation in Project's formulation	HS
National appropriation	HS
Implementation approach	S
M&E	S
IA and EA execution	S
Gender inclusion	MS
Climate Change mainstreaming	S

6.6. SUSTAINABILITY

In this section, the following items are considered: (i) Financial Risks for sustainability; (ii) Socio - Economic Risks for sustainability; (iii) The Institutional Framework and Governance for Sustainability; and (iv) Environmental Risks for sustainability.

Regarding the Project's sustainability, the interviewees responded that outcomes will persist in time and will count with the support of various key stakeholders such as government agencies, universities, private companies and local civil society actors.

However, the need to institutionalize the role of MEER in EE and as a key stakeholder in establishing future strategies for EE and mitigation of the effects of climate change, either through a specific programme or in a transversal manner, and also by allocating funds for these tasks was mentioned.

The laboratories' support for their strengthening should continue and their work with future local clients should be diffused.

Financial Resources:

The SECURE Project, since its inception, has contemplated its articulation with other projects and the co-financing of different institutions (MEER, MIPRO, UNDP, GEF). The greatest reassurance factor of actions at the level of economic and financial sustainability are the commitments assumed by MEER to supervise the initiated actions; as by the electrical companies that have adopted EE measures and replaced their equipment.

It is **likely** that much of the cooperation links initiated with other agencies will result in the management of new resources (technical, financial, institutional) for the actions initiated by the SECURE Project regarding EE.

At the local level, and in order to ensure a continuation of what has been done to date, it would be important to contact the entrepreneurs of the electricity companies involved in the Project with others from the same sector to share the experience.

It is necessary to allocate a budget line for the continuation of the actions started by the Project and to ensure its continuity, as well as support the different levels of government. It is presumed that this will be probable, since government regulation has included consideration of EE from the development of plans and programmes, allowing to contemplate the resources' allocation to implement the necessary measures.

As mentioned in this report, the budget for the equipment of national laboratories has been limited, reason why it's coordination developed a successful strategy of approach with international institutes of cooperation and successful initiatives, in order to manage resources and technical assistance towards national capacities strengthening for the verification of compliance of EE in market electrical appliances.

Within this framework, spaces for exchange and technical assistance have been generated, and the possibilities of continuing the actions initiated in this project have been enhanced. The inclusion of MEER as part of UNEP's Global Alliance of Efficient Products and Equipment will provide technical assistance, information and support in obtaining funding to promote actions towards the transition to efficient appliances and equipment. With the intention of positioning the importance of continuing to strengthen the laboratories, the management of cooperation with the Institute of Metrology in Germany was encouraged.

Socio – Politic:

The SECURE Project has favored the strengthening of both public institutions and civil society. Through the Project, public sector staff (civil servants and technicians) have been trained and, through the application and transmission of the knowledge acquired in the exercise of their functions, will give sustainability to EE measures. The technical and didactic documents are available to continue with these activities, either through the virtual platform or on site.

The decision-makers appropriation of the importance of including EE in the preparation of sectorial plans and programmes favors the sustainability of the Project's outcomes. Likewise, it also fostered the strengthening of civil society, promoting awareness- raising campaigns on energy efficiency and the use of low energy -

consuming appliances, for the general public (end users), officials and entrepreneurs. Significant work has been done in raising awareness, starting with the residential, public and beneficiary sectors, reaching out to the schools that have expressed their interest to participate in awareness-raising activities through their institutions.

Two institutions have been equipped, and will continue with the equipment of 4 EE lines, a situation that favors the sustainability of the actions. The strengthening of the National Laboratories, through its modernized infrastructure and equipment, will allow the compliance verification with EE standards in household appliances. The formation of an EE-specialized "laboratory network" will also allow the use of the national infrastructure to comply with the RTE tests.

Taking into account the above, sustainability is considered **likely** within the framework of the socio-political dimension.

Institutional framework and governance:

According to the collected information, as well as the interviews conducted, sustainability is considered **likely** within the institutional framework and governance dimension. In this sense, throughout the implementation of the SECURE Project, in addition to the project's own activities, different initiatives of the Ecuadorian state have crystallized that would contribute to the sustainability of the implemented actions.

In this sense, through the Ministerial Agreement that issued the DMEE scheme, it has been supported and positioned at the level of government policy, ensuring its sustainability. Likewise, the intention expressed by the authorities to form a minimum governance structure with technicians who participated during this process is favorably observed in terms of continuity; as well as promoting policies through the DMEE, new standards, which is documented within the MIPRO Quality Plan.

