

**Terminal Evaluation of the UN Environment / GEF Project:
Integrated Responses to Short-Lived Climate Forcers Promoting Clean
Energy and Energy Efficiency**

Main Evaluation Report



Evaluation Office Unit of UN Environment

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Integrated responses to short-lived climate forcers promoting clean energy and energy efficiency

GEF ID: 4999

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About the Evaluation

Main Phase

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Brief Description: This document presents the final report for the Terminal Evaluation (TE) of the UN Environment/GEF project “Integrated responses to short-lived climate forcers promoting clean energy and energy efficiency” (No 4999). The primary objective of the project was to contribute to the development and implementation of a more comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico through an integrated assessment of short-lived climate forcers (SLCF), and the development and demonstration of targeted SLCF mitigation policies. The primary pollutants characterized as the focus of attention included, but were not limited to, three main substances: methane, black carbon and the secondary pollutant, tropospheric ozone. Implemented from September 24, 2012 to July 31, 2016, the project had a planned approved budget of \$23,403,213, of which the GEF Grant allocation was US \$909,090.

Key words: black carbon; Low Emissions Development Strategies; methane; short-lived climate forcers; terminal evaluation; UN Environment.

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Abbreviations Table

Abbreviation	Name
BC	Black Carbon
CCAC	Climate and Clean Air Coalition
EF	Emission Factors
GEF	Global Environment Facility
GIRA	Grupo Interdisciplinario de Tecnología Rural Apropiada
HFCs	Hydrofluorocarbons
INE	Instituto Nacional de Ecología / National Institute of Ecology (in 2013, it changed its name to National Institute of Ecology and Climate Change – INECC)
LEDS	Low Emissions Development Strategy
MCE2	Molina Center for Strategic Studies in Energy and the Environment
MSP	Medium Sized Project
NDC	Nationally Determined Contribution
PCA	Project Cooperation Agreement
O ₃	Tropospheric ozone
SEMARNAT	Mexican Ministry of the Environment and Natural Resources
SNAP	Supporting National Planning for Short-lived Climate Pollutants
SLCF	Short-lived Climate Forcers
SLCP	Short-lived Climate Pollutants
TE	Terminal Evaluation
ToC	Theory of Change
UAEM	Universidad Autónoma del Estado de México.
UNAM-CCA	Universidad Nacional Autónoma de México – Centro de Ciencias de la Atmósfera
UNAM-II	Universidad Nacional Autónoma de México – Instituto de Ingeniería
UNFCCC	United Nations Framework Convention in Climate Change
UN Environment	United Nations Environment Programme
USAID	United States Agency for International Development
\$	United States Dollars

Project Identification Table

Table 1 - Project Identification Table

GEF Project ID:	4999		IMIS #: GFL-2328-2722-4C58	
Implementing Agency:	UN Environment	Executing Agency:	Molina Center for Strategic Studies in Energy and the Environment in coordination with INE	
Sub-programme:	Climate Change	Expected Accomplishment(s):	Contribute to development and implementation of a more comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico through an integrated assessment of short-lived climate forcers (SLCF), and the development and demonstration of targeted SLCF mitigation policies	
UN Environment approval date:	September 24, 2012 ¹	Programme of Work Output(s):	Climate Change (POW 2012-13) Expected Accomplishments B	
GEF approval date:	July 18, 2012	Project type:	MSP	
GEF Operational Programme #:	00828	Focal Area(s):	Climate Change	
		GEF Strategic Priority:	CCM1: Promote the demonstration, deployment, and transfer of innovative low-carbon technologies	
Expected start date:	August 2012	Actual start date:	October, 2012 ²	
Planned completion date:	December 2015 (technical completion July 2015)	Actual completion date:	July 31, 2016	
Planned project budget at approval:	\$23,403,213	Actual total expenditures reported as of [Oct 2018]:	\$3,158,232	
GEF grant allocation:	\$ 909,090	GEF grant expenditures reported as of [Sept 2018]:	\$909,075	
Project Preparation Grant - GEF financing:	0	Project Preparation Grant - co-financing:	0	
Expected Medium-Size Project/Full-Size Project co-financing:	MSP: \$22,494,123	Secured Medium-Size Project/Full-Size Project co-financing:	MSP: \$2,249,157	
First disbursement:	October 18, 2012	Date of financial closure:	July 31, 2016	
No. of revisions:	1	Date of last revision:	November 15, 2013	
No. of Steering Committee meetings:	3	Date of last/next Steering Committee meeting:	Last: November 18, 2015	Next:
Mid-term Review/ Evaluation (planned date):	None	Mid-term Review/ Evaluation (actual date):	N/A	
Terminal Evaluation (planned date):	December 2016	Terminal Evaluation (actual date):	August 2018	

¹ UN ENVIRONMENT date PCA Agreement ; UN ENVIRONMENT Approval Group 31 Aug 2012

² First funding Oct 18, 2012, PCA signature Sept 24, 2012

Coverage - Country(ies):	Mexico	Coverage - Region(s):	Mexico
Dates of previous project phases:	-N/A	Status of future project phases:	-N/A

Executive Summary

1. The Integrated Responses to Short-Lived Climate Forcers Promoting Clean Energy and Energy Efficiency (ID 4999) has been an innovative initiative to facilitate a more comprehensive assessment addressing an array of pollutants deemed to be short-lived climate forcers in Mexico.
2. The main purpose of the project was to promote clean energy and energy efficiency through contributions to a comprehensive, sustainable Low Emissions Development Strategy for Mexico through integrated assessment of Short-lived climate forcers, and development and demonstration of targeted mitigation policies. Executed from 2012 to 2016, this pilot project aimed to generate information on emissions of Short-lived climate forcers, including methane and black carbon, to inform decision-making of Mexican government officials and helped to engage scientists, academics, policymakers working in an array of sectors including not only air quality and climate, with a focus on transportation (mobile on- and off-road sources), municipal solid waste disposal (landfills), wastewater treatment, agriculture (livestock enteric fermentation), and energy including oil and gas operations, residential cooking, and brick production.
3. Implemented over a four-year period from October 2012 to July 2016, the project spent \$3,158,232 million (\$909,075 from the Global Environment Facility's grant and \$2,249,123 cash co-financing, of which \$ 1,279,599 was cash co-finance from a range of six sources including the executing agency- the Molina Center for Strategic Studies in Energy and the Environment, several academic institutions and the United States Agency for International Development). \$969,558 was provided in in-kind co finance from diverse sources.
4. The budget included a large amount, \$20,000,000 in bilateral funding which was not specifically for the project, but part of an agreement between the United States Agency for International Development and the Mexican government towards the Mexican Low Emission Development Strategy.
5. This report presents results of the Terminal Evaluation that involved several phases including, initial review of project design quality and stakeholder analysis, development of a Reconstructed Theory of Change, desk review and extensive interviewing with a wide range of project actors during an investigative field trip to Mexico City over a seven-day period in August 2018, with subsequent thematic analysis of results.
6. The project is rated Satisfactory overall, with strengths, particularly in the project's Strategic Relevance, where it is rated Highly Satisfactory. Most of the other aspects of the project, Project Design, Sustainability, Financial Management, Monitoring and Reporting and Efficiency (including Achievement of Direct Outcomes and Likelihood of Impact) were also rated as Satisfactory. Where some improvements were necessary, the project was rated Moderately Satisfactory (Monitoring and Reporting).
7. The project had a high degree of Strategic Relevance due to alignment with priorities of both the United Nations Environment Programme and Global Environment Facility and policies of the Mexican government. The project sought to guide the country in terms of bridging initiatives focusing on impacts of air quality and climate change, with Mexico helping to shape a proactive approach to explicit adoption of policies and plans to address