The ongoing actions, at the time of this evaluation, will follow their course according to plan, since the institutionalization of a large part of the Project's outcomes has been achieved through the PLANEE. acts as an umbrella, a framework with axes and lines of action for future projects. Progress has been made in the development of regulations governing the state's procurement service.

Environmental:

As an outcome of undertaken actions under the SECURE Project, the incorporation of energy-efficient electrical appliances in the residential and public sectors and contribution to reduce GHG emissions by increasing the incursion and use of energy-saving appliances. This will benefit not only at the local level but also at the international level, in addition to supporting measures for mitigation and reduction of vulnerability to climate change.

The definition of NAMA on EE is another output of the Project that favors the future fulfilment of one of the objectives of the Project regarding mitigation to climate change based on the assurance of energy efficiency in the public and residential sector. This document is part of the efforts made by the Government of Ecuador to promote the replacement of refrigerators, water heaters, stoves and lighting (public and residential) by equipment with greater EE, reducing energy consumption and associated CO₂ emissions. In this sense, it is important to emphasize that NAMAs can have significant implications for the country, since their implementation would make it possible to access the financial, technological and technical assistance resources that are necessary for the materialization of those actions and that could be provided by multilateral cooperation.

Environmental sustainability is considered to be **likely**.

Table 8. Sustainability dimensions classification¹⁹.

Sustainability dimensions	Rating
Financial resources	L
Socio-Politic	I
Institutional framework and governance	I
Environmental	I
General sustainability probability	I

6.7. IMPACT - ROTI

Terminal project evaluations rarely provide information on the impacts obtained due to lack of information, the complexity of the processes and the long-term time frame needed for outcomes to generate impacts. The latter can be observed years after the completion of a project. However, in the present TE the ROTI methodology will be used, as explained in section 2.2, in order to understand in a more explicit manner the final impact achievement.

1- Expected impacts identification

Ultimately, as a result of the undertaken actions under the SECURE Project, the incorporation of energy-efficient electrical appliances in the residential and public sectors will contribute to reducing GHG emissions by increasing the penetration and use of energy-saving appliances. This would ultimately benefit not only locally but globally as well as supporting measures to mitigate and reduce vulnerability to climate change.

Defined impact: Reducing vulnerability to climate change through formulating adaptation / mitigation responses through the use of low energy-consuming equipment, promoting energy efficiency.

2- Project's logic verification

From the analysis of the Project documentation, the project logic is considered adequate so that the outputs generated contribute to the achievement of the outcomes, which in turn would allow the desired impacts to be achieved.

Outcome to impact analysis. Chequear con el rpdoic y sustiruir en todos con la misma redacción no estoy segura si queda así

3-

The first step was to determine the associated factors (impact drivers) and necessary conditions (assumptions) that would be required to achieve the desired impact for each of the Project's outcomes. Also, for each case, the intermediate state, that is the transition condition between outcome and impact, was determined.

Outcome 1 - The governance and legal framework for adopting the use of EE appliances in the public and residential sectors has been strengthened.

Intermediate Status - The plans and policies of the sector incorporate energy efficiency (EE) in its formulation. Likewise, the EE as a State policy reaches through the structure of the Central Government to the Municipal Governments.

Impact drivers:

1. The Technical Committees act as interinstitutional spaces, within a framework of orderly, formal and continuous work.

¹⁹ Categories: Likely (L): There are no risks that affect this dimension of sustainability; Moderately likely (ML): there are moderate risks that can affect this dimension of sustainability; Moderately Unlikely (MI): There are significant risks that affect this dimension of sustainability; unlikely (U): There are severe risks that affect this dimension of sustainability.

2. The integration of EE is adopted as a necessary condition for the formulation of sectorial plans, programmes and / or strategies.
3. Equipment replacement continuity as an outcome of the purchase guideline by the end users due to the DMEE.
4. Trained officials and technicians continue in their functions and apply and transmit the knowledge acquired.
5. The approved NAMA is implemented.
6. The dissemination of the outcomes of the project is continued to facilitate its adoption.

Assumptions:

1. The support of the key stakeholders and the political will of the Government of Ecuador continue to guarantee the crystallization of efforts along these lines.
2. The necessary financing for the continuation of the actions is maintained.
3. The institutionalization achieved by the SECURE Project is consolidated and actions are continued.