the array of chemicals classified as short-lived climate forcers including methane and black carbon. The project helped to provide strategic support through catalytic leaders (characterized as the “Molina effect”), who acted as policy entrepreneurs in their work on the front lines of moving the agenda on short-lived climate forcers, building partnerships and shaping emerging networks and coalitions that involved high levels of collaboration to bring attention to the issues.

8. The project was built on a strong foundation of a design that had solid articulation of not only strategic relevance, but also efficiency, taking advantage of a range of existing initiatives. A few minor areas for improvements in design were identified in the log-frame, shaping of project components, strategy for communication, outreach and articulation of areas such as governance and supervision. This project is clearly found to be an excellent example of the importance of the choice of the appropriate executing agency - the Molina Center for Energy and the Environment - whose dynamic head, Luisa Molina, played an important role not only in shaping the original project concept but also in accelerating and amplifying the results achieved.
9. Delivery of project outputs is another important project strength. A wealth of scientific presentations and publications were generated, advancing the front lines of available information related to sources of emissions and technological solutions to mitigate impacts from cookstoves, brick kilns, wastewater, cattle and on-road and off-road vehicles. Working successfully with well-respected experts and institutional partners, the field measurement campaign and demonstration of mitigation measures in the identified target sectors often served to build additional capacity, at times even engaging students and individuals from local communities, including women and brick producers, who made important contributions. Activities also included sectoral modelling and analysis of public policy instruments needed to achieve the desired goals.
10. The achievement of the direct outcomes has been rated Satisfactory, as two direct outcomes have been achieved (Direct outcome 1: The scientific community follows up Short-lived climate forcers emissions and mitigation technical and policy oriented research projects; and Direct Outcome 2: Project participants and trainees, the scientific community, other policy relevant organizations [national and sub-national levels] have increased capacity to perform measurement and to model projection of Short-lived climate forcers emissions and mitigation potentials and co-benefits); and one has been partially achieved (Direct Outcome 3: International partners are aware of the mitigation potential and of the benefits of Short-lived climate forcers policies). A large number of assumptions and drivers for the achievement of the direct outcomes has been identified. For the most part, assumptions hold and drivers are in place.
11. Overall, there is also an array of evidence highlighting well-organized meetings that addressed the projects yearly progress. This engagement took place over several years with government agencies, as well as some of the private sector and a few Non-Governmental Organizations.
12. The evaluation team believes that some additional efforts (see recommendations) need to be made so that all relevant stakeholders, in particular, those at the different levels of public administration with responsibility to estimate emissions and mitigation potentials see their capacity built sustainably as a result of the project outputs (namely the use of

models and use of new emission factors). The team is confident that this will be the case, as all identified assumptions hold and all but one driver is in place, while one is partially in place.

13. As previously mentioned, the project facilitated production of a range of important scientific studies, demonstrations, and publications. So far, the project own final report was completed although broader dissemination with Spanish translation is still a necessary step. Thus, we report progress, rather than full conclusion, towards acceptance of recommendations across sectors as a solid foundation for what is needed for forward movement through all stages of the policy process. The broad scope of the project, and resulting policy proposals, necessitate continued communication and engagement to ensure continued progress.
14. Despite challenges, the project impact “Low Emissions Development in Mexico and in other national contexts, with reduced effects on human health, ecosystems and agriculture” is deemed likely to be achieved. Achievement of three identified intermediate outcomes (those which can be expected to be achieved beyond a two-year period after project conclusion) is likely; two intermediate states are also likely and a third is deemed highly likely to be achieved. All assumptions identified in the reconstructed theory of change hold (except for two that “mostly hold”) and most drivers are in place (with some being “mostly in place”). Although policy decisions cannot be certain in advance, the team is generally convinced that Mexico will make progress in terms of integrating short-lived climate forcers and climate change mitigation policies and that the project will have made an important contribution towards that end. The specificities of the Mexican policy making process (which is in part influenced by the international regime – as the preparation of Low Emissions Development Strategies, in the form of Nationally Determined Contributions, for example, is mandated by the Paris Agreement), resulted in a delay of integration of the project outputs in national policies, but the team projects believe that such integration will probably be evident starting from 2019.
15. Sustainability is rated Satisfactory. Socio-political and institutional sustainability were determined to be in place (with strong ownership, interest and commitment among government - permeating several federal administrations and several state and municipal government entities - and among other stakeholders), resulting in a Satisfactory rating. Financial sustainability rated Highly Satisfactory, as the team believes mechanisms are in place to ensure the funding of the organizations which are relevant for the achievement of outcomes and impact. The team notes that the project is part of a larger and long-standing approach by Mexico for integration of air quality and climate change policies, which contributes greatly to the institutional sustainability crucial for the achievement of the outcomes. The two organizations involved in project management are a crucial building block in sustainability. The Molina Center is now working with government institutions including the National Institute for Ecology and Climate Change on activity data. This institute and the National Council for Science and Technology are also collaborating on activity data on off-road emissions. The National Institute for Ecology and Climate Change is also doing ongoing related work since the time of this project on

transport in terms of measurement of emissions, remote sensing and emissions scenarios.

16. In the area of financial management, the project is rated Satisfactory because strong financial communication and extensive, accurate financial documentation are balanced with some minor weaknesses in some budget forms, question response, etc. The pilot nature of the project is linked with stakeholders affirming allocation sufficiency, but also noting the relatively low levels of funding for the activities undertaken. Challenges with non-delivery of expected Mexican government funding due to the financial crises, necessitated additional contributions from other sources, including the projects executing agency, who are commended for stepping forward to fill in the gaps. Issues with perception are found to stem from the large amount of bilateral government funding from the United States Agency for International Development (US\$20 million), ambiguously determined as “baseline”, which, while delivered to important aspects of the Mexican low emissions strategy, played little role in direct project operations. That agency did contribute another smaller amount to the transportation component of the project, however.
17. In terms of monitoring and reporting, the project had a combination of a rigorous, timely and well-organized monitoring system combined with some weaknesses resulting in determination that this part of the project is rated Moderately Satisfactory overall. While monitoring design and budgeting of the project was deemed Satisfactory, reporting the rating was only Moderately Satisfactory because of improvements needed, in areas such as challenges in capturing minutes about key decisions in formal bodies such as the Steering Committee to improve project transparency. With respect to monitoring of implementation, while many parts were strong, enhancements were needed in aspects such as tracking tools and alignment between design documents and structure of project reporting documents.
18. Project efficiency is rated Satisfactory with some evidence of only minor delays, with a slightly later than expected project start and delays again towards the end of implementation. This necessitated only one formal project revision and budget adjustment, and only one extension resulting in changed dates from a three- year, one-month project (August 2012 to September 2015) to one beginning late September 2012 and ending July 2016. The project clearly benefitted from the long-standing relationships among the wealth of trusted partners, which enhanced the project in various ways.
19. The following is a brief summary of evaluation findings based on the Evaluation Criteria. The link to the recommendations and lessons is a highlight of the full list of recommendations and lessons found in Table 13 and Table 14 at the end of the report.

Table 2 – Summary of Evaluation Findings

Criterion	Findings/Synthesis	Recommendations / Lesson Link
A. Strategic relevance	The project was highly strategic and quite relevant helping to both respond to, and move forward, a range of critical policies aimed to guide not only the future of Mexico but also the global response to the issues of SLCF's and LEDS.	
B. Quality of Design	The project was generally well constructed with strengths in a range of areas such strategic relevance and efficiency with room for increased attention to some areas such as the original log-frames framing of components, communications planning and in some areas related to finance (evaluation budget and MLEDS grant strategy).	Lesson 3: Alignment budget bottom line with actual funding
C. Nature of External Context	The project was not substantially impacted by the external context, although there were some adjustments to adapt to government transitions, needs for security and reduced funding as a result of government circumstances.	
D. Effectiveness		
1. Achievement of Outputs	Diverse outputs combined technical data including guidance on black carbon and methane emission factors and activity data, demonstrations, modelling, policy analysis, events involved complex synergies with a range of actors, academic institutions, government and private sector actors, although mostly specialized audiences, in sensitive sectors.	Recommendation 1. Dissemination Strategy Lesson 6: Project meeting participant surveys
2. Achievement of Direct Outcomes	The project's direct outcomes achieved, with the scientific community's capacity to use project information and to follow up scientific research clearly demonstrated. Mexico's active engagement with international partners integrating project results into related research is also relevant.	
3. Likelihood of Impact	Project's impact is rated as likely to be achieved, given the project strategic relevance and the fact that nearly all assumptions hold and most drivers are in place. Mexico is a leader in the integration of SLCF mitigation policies in the CC policy which, together with the clear and immediate benefits (including human health), makes it unlikely that the country will not continue pursuing SLCF mitigation.	Recommendation 4. Assess dissemination/ capacity training on the methods and generated information as part of activities performed to ensure sustainability.
E. Financial Management	The project had generally solid financial management with good communication compensating for minor weaknesses in completeness financial information. Somewhat limited funding due to the pilot nature of the project but reductions in expected Mexican government contributions remediated by executing agency and new partner contributions. Challenges of perception linked to large multimillion grant in baseline.	Lessons 3 Alignment budget bottom line with actual funding
F. Efficiency	In spite of some delays the project was relatively efficient	Lesson 4 Project timetables
G. Monitoring and Reporting	Although many strong aspects, some improvements needed in monitoring and reporting implementation, such as an enhanced alignment of design and reporting and elaboration of minutes key meetings.	<ul style="list-style-type: none"> • Lesson 4 Consistency in forms, tables, identification of components along the project; • Lesson 5 Decision tracking steering committee.

Criterion	Findings/Synthesis	Recommendations / Lesson Link
H. Sustainability	Sustainability based on political, financial and institutional factors is on solid footing, given the high priority given to scientific data for climate action and the high level of mobilization among federal and local governments, as well as private sector.	Recommendation 2 Plan/list for follow up funding Recommendation 2: Scoping meeting
Factors Affecting Performance		
Preparation and Readiness	Preparation and readiness included most of the appropriate components and steps although this is an area where a bit more structured recording of key decisions may have helped.	
Project Management and Supervision	Management strengths built on small cooperative groups and long-standing relationships. Leadership of project coordination was an important factor for project success.	
Stakeholder Participation/ Cooperation	The cross- sectoral nature and broad scope of this project meant that many stakeholders were involved both in and outside of Government; participation varied by events/ stakeholder types and additional feedback useful; Structures such as the Steering Committee could have been strengthened by more formalization of reporting.	<ul style="list-style-type: none"> • Lesson 6 participant surveys; • Recommendation 1 results dissemination; • Lesson 5 appointment of external members to steering committee and recordkeeping.
Responsiveness Human Rights/ Gender Equity	The project had important implications for women and marginalized groups particularly in terms of addressing critical health risks, although some aspects of responsiveness were not fully mainstreamed throughout the project which elevates the need to highlight progress and scale up communication to institutions representing these issues and interests.	Recommendation 1: Strengthen linkages through increased report dissemination and outreach
Country Ownership and Driven-ness	Project country ownership and driven-ness, reflects engagement from a range of public sector, academic institutions and think tanks, builds on long standing relationships and reputation of the project manager	<ul style="list-style-type: none"> • Lesson 2 presentation of results to a broader audience; • Recommendation 1: Final Report dissemination and make the detailed results available to the public via internet, by MCE2 and INE.
Communication/Public Awareness	Communication about project findings did not reflect a full communication plan	Recommendation 1: Enhance communication about project findings through more widespread outreach tools and easy website accessibility by MCE2 and INE.