Outcome 2 – Designated National test laboratories have been prepared to verify compliance of household appliances with applicable EE standards

Intermediate State - National Laboratories with infrastructure and modernized equipment that enables the compliance verification of EE standards in household appliances. Stakeholders also take the necessary steps to acquire energy-efficient equipment

Impact drivers:

1. National and local institutions continue to support the initiative.
2. Two national laboratories are strengthened in order to comply with the tests established in the Technical Regulations of Ecuador.
3. Document with comprehensive analysis of laboratories available in both the public and private sectors as a baseline input.
4. The activities of technological and knowledge transference to laboratories are continued.
5. The Laboratory Network is strengthened by fostering the exchange of knowledge and synergies.
6. The Project's dissemination of the outcomes is continued to facilitate its adoption.
7. Government supports replication in other laboratories based on the successful Project's interventions.

Assumptions:

1. Based on equipment investment and staff training, laboratories expand EE testing capacities in electrical equipment.
2. Laboratories diversify to new technologies and upgrade test performance and accuracy of results.
3. There is interest to include other laboratories in the Network and adapt their infrastructure and equipment in order to meet the requirements to verify the compliance of EE standards in appliances.
4. The working groups and trained technicians are maintained in their duties.
5. The necessary financing for the continuation of the actions is maintained.

Outcome 3 - The institutional and technical capacity of the RENOVA Programme has been strengthened to ensure the replacement of obsolete household refrigerators by energy- efficient units.

Intermediate Status - Institutions train their staff on EE related issues, and socialize and periodically disseminate the activities and actions that the state carries out in order to update knowledge and ensure that the population has understood the benefits and potential of low energy-consuming appliances. Also, the recycling processes of obsolete refrigerators continues to be strengthened in a joint effort between recyclers and MIPRO. There is an improvement in the operational processes of the RENOVA Programme, an increase in the amount of replaced units as a result of the promoted policy through the DMEE launching, continuity in the recovery processes of ozone-depleting substances (ODS) and replicas of communication campaigns.

Impact drivers:

1. Trained officials and technicians continue in their functions and apply and transmit the acquired knowledge.
2. Decision-makers understand the importance of EE in the preparation of sectorial plans and programmes.
3. The local population understands the importance and benefits from the use of low energy-consuming appliances.
4. Awareness-raising campaigns on energy efficiency and the use of low energy-consuming appliances, both for the general public and for officials, are performed periodically.
5. The recycling of obsolete refrigerators continues its progress and is strengthened.
6. Continue with EE initiatives in private sectors, such as being successful in Galapagos and the tourism sector.
7. The operational processes of the RENOVA Programme continue to be enhanced
8. Replaced units continue to increase as an outcome of the policy driven through the launch of the DMEE and the continuity in ODS recovery processes.
9. . Dissemination of the outcomes of the project is continued to facilitate its adoption.

Assumptions:

1. The support and interest of the population continues for the continuation of efforts in this regard.
2. An EE training plan is included as part of the training activities of key institutions in the area.
3. The necessary financing for the continuation of the actions and support is maintained mainly to the families in situations of greater vulnerability.

Annex X presents the Evaluation Matrix, which summarizes the obtained outcomes and the quantitative and qualitative assessment performed.

As it can be observed, through the documentation analysis has determined that the outcomes have been designed so as to be part of a continuous process. However, the responsibilities that each of the key stakeholders and partners will have after GEF's financing has yet to be explicitly determined.

On the other hand, in addition to having obtained important outcomes, it has begun to observe the impact that the use of more energy- efficient equipment has as part of adaptation / mitigation measures to climate change. In the Project's framework, more than 30 thousand refrigerators per year were replaced by more energy- efficient models. This resulted in a reduction of 154 thousand MWh and a corresponding decrease in GHG emissions.

Considering the above mentioned, and as a result of the Evaluation Matrix analysis, the project received a **BB + rating** "which means that it is highly probable that it will achieve the desired impacts if the support

required for the Project continues in order to give continuity to the actions initiated within the SECURE Project's framework."