Purpose

20. This document presents the Terminal Evaluation of the UN Environment Project Integrated Responses to Short-lived climate forcers Promoting Clean Energy and Energy Efficiency (ID 4999). The evaluation seeks to address both the needs for accountability as well as the goal of enhanced reflection and learning for operational improvements. This report aims to identify both project successes and limitations. The goal is to enhance future efforts towards sustainability and funding, and inform those involved in project management and implementation.
21. The target audience for this evaluation are the implementing and executing agencies (UN Environment, Molina Center, INE) and the GEF, as well as other project partners, stakeholders and interested parties (e.g. USAID, INECC, UNAM-CCA, UNAM-II and UAEM, ARI and GIRA, the project partners including those involved in various bodies such as the Technical Advisory Panel and others who participated in interviews). The intent is to go beyond mere dissemination, but to support the spirit of consultation, cooperation and continued growth, represented in this project.

1. Introduction

22. The Integrated Responses to Short-lived climate forcers Promoting Clean Energy and Energy Efficiency, was a project aimed at addressing a range of climate change - related issues critical to Mexico and the health of its population. The project (PIMS ID No 4999) received final CEO Approval June 29, 2012 and Global Environment Facility Council approval July 18, 2012. The Mexican government through the Secretariat of Finance and Public Credit wrote a project endorsement in February 10, 2012. The Project Cooperation Agreement (PCA) was signed by United Nations Environment Program in September 24, 2012 with final closure on July 31, 2016, a date just 45 months from the date the project began versus the 36-month project originally envisioned. Figure 1 presents some of the elements in the project's timeline. The project both supported and advanced UN Environment and donor objectives in the area of climate change, focusing primarily on assessing emissions of short lived climate forces in Mexico, particularly methane, black carbon and other co-pollutants from key sectors including transportation (mobile on- and off-road sources), municipal solid waste disposal (landfills), wastewater treatment, agriculture (livestock enteric fermentation), and energy including oil and gas operations, residential cooking, and brick production.

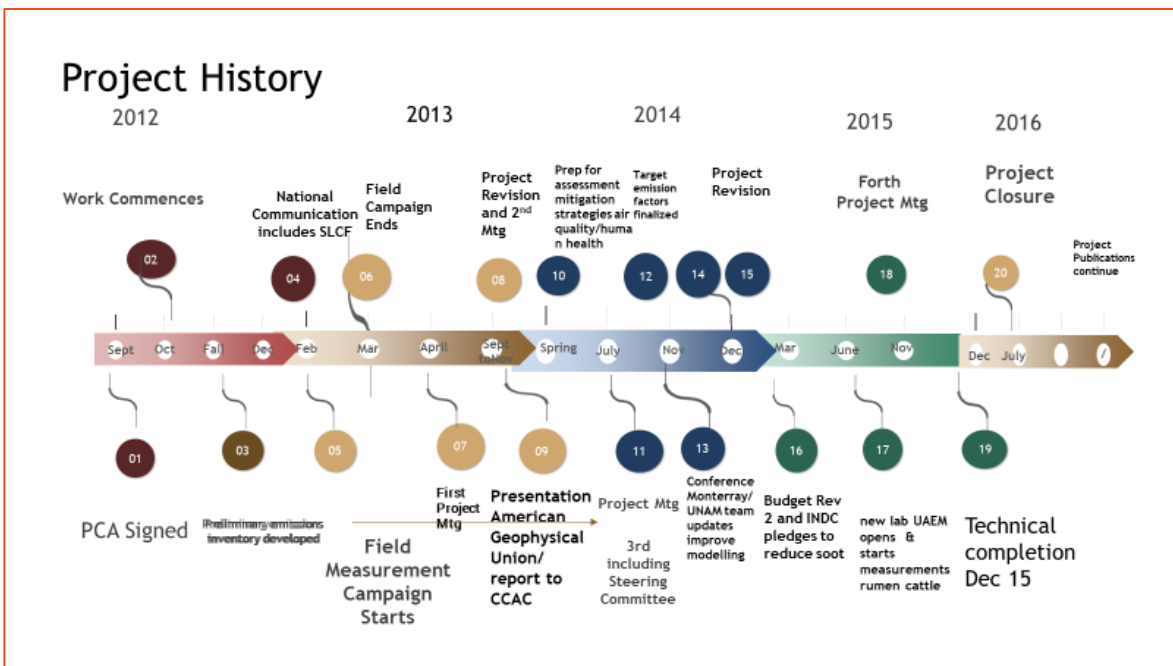


Figure 1 - Project Timeline

23. UN Environment formally provided project supervision through staff appointed by the Director of the Division of Technology, Industry and Economics, working closely with the

Molina Center for Strategic Studies in Energy and Environment, commonly referred to as the Molina Center Energy and Environment, (MCE2) who executed the project.

24. The total approved budget including cash and in-kind sources totaled \$23,403,213. The actual final project cost was \$ 3,158,232. This was from GEF grant of \$909,090 against which \$ 909,075 (99.9%) was spent. As well, the project spent \$2,249,157 versus the \$22,249,123 planned co-financing from a variety of academic, government and nongovernmental sources.
25. The project had one revision that rephrased unspent balances from 2012 to future years. (mention the exact sum of balances) A second six- month extension of implementation was approved in 2015 with three completed Project Implementation Reviews (PIR's) (see discussion Changes in Design below).

2. Evaluation Methods

26. The Terminal Evaluation involved a series of stages with data collection using both primary and secondary methods. The first stage of literature reviews included a desk review of a wide range of documents (See Appendix A: List of Documents Consulted).
27. 'The documents included a review of a) general background literature on topics relevant to the project's core issues such as short-lived climate forcers and climate change mitigation and policy in Mexico, b) official project related materials such as the original project description (CEO Endorsement), Project Implementation Reviews (PIR's), monitoring and financial reports and c) material generated by the project, including: final and technical reports (and appropriate related executive summaries), project communications, outreach materials and plans, project related presentations/publications, websites and media, training and event materials (participant lists/surveys and agenda's), minutes of both Technical Advisory Panel meetings and all Steering Committee meeting minutes.
28. An initial project design quality assessment was completed at the evaluation inception stage that involved review and rating of various aspects of the original design. This was followed by a preliminary stakeholder analysis that examined the initial array of government and private sector representatives, academic institutions and NGOs identified in the original project design document, based on selected key actor/expert input, for their interest, influence, expertise and the degree to which they were affected by the project. As part of the Terminal Evaluation this analysis was revisited after the fieldwork to examine changes in the original conceptualization and composition of stakeholders through further examination of materials/reports combined with interview information to highlight the changes in the composition and role of stakeholders as the project progressed.
29. A Reconstructed Theory of Change was developed and validated by initial interviews with a small group that included members of the project team and experts in LEDS/climate mitigation research to determine the degree to which this is a useful instrument to help guide assessment of factors such as effectiveness, sustainability and likelihood of impact. In addition to UN Environment definitions³, the following have been specifically determined for the purpose of this evaluation:
 - direct outcomes are those achieved 1-2 years post project completion
 - medium-term outcomes are those achieved 5- 7 years post project completion
 - intermediate states are achieved 8 plus years post project completion and
 - the impact is achieved in the much longer term
30. Data was then triangulated from all sources to first refine the reconstructed Theory of Change into a Theory of Change at Evaluation, to form the basis especially of findings in