7- CONCLUSIONS, RECOMENDATIONS AND LESSONS LEARNT

The following section will detail: a) the conclusions of the terminal evaluation, understood as the success and failure factors of the SECURE Project, based on the gathered data and its analysis and interpretation through a transparent chain of statements, where the actions for its monitoring have been pointed out, and those actions that contribute to enhance the benefits achieved during the execution, as requested in the ToR; b) the lessons learnt described in section 7.3 refer to generalizations based on concrete experience of Project interventions applicable to broader situations, highlighting strengths or weaknesses in the preparation, design and / or implementation that affect the performance, outcomes and impact of the intervention, and identify good or bad practices; c) the recommendations, understood as proposals that have elicited the conclusions of the consultancy with the purpose of being considered for the consolidation of the strengths and the reduction of the weaknesses of the assessed Project. The recommendations are presented in section 7.2, as well as proposals for future actions considering the main objectives, as in Table N-9 Recommendations, in relation to the expected outcomes, the implementation and adaptive management and the sustainability of the SECURE Project.

Factors of success and failure of project design and implementation have been identified, supported by gathered data and analyzed and interpreted through a transparent chain of statements.

- The SECURE Project is **aligned with national policies and priorities** and with the guidelines on the energy sector, as it contributes to actions towards the use of renewable energies and the efficient use of energy. In addition, the Project is relevant to GEF policies, especially regarding climate change and GHG emissions reduction policies.
- The SECURE Project has participated and **led the creation of several interinstitutional workspaces**.
- The SECURE Project **has generated technical documents**, such as the "Prospective Energy Study 2012 - 2040", which resulted in the formation of a Technical Committee, and the incorporation of the study's energy scenarios in the National Energy Efficiency Plan.
- In addition, around 17 technical regulations have been updated for the main appliances (kitchens, water heaters, refrigerators, etc.).
- **Resources are considered to have been used satisfactorily (S)**. As of June 2017, a total of USD 1.512.531, representing 85% of the GEF project funding,
- It should be clarified that part of the remaining funds corresponds to those that are being executed and pending commitments regarding activities inherent in the exit strategy of the Project. The Project Steering Committee discussed the above activities and recommended that the Project proceed with these processes outside the project period.
- **Governance and the legal structure in the country to adopt the use of energy-efficient appliances** in the public and residential sectors has been strengthened through the formation of operational committees where the involvement of other actors who do not have a direct role in the EE, but are considered strategic partners to incorporate it as a transversal theme in the policies, plans and regulations of their institutions, was promoted. Through training of public officials in the enforcement of EE standards, the Project also contributed to this governance structure. The development and approval of the NAMA on EE for the residential sector has been one of the products that contributed to the strengthening of the legal structure.

- Envisaged trainings were completed for public sector personnel, involving 400 officials and technicians from more than 37 government institutions that received training on the enforcement of EE standards, regulations and practices for the public and residential sector. **The Project managed to quadruple the progress / target achieved in training regarding the planned goals.**
- Jointly with the Renewable Energy and Energetic Energy Efficiency Sub Secretariat, **a Nationally Appropriate Mitigation Action (NAMA) was defined as a climate change mitigation measure based on energy efficiency assurance in the public and residential sectors.** This NAMA is in the process of technical review and validation by the National Environmental Authority for its subsequent submission to the United Nations Framework Convention on Climate Change.
- The **Project supported 4 national laboratories strengthening:** 3 of the National Institute for Energy Efficiency and Renewable Energy (INER) (for public lighting, induction stoves and water heaters); and 1 of the Ecuadorian Standardization Service (INEN) (for refrigerators).
- The Project has devised a proposal for the formation of a specialized "network of laboratories" in EE, in order to capitalize the national infrastructure to comply with the tests established in the Technical Regulations of Ecuador, optimizing the services and promoting the exchange of knowledge.
- Through the SECURE Project, **the institutional and technical capacity of the RENOVA Programme was strengthened** through training actions, visits to power companies, agencies, and missions. This included, among other activities, the preparation of a proposal for implementation and funding methodology for the second phase of the RENOVA Programme.
- By strengthening the RENOVA Programme, it was possible to contribute to the replacement of household appliances in more than 30 thousand homes per year. As of the Project's inception in 2016, a total of 30,011 refrigerators per year have been replaced, representing a progress of 71.45% over the expected goal. In addition, 3,137 refrigerators have been replaced from June 2016 to June 2017 as an outcome of the natural replacement of equipment.
- Through the Project, **the Maximum Energy Efficiency Emblem (DMEE in Spanish)** was developed, which is an energy efficiency certification scheme, innovative in the country, acting as a premise to ensure compliance with energy efficiency standards. The Project managed to underwrite the Ministerial Agreement that formalizes the DMEE, making this initiative a key instrument to foster public policies of EE, and also contribute to the sustainability of the outcomes of the Project.
- As a product of the Project, the DMEE implementation plan was designed to allow the public institutions of the Ecuadorian Quality System (SEC) to take an active role in the enforcement of EE measures in the public and residential sectors, contributing to the transformation of the market towards the most efficient appliances, thus increasing energy savings and mitigation of associated emissions.