³ See the UN Environment Evaluation office website at <https://www.unenvironment.org/about-un-environment/evaluation/our-evaluation-approach/theory-change>

areas such as effectiveness and sustainability among others. The Evaluation Office Ratings Criteria⁴ were then applied to generate the ultimate ratings found in the findings.

31. An evaluation matrix served to guide the framework of review laying out both questions and criteria including relevance, effectiveness, likelihood of impact, financial management, efficiency, monitoring and evaluation, sustainability and factors affecting performance as well as answering the strategic questions previously touched upon in the TORs for the terminal evaluation which were:
 - To what extent have the interventions been appropriate to bridge the gap between science and policy/ action/ implementation of the national strategy including SLCF/ air quality and climate stabilization, clean energy and energy efficiency through SLCP mitigation strategies benefits for health, crop production, ecosystems?
 - To what extent has the project built capacity in the sectoral ministries and civil society to implement SLCP mitigation strategies?
 - How unique is this project vis a vis other prior and existing national, regional and global projects related to SLCF in Mexico and how does this build on prior projects and link to follow on projects?
 - To what extent were gender aspects considered in the design and implementation of this project- especially in engaging relevant sector level stakeholders in the emanating strategy implementation process at the sector level? e.g. residential, agriculture, etc.
32. The evaluation matrix was then further customized into interview guides that were designed to be administered via Skype and in-person with the diverse array of project stakeholders.
33. A purposive sampling approach was used, identifying a diverse array of representatives of the partners, staff, experts and support staff relevant to the project. In person interviews were conducted. In all, 21 semi-structured interviews were conducted with 19 in person in Mexico City and two by skype between August and October 2018 (See Appendix B: List of Interviewees Consulted.)
34. In addition to government and civil society stakeholders, skype interviews were conducted with project managers and UN Environment staff (see Appendix B: List of Interviewees Consulted). To ensure that the approach to the evaluation was sensitive to indigenous populations and gender concerns, interviews were conducted with both partner NGOs and stakeholders external to the project involved with these interests (GIRA, MIRA). Additional questions on these issues were incorporated in the other partner and stakeholder interviews⁵. Additional analysis compared original plans for attention to gender and marginalized group in project design documents with project implementation including participation in project activities. All interviewees were informed of the purpose of the interview and that their participation was voluntary. Data

⁴ Please refer to the Evaluation Office for a copy

gathering and analysis involved note taking and taping (with permission), transcribing and translating of the interviews with thematic analysis triangulating data across sources.

35. Efforts were made to ensure that evaluation judgments were based on sound evidence, through the application of the Evaluation Office's "Evaluation Criteria Ratings Matrix", that provided the foundation for the full array of evaluation ratings, conclusions and recommendations as well as lessons learned that were developed in this terminal evaluation report. The analysis built on sound evaluation principles including integrity, honesty, confidentiality, systematic inquiry and cultural sensitivity. The project team sought to identify not only what happened in this project but where possible, to explain underlying issues influencing why, exploring various complex dynamics related to project performance, presenting diverse perspectives about project challenges and successes.
36. Limitations related to language were overcome with the full involvement of two bilingual Spanish/English speaking members in the evaluation team, including one native to Mexico, to assure appropriate translation and communication throughout the evaluation process. Other limitations that emerged related to some challenges in scheduling some desired interviews (which led to some adjustments during the process in the interview targets). Other issues in recall due to time lapse since project closure also emerged at times, thus efforts were made to ensure triangulation of data sources to the extent possible.

3. The Project

3.1. Context

37. The primary objective of the project was to contribute to the development and implementation of a more comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico through an integrated assessment of short-lived climate forcers (SLCF), and the development and demonstration of targeted SLCF mitigation policies.
38. The project was launched in a period when the government was seeking to address the goals for climate change established through the framework of the United Nations Framework Convention on Climate Change (UNFCCC). Recognition was growing about emerging issues surrounding climate systems including the need to know more about impacts of short-lived pollutants in the atmosphere linked to radiative forcing understood as the variance between earth heat energy absorption from solar radiation and energy radiation to space due to changes in substances or Earth's system properties (Sims, Gorsevski, Anenberg, 2015).
39. The primary pollutants characterized as the focus of attention included, but were not limited to, three main substances: methane, black carbon and the secondary pollutant, tropospheric ozone. The stage was set for this project with a series of UN Environment (previously UN Environment Program) studies in the years before this project's launch calling not only for action at national levels as well as increased international coordination and regional intergovernmental cooperation to address these newly identified issues and concerns (UN Environment, 2011; UN Environment, WMO, 2011) Indeed they also go further highlighting unrealized potential for capitalizing on "win win" benefits for both the climate and public health through increased focus on this previously overlooked area in air policy and climate spheres (UN Environment, 2011). At the same time as identifying measures and emphasizing the importance of action to enhance air pollution and near- term climate protection through slowing global warming rates, work from this period also warns that management of SLCF's may have "relatively little" impact on long term global warming (UN Environment 2011, "Near Term" p.xv).
40. While some initial work on source identification of SLCF had begun in Mexico, there was a clear need for a more integrated mitigation approach targeted towards more in-depth understanding across key sources, upgrading of the national emissions inventory and a strengthened, rationalized framework to guide policy. This project was therefore purposefully intended to enhance an array of multiple objectives through improvements not only to climate but also health, energy efficiency, agriculture and ecosystems. It

moves to further improve analysis and integration of SLCF measures into the national Mexican context.