The plan has been implemented at 100%, for which the structure and scheme of the DMEE was socialized among the public institutions that make up the SEC, private institutions, manufacturers and importers of electrical appliances.

Technical committees were established to specify the limits and technical standards for electrical equipment contemplated in the DMEE initiative. The technical requirements and general procedures for the granting of the DMEE were devised, culminating their formalization through the signing of Ministerial Agreement No. 001-2017.

Within this framework, twelve (12) public officials, OAE representatives and compliance assessment bodies were trained in the DMEE scheme management, internal production of household refrigerators, ISO 50001 standard, and energy management systems.

One of the main stages of the initiative is the technical evaluation of the appliance applicants and announce the DMEE award decision, which involves the compliance assessment according to the DMEE certification scheme, through laboratory tests and through a certification agency duly recognized by the OAE. All of the above, promotes national infrastructure's quality.

On the other hand, the Project's exit strategy includes the implementation of a communication plan to position the DMEE and raise awareness among the general public about the advantages and benefits of the appliances awarded by the DMEE.

- The Project **achieved the expected objectives, and in some areas, it was possible to do more than expected**, such as a greater number of trained staff through online tools (virtual seminars). Likewise, it was proposed to achieve at least one accredited / authorized laboratory by the Ecuadorian Accreditation Organization (OAE). However, the Project has exceeded this target, benefiting four national laboratories.
- In general, **the Project's target values for the proposed indicators have been exceeded**. The set of 19 indicators (4 for the objectives and 15 indicators for the four outcomes) defined in the Logical Framework Matrix (LFM), allow to evaluate effectively and in detail the outcomes and achievements at the time of the present TE.
- The project managed to increase the use of low energy-consuming household appliances in the residential and public sectors, which implies a significant increase in EE and contributes to climate change's mitigation.
- The MEER's efficient performance in the implementation of the SECURE Project is considered key to access future sources of multilateral cooperation such as the GEF.

7.1. PROJECT'S BENEFITS MONITORING AND ENHANCEMENT ACTIONS

This section, the main identified actions regarding Project's progress monitoring are detailed, as well as those that contribute to enhance the benefits achieved during its execution.

- i) MEER's recommendation to include the Project in the "Virtual platform for supervision and monitoring of State projects and programmes" and to adopt the GPR tool, whose use as additional benefit represented a zero cost for the Project, was adopted. This tool was effectively applied to the first and second year of implementation (2014-2015 and 2015-2016).
It is recommended to apply the GPR tool updating it to the third year of project execution (at the end of the Project in 2017, to achieve an integral implementation of the tool throughout the Project's cycle and to complete the envisaged M & E Plan).
- ii) Although the Energy and CO₂ Emissions Indicators reflect the successful management of MEER's RENOVA Programme and the Project (replacement of refrigerators); in Critical Risk Management (Section H. Critical Risk Management, pp. 25 and 26 of the Project Implementation Review - PIR 2016) in June 2016, it was stated that: "*Given the current economic situation of the country, specifically, the declining government revenues due to falling oil prices, public investment projects have been affected to cover the necessary financing and co-financing. Under this scenario, there is a risk that the RENOVA Programme will not continue.*" As a response, the Project pointed out that: "*The project worked on a methodological proposal for funding the 2016-2020 Programme, to reduce government's fiscal effort.*" This proposal was, at that moment under review by MEER and the Vice President of the Republic.
It is recommended to document the outcome of this review, in view of the implementation of a new phase proposed for the RENOVA Programme.
- iii) On the other hand, and although the termination of the RENOVA Programme was considered a critical risk for the Project, it was mitigated through the implementation of a proposal to take measures in line with RENOVA Programme's objectives (such as the development of a public communication campaign in the Galapagos Islands on October 2016 regarding the benefits of the use of appliances with higher EE). In addition, the Project completed its activities by implementing a

second public communication plan focused on positioning the DMEE and thereby promoting market transformation towards the purchase of more efficient refrigerators.