3.2. Project Objectives and Components

41. The objective of the project was to contribute to the development and implementation of a comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico by promoting clean energy and energy efficiency as well as targeted SLCF mitigation policies. The project was originally organized into five project components, each with an outcome emanating from a corresponding set of outputs. In the first and subsequent PIRs, the project outputs were revised and named both as tasks and outputs in (in the PIR FY 2013) and as objectives and outputs (in the PIR FY 2016). Annex 10 – Final Report (MCE2 7-31-16), lists the final Outcomes and Outputs, which are consistent with those in the PIR. Below we see the original project components, outcomes and outputs as expressed in the CEO Endorsement Document and in the PIR.

Table 3 - Project components, outcomes and outputs as per the CEO Endorsement Document and the PIR

Project Components	Outputs (as per CEO Endorsement's Project Framework)	Outputs (as per PIR FY 2016 and Annex 10)	Outcomes (CEO Endorsement, PIR and Annex 10)	Project Objective
Component 1. Characterization of methane, black carbon (BC) and co-pollutants from key emissions sources	1.1 Activity data and emission factors for methane and BC to define targeted mitigation measures	Output 1: Characterization of methane, black carbon and co-pollutants from key emission sources	1. Improved knowledge on key emission sources and of mitigation potential of addressing SLCF	Development and implementation of a more comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico through an integrated assessment of short-lived climate forcers (SLCF), and the development and demonstration of targeted SLCF mitigation policies and integrated responses to short-lived climate forcers promoting clean energy and energy efficiency
	1.2 Characterization of methane and BC from main sources			
	1.3 Comprehensive emission inventories for SLCF			
Component 2. Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico	2.1 Technical report including selection, evaluation and ranking of SLCF mitigation policies in terms of climate benefits, energy efficiency, health, agricultural production and ecosystem protection from sector specific data.	Output 2: Assessment and selection of SLCF mitigation policies for implementation in Mexico	2. Decision making on efficient SLCF mitigation policies based on improved data on emission sources and on quantified impacts including co-benefits	
Component 3. Demonstration of SLCF	3.1 Demonstration of priority SLCF mitigation	Output 3: Demonstration of SLCF	3. Increased knowledge on cost and	

Project Components	Outputs (as per CEO Endorsement's Project Framework)	Outputs (as per PIR FY 2016 and Annex 10)	Outcomes (CEO Endorsement, PIR and Annex 10)	Project Objective
mitigation technologies for key sources	technologies as basis for learning and replication	mitigation technologies for key sources	benefits of promising SLCF mitigation technologies for decision making	
Component 4: Integration of SLCF mitigation measures into LEDS	4.1 Results from components 1-3 compiled, integrated in LEDS, regularly updated and monitored	Output 4: Integration of SLCF mitigation measures into LEDS	4. Mexico's LEDS incorporate priority SLCF mitigation policies	
Component 5: Capacity building, awareness raising, monitoring and evaluation	5.1 National SLCF action plan	Output 5: Capacity building and awareness	5. Enhanced capacity and knowledge in measurement of SLCF emissions and in evaluating and selecting mitigation policies	
	5.2 Guidance document developed			
	5.3 Staff trained on SLCF related inventories and measures			
	5.4. Peer reviewed articles			
	5.5. Monitoring and evaluation reports			

3.3. Stakeholders

42. The project involved an array of government and non-governmental stakeholders that played a variety of roles in the project. The large array of stakeholders was a strength in terms of contributions of a wide array of individuals and institutions who were engaged. The initial assessment during the inception phase (Inception Ratings columns) of this evaluation graded stakeholders in terms of interest, influence expertise and how they were affected by the project. Engagement with a variety of the government level and partnering stakeholders took place through a range of project activities that will be further discussed as well as ongoing project meetings dealing with logistical issues and four larger structured meetings which occurred over the life of the project. The first column in the table identifies the stakeholders classified according to their role, with the final column identifying how they appear in the final report. We see some new

stakeholders emerging. The last column to the right also color codes stakeholder presence at the four main project meetings which is further discussed below.

3.4. Project Implementation Structure and Partners

43. The **executing agency** for the project was the Molina Center for Strategic Studies in Energy and Environment, generally referred to as the Molina Center Energy and Environment, (MCE2) who is a nonprofit located in La Jolla California and the Mexico National Institute of Ecology and Climate Change (INE) located in Mexico City who also played a lead executing partner role. MCE2's responsibilities for coordination and implementation included two parts, oversight of technical activities, and all fiduciary responsibilities, including procurement of goods and services. They also appointed the project's Scientific Advisory Panel and were part of the project's Steering Committee. Implementation also involved coordination with not only INE but a **group of professional staff (GPS)**, led by a Project Manager. INE is a scientific research institute within the Mexican Ministry of the Environment and Natural Resources (SEMARNAT), whose leadership in applied environmental research, and responsibilities for climate and sustainable development policy, national communication and LEDS, helped ensure technical coordination as well as integration of project's activities and results into government policy and planning. UN Environment was the project's **Implementing Agency**, assigning a project Task Manager for supervision who represents the Director of the Division of the Division of Technology, Industry and Economics. UN Environment also houses the Secretariat of the Climate and Clean Air Coalition (that is a voluntary partnership of governments, intergovernmental, scientific and civil society organizations, whose aim is to protect the climate and improve air quality through

actions aimed at short-lived climate pollutants) through their office in France, for which the task manager of this project provides coordination.