- iv) Regarding the Outcome / Component 1. Strengthening governance and legal structure; the following Outputs stand out: development and publication of the "Practical Guide to the efficient use of electric energy in Ecuador" and the "Design and development of the NAMA NINO, NAMA CONCEPT and NAMA PROPOSAL (which integrate the public and residential sectors, and the actions that at country level refer to the substitution of inefficient equipment, regulation, and labelling and mitigation to climate change).
- v) Regarding the Outcome/ Component 2: Technical Support to National Test Laboratories; the Interinstitutional Cooperation Agreement between MEER and INER of June 2016 stands out as output in order to "Strengthen the National Test Laboratories in the field of energy efficiency of INER, Laboratory of lighting technology", which will take shape (after its accreditation) to be able to count on a strategic partner that gives continuity to the achievements in this area.
A similar case is the MEER / INEN Agreement, a document that constitutes a legal instrument that gave legal and normative feasibility to the delivery of equipment and training. Also noteworthy are the advances in DMEE by the MEER, which were successful and innovative in the country context.
- vi) Regarding Outcome / Component 3: Strengthening of the RENOVA Replacement of Refrigerators Programme; the alternatives proposed by the Project to complete its achievements (see item ii) of this section), the training workshops held with MEER; and the communication plans and technical support provided to the Management of the RENOVA Programme stand out.

7.2. FUTURE ACTIONS PROPOSAL REGARDING MAIN OBJECTIVES

- i) DMEE enforcement monitoring and promotion through a social campaign for the general public.
- ii) In accordance with what was mentioned by the Project's team, if the second phase of the RENOVA Programme is crystallized, the plan for supervision, monitoring and strengthening of the recycling processes of the RENOVA Programme, which devised the Project, in support of MIPRO will have continuity.
- iii) Continue public and private sector's training, in order to expand the beneficiaries' coverage.
- iv) Continue Laboratories Network implementation, linking them together to enhance their possibilities and add new laboratories for accreditation.
- v) Materialize the test bench (planned) with the remaining funds of the Project.
- vi) Systematize the experience of the SECURE Project - especially the DMEE – in order to disseminate it at the national and regional levels.
- vii) Provide technical and financial support to local governments for the replacement of electrical appliances in accordance with EE standards.
- viii) Socialize the national laboratories accreditation process, which was elaborated by the Project's team and determines the specific steps and activities to achieve one of the proposed objectives.
- ix) To share and disseminate with other interested organizations and institutions the key products developed within the framework of the Project: "Outcomes Report of the EE Communication Campaign", "Guide to the Efficient Use of Electric Energy in Ecuador", "Document of lessons learned from the Project", among others.
- x) Consider the incorporation of one (1) project specialist by MEER (according to indicator 2.3 - (b) of PRODOC), which provides continuity to the outcomes obtained by the project, with a special focus on maintaining DMEE.

7.3. BEST AND WORSE PRACTICES REGARDING PERTINENCE, EFFECTIVENESS AND SUCCESS

In this section, information and structure of the Systematization and Lessons Learned Documentation report developed by Engineer Laura Melisa Salgado, as well as the documents reviewed and the answers of the stakeholder's interviews were considered.

- i) **Participatory work allows the institutional actors to be involved in an orderly, formal and continuous work context. It is important to generate an agenda to influence decision-making and the formulation of public policies: one of the objectives of the Project is to strengthen governance and the legal**

structure, through the development and enforcement of plans or policies. To do this, it is crucial to identify stakeholders and generate interest in decision makers.

It stands out as a good practice of the Project, the **articulation at inter-institutional level** work, dialogue with delegates, work with other areas. Regarding the interinstitutional work and the formation of committees of the SECURE Project, which has participated and led the formation of several interinstitutional work spaces. Through these committees, technical inputs and proposals for policy instruments have been generated, which have also opened bridges of dialogue and inter-institutional cooperation favorable to the decision-making of the most important stakeholders in the energy sector. One example has been the incorporation of a Subcommittee on Energy Efficiency, which proposed the initiative to develop the DMEE (a successful and innovative initiative in the country's context). For this purpose, the MEER created the Technical Operational Committee (CTO) on DMEE (validated by Ministerial Agreement number 001 in 2017), where institutions such as MEER, INEN, OAE, SERCOP, MIPRO and private sector representatives participated. promoting a comprehensive approach. For institutions such as the MEER, these experiences have strengthened their interinstitutional working capacity; constituting a replicated methodology in the National Energy Efficiency Plan 2016-2035 development. This experience will benefit other institutions and their projects in the future.