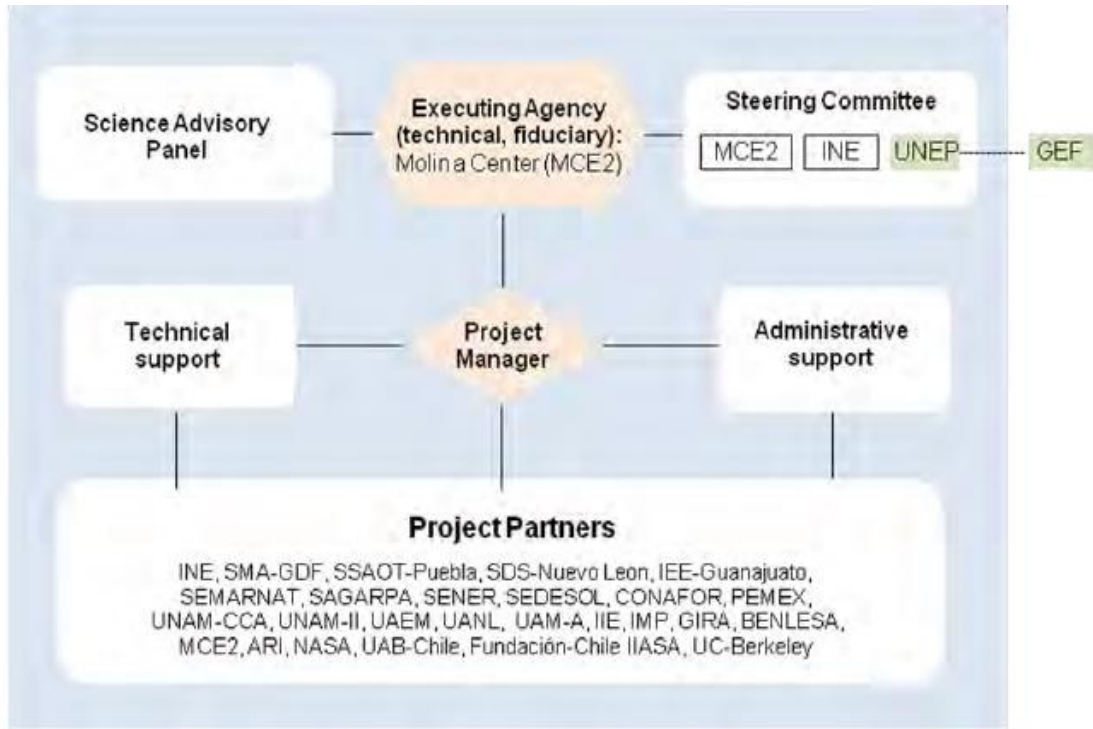


Figure 2 - Project Structure

44. The original vision for implementation was for a joint international process including an array of Mexican and U.S. institutions. There was originally an extensive list of 24 **project partners** identified including organizations such as the Directorate General Of Air Quality Management and Registration of Emissions and Transfer of Pollutants (DGGCARETC) in the Secretariat of Environment and Natural Resources, Aerodyne Research Inc. (ARI), National Autonomous University of Mexico Institute of Engineering (UNAM-II), National Autonomous University of Mexico Center of Atmospheric Sciences (UNAM-CCA), Autonomous University of the State of Mexico Faculty of Veterinary Medicine and Zootechnics (UAEM), Interdisciplinary Group of Appropriate Rural Technology (GIRA), University of California Berkeley, Autonomous University of Nuevo Leon (UANL), Mexican Petroleum Institute (IMP), PEMEX (Mexican Petroleum), Bioenergy of Nuevo Leon S.A. de C.V. (BENLESA), University of National Aeronautics and Space Administration (NASA), Institute of Electrical Investigations, IILASA, Austria, National Autonomous University of Mexico (UNAM-Veracruz, UNAM-Morelia), Andres Bello University, Chile, Institute of Ecology (IEE-Guanajuato), The National Water Commission (CONAGUA), Secretariat of Social Development (SEDESOL), National Forestry Commission (CONAFOR) and Secretariat of Energy (SENER), Secretariat of Environmental Sustainability and Territorial Planning (SSAOT) Puebla, Secretariat of Sustainable Development Nuevo Leon, Autonomous Metropolitan University (UAMA) and GDF-SMA. The evaluation explored not only their involvement but also changes over

time in the constitution and listings of project partners over the life of the project (see Stakeholder Analysis below). Slight variations in designations between documents are also found, with some graphics showing 26 partners including INE (**Error! Reference source not found.**) and the executing agency, others showing 24 partners and the three agencies of UN Environment, the Molina Center and INE designated separately as implementers, technical coordinators, etc. (CEO Endorsement Appendix 5).

45. By the end of the project, according to the final report, we find a slightly different nomenclature for the project stakeholders. There is a list of 18 organizations with 93 individuals (including 30 students) listed as project “**participants**” rather than project partners. Another five individuals from twenty institutions and/or companies are listed as “**collaborators**”⁶. There are another 19 now identified as **collaborating institutions** including one federal government institution SEMARNAT, three previously included state/municipal institutions and four new institutions in that category and two new institutions outside of Mexico that were not previously identified. This category also includes a list of 16 wastewater treatment plants not included in the table above.
46. The other structures designed for project operations were a **Project Steering Committee (PSC)** of Molina Center, INE and UN Environment and a **Scientific Technical & Advisory Panel (STAP)** composed of UN Environment staff, including those linked to the SLCP Coalition, and unspecified experts on SLCF. The Project Steering Committee was operational, but since it was so small met during what was described as “on the sidelines” (e.g. before or after) either the various formal project meetings as well as meetings of the Climate and Clean Air (CCAC) Coalition, since all of the steering committee members were participants. The participants discussed operational aspects of the project however no formal minutes were kept of these deliberations. The Scientific and Technical Advisory Panel was described as comprised of the lead person involved in the work on the various sectors (example lead person on wastewater, cattle, cookstoves, transport and Aerodyne for the field measurements etc.) who formed a committee that came together not only for the four main project meetings but also met frequently in subgroup meetings. The four project meetings served to discuss technical and operational aspects of the project and were formally recorded. The process of meetings related to the project occurred almost daily at some points during the project among the group of partners and professional staff closest to the project which served to move forward operational matters of the project.
47. Main project **subcontractors** included several entities also named as project partners (ARI, UNAM-CCA, UNAM II, UAEM and GIRA). One attachment letter in a project funding endorsement also refers to a **Bilateral Coordination Group** including SEMARNAT, National Institute of Technology, National Forestry Commission, National Commission for Natural Protected Areas and others but this was aimed to address the broader LEDS process specifically and not the project. This was also not described in the body of the

⁶ Final Report states participants: Those involved in development and implementation of the project; Collaborators: Officials and researchers instrumental in success of field campaign who provided logistical support and were invited to project meetings.

project design document so was not considered in this analysis as integral to this project.

48. As mentioned above, the last column in Appendix I indicates not only those identified in the final report with the color coding helping to highlight the level of participation of various stakeholders in the main project meetings throughout the life of the project. The black indicates presence at all four meetings. The darkest orange means present at three of four, medium orange refers to attendance at two of four meetings with white indicating not found on meeting participant lists. This chart helps illustrate the consistent involvement of the three organizations (MCE2, INE and UN Environment) who were the project managers who were members of the Steering Committee. INE had a very heavy presence at these meetings, bringing a large number of representatives. With respect to the academic institutions, the largest, most consistent presence is by institutions such as UNAM-CCA, UAEM and UNAM II. UADY was another active participant. Some did not attend all four meetings because of the challenges of travel. With respect to federal government presence SEMARNAT is the primary government institution showing consistency in addition to INE. With respect to the state and city levels of government SEDEMA was present at all of the four meetings. With respect to NGOs, GIRA showed an active presence at three of the four meetings, also collaborating on diesel vehicle samples. The Ecology Institute of the State of Guanajuato helped the project secure collaboration of brick producers for measurements of brick kilns. The Secretary of Environment for the State of Mexico and CAME (Environmental Commission of the Megalopolis and other states and municipalities also participated in meetings. Another organization which is not mentioned on this list because they were not identified as a stakeholder in the project documents or final report, but who demonstrated presence at half of the meetings was WWF. For the private sector, the only organization who was present on a relatively consistent basis was Coca Cola/FEMSA. CINPRO was present occasionally, with other consultants or consultant companies coming once.