ii) Starting from a diagnosis and analyzing the initial situation allows a strategic work route tracing. The Project carried out several diagnostic analyzes, which allowed to focus and plan activities in a correct manner

The SECURE Project began with a **Training Needs Assessment (TNA)** as a start-up phase prior to the development of training. Both the "Training Needs Assessment" (TNA) and the "Mapping and Survey of Existing National Energy Efficiency Laboratories" (obtained information on 14 laboratories in the country) were exercises that allowed to clarify the work context, make the key actors visible and to evaluate the scope to develop in the interventions. The initial diagnosis on the laboratories' state and the availability of equipment for the development of studies and tests, allowed to identify that there were a variety of laboratories with needs of strengthening but that in turn were working in a plan towards the accreditation. Given this, the **Project reoriented its strategy in order to support the laboratories with more advances.**

iii) Counting on strategic partners: inter-institutional collaboration promotes joint efforts. By leveraging the capacities of nearby institutions and strengthening working synergies between institutions, the Project was able to count on efficient processes at inter-institutional level and to achieve better outcomes

The SECURE Project identified key actors, based on the premise that there is common interest among institutions and this is an opportunity to join efforts and complement capacities. Thus, it established working spaces with strategic partners (INEN, SNAP, Sub secretariat of Quality of MIPRO, INEN, OAE) with which excellent outcomes have been achieved. Likewise, based on the diagnosis and mapping of the laboratories, an inter-institutional coordination work was carried out to formalize the cooperation processes between the SECURE Project and the laboratories, through cooperation agreements aimed, for example, to: the adaptation and / or accreditation of laboratories, training of technical personnel, infrastructure upgrading and equipment. In addition, it is positively valued by the stakeholders involved, hiring a specialist consultant in laboratory accreditation processes and developing technical skills of the technical staff to carry out internal audits of the INER and INEN refrigeration laboratories, and with it the development of plans for lifting non-conformities detected.

iv) Build on the built. Starting from a diagnosis of barriers and problems to overcome was a key factor. However, another important factor, which acted as a catalyst for the success of SECURE Project was to build on the built. This was relevant when planning training for public officials on EE issues, and to exceed the proposed goals with a lower investment of resources.

Capitalizing **nearby institutions skills and strengthening the synergies of work** between institutions, has allowed efficient processes of inter-institutional work and achieve better outcomes. The SECURE Project identified certain key stakeholders, starting from the idea that there are common interests among institutions, this being an opportunity to join efforts and complement capacities. As an example, the invitation from the Chinese Government to donate air conditioning equipment for public institutions, focus panels, and others should be considered and could be included as part of a GEF project with UNDP in Galapagos. The TNA was initially intended to be carried out through consulting, however, it stands out that it obtained an excellent outcome working with **technical personnel of the SECURE Project**. This working modality allowed to capitalize resources and technical capacities of the contracted personnel to finally have outcomes that surpassed goals established initially since more than 300 people of more than 10 institutions were trained. Also, the articulation and support of the SNAP was fundamental to carry out this research, and the implementation of the online questionnaire was another successful experience, which allowed to have a representative sample to make the diagnosis. The cooperation agreement signed with INER is also highlighted as an example for the execution of training in **virtual mode**, using its free online knowledge transfer platform called WebINER, which has served as the instrument to execute the Training Programme.

v) Capitalizing international experiences or international cooperation reduces the risks of failure and allows learning from similar experiences.

To achieve this transformation, it was considered necessary to have an incentive and position a differentiating attribute so that the best products have a competitive advantage and thus guide the final consumers así)purchase to a best quality equipment. In this context, an analysis of international experiences was carried out to know what approaches other countries have taken in the development of this type of certifications, recognitions or labels. Mexico's experience with the FIDE Label; the Brazilian experience, through the National Energy Conservation Programme(PROCEL) of the Ministry of Mines and Energy; the United States ENERGY STAR experience under the direction of the Department of Energy and the Environmental Protection Agency were considered. The inclusion of the MEER as part of the Global Alliance of Efficient Products and Equipment, an UNEP initiative, has been a good initiative to expand the possibilities of receiving technical cooperation, information and support in obtaining funding to promote actions towards transition to efficient appliances and equipment.

vi) Foresight: an intervention is successful if it grows in time. In developing a foresight, the Project contributes to a lasting transformation of the energy sector towards the use of efficient equipment and technologies in Ecuador.

Interventions have been made in order to strengthen long-term planning and governance, and the institutionalism of the energy sector (DMEE, Ecuador's Energy Outlook for Forestry 2012-2040). It has strengthened the infrastructure and the ability to verify EE standards (trainings and laboratories).

Replacement programmes (RENOVA) are supported; and although initially the project focused on strengthening only state / public laboratories (and no thought was given to supporting the private sector), this will allow private sector services to be sought in the future.

vii) Involve the private sector. Working from the state with the companies that can lead initiatives for enhancement in EE allows increasing the chances of success in terms of the outcomes proposed and contributes in a relevant way to the sustainability of these achievements.

The companies that participated in the initiative, as in the case of the DMEE, recognize the benefits provided to their products (washing machines, dryers, etc.). Through the project, new spaces of public-private work are made available in the future. The strengthening work carried out at the INEN laboratories for refrigeration and INER for lighting technology has allowed them to increase their management capacity, which is reflected in a better service to the industry (manufacturers, assemblers and importers of products), overcoming the barrier on the **availability of laboratories**.

Table 9. Recommendations

N°	Recommendation	Responsible institutions
1	Outcome 1	
1.1	The MEER is a key player in the definition of climate change and energy efficiency in the country and with the relevant tasks to deal with the allocation to funds for adaptation to climate change, being so, it is important to institutionalize these work initiatives with the cooperation and external financing in the MEER. These initiatives could be supported by countries that have this kind of cooperation such as Australia and Germany, as well as the Green Fund (GCF) and the Adaptation Fund for Climate Change. It is recommended that Ministry of Environment's (MAE) Climate Change division provides MEER with technical support in order to integrate SECURE Project's outcomes into new GEF initiatives within the Climate Change related National Plans whether executed by MEER or by MAE.	MEER MAE SNAP International Cooperation actors
1.2	It is considered that the SECURE Project has contributed significantly to the acquisition of the experience and capacities in the MEER for the future GHG emission reduction and adaptation projects. It is recommended to consolidate the institutionalization achieved by the SECURE Project in this ministerial area; and continue with the actions to make visible to the citizenship the achievements and the opportunities that these capacities represent.	MEER
2	Outcome 2	
2.1	The national laboratories (in the process of accreditation) are prepared to carry out tests to verify the compliance of EE RTEs in household appliances. It is recommended to expand the DMEE, through an analysis that includes campaigns for consumer education and promote its value in the national market.	MEER MIPRO INEN OAE
2.2	It is recommended to evaluate electrical equipments sale's behaviour with the DMEE, in order to account for the number of users who have purchased energy-efficient appliances and therefore participate in the replacement of equipment on the demand side. In addition, it is recommended to establish a baseline in terms of the consumption of electrical energy since the implementation of the DMEE and thereby assess the impact and benefits of such an initiative.	MEER INER SERCOP
3	Outcome 3	
3.1	The capacity of the RENOVA Programme has been strengthened in order to ensure the replacement of obsolete household refrigerators by units with higher EE. It is recommended to seek mechanisms to sustain these institutional and technical achievements in time. In case the second phase is consolidated, it is recommended to replicate the activities implemented during the implementation phase of the SECURE project.	MEER MIPRO
4	Outcome 4	
4.1	It is recommended to systematize the experience of the SECURE Project and share it with other countries in the region (such as Mexico and Brazil), for example, through a Regional Workshop where other experiences are also involved, emphasizing South-South cooperation.	MEER Academic institutions

4.2	It is recommended to document and systematize the implementation of MEER's GPR tool, so that it can serve as a model to be replicated / adopted by other countries of the region in themes similar to those approached by the Project.	MEER Academic Institutions
5	Project's implementation and Adaptive Management	
5.1	It is recommended to develop a strategy of gender approach, to be applied in social communication campaigns and to highlight the achievements of the women scientists involved in the Project	MEER
5.2	It is recommended to perform an analysis of the participation of women in the implemented training sessions at the level of the SNAP, and the role of women engineers and technicians in laboratories and companies.	MEER MIPRO SNAP
6	Sustainability	
6.1	Through the Ministerial Agreement, the DMEE has been supported, positioning it at the government policy level. It is recommended to continue with a minimal technical equipment.	SNAP MEER
6.2	Continue with information and awareness-raising campaigns for society, through schools, videos, for example in Galapagos. Incorporate customer service staff in the training sessions.	Galápagos Council MEER INER

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