Finally, for the organizations outside of Mexico ARI was the only organization coming to half of the project meetings.

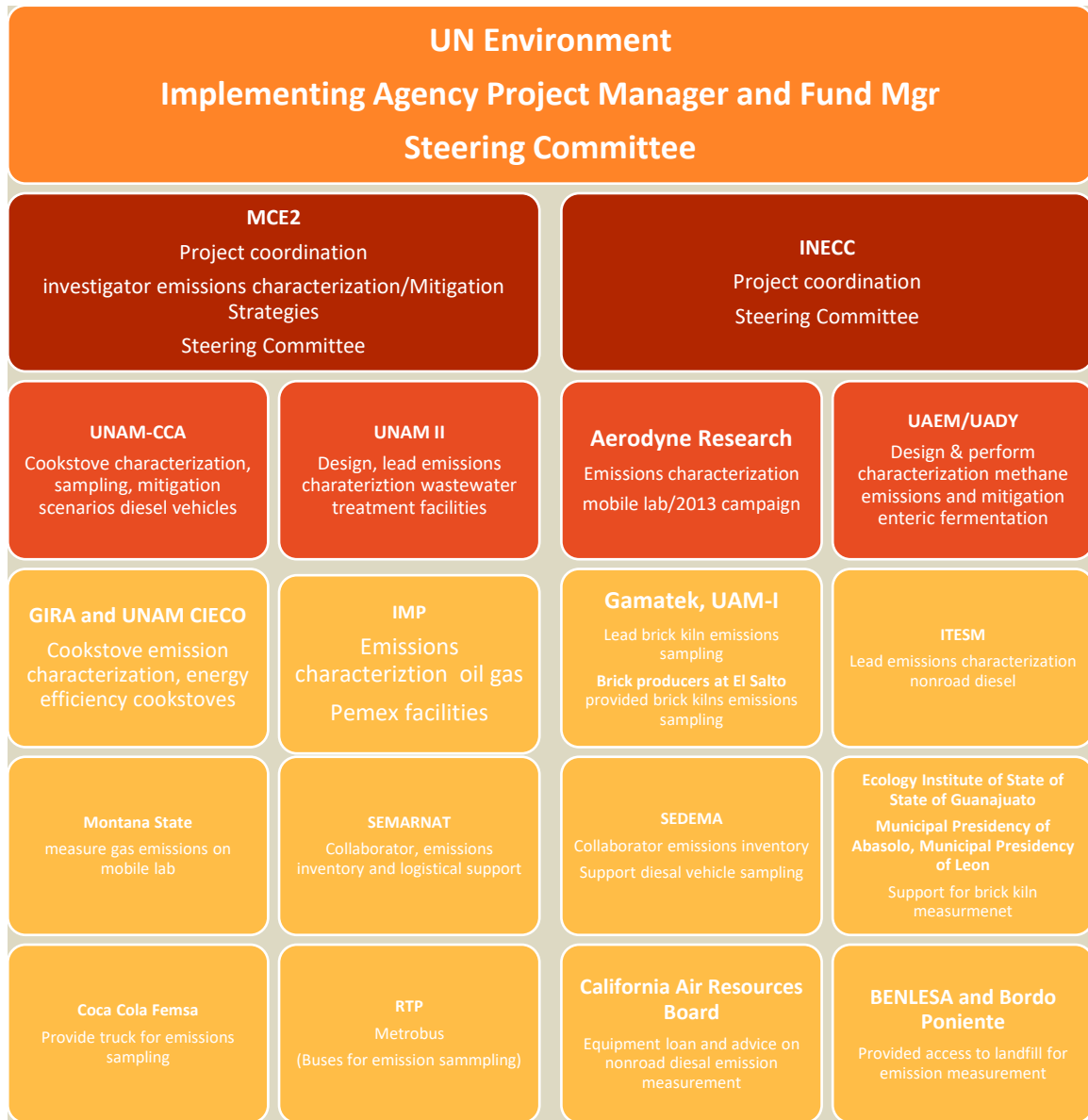


Figure 3 - Sample Roles of some Project Partners

**** (sample only—because of extensive numbers fuller list project participants/collaborators in Final Project Report, Appendix I)**

- Figure 3 shows some more of the detail about the specific roles of various key stakeholders associated with the project. Analysis and tracking of involvement as the project unfolded was challenging because of the large number of identified entities.

3.5. Changes in Design During Implementation

50. In terms of project changes, the project went through one revision in late 2013 (email dated November 15, 2013 but informed revision was October 2013) that involved only a budget revision to account for the spending changes because the project began so late in 2012. The total budget amount did not change and the work plan remained the same.
51. Because of the delay in the starting date, a six-month extension was requested by the project manager in June 2015 to complete the project. The request was to move technical completion from July to December 2015 with June 2016 the date for the completion of reporting. There is some lack of clarity about the response, with no evidence of a formally signed extension, although interviews revealed this seems to have been approved by the Steering Committee members with a second budget revision in March 2015 and revised workplan issued in May 2015. Thus, the project completion date was changed from January 2016 to July 31 2016. Technical parts of the project were completed before December 2015 including a final project meeting November 18, 2015 and all required reports (financial, technical, audit) completed prior to July 31 2016. The three Project Implementation Reviews (PIR's) covered: a) July 1, 2013 to June 30, 2014 b) a second PIR for the period between July 1, 2014 and June 30, 2015 and c) a third PIR covering the same period the following year 2015 to 2016. Issues of consistency in formal documentation is discussed in the section on project reporting.

3.6. Project Financing

52. The total approved budget for the project was originally \$ 23 403 213 (Table 4). The cost to the GEF Trust Fund was \$ 909 090. There were no PPG (Project Preparation Grant) cost additions which is typical for a medium sized project. There was confirmed co-financing reported in the amount of \$ 22 494 123. The original planned project total costs included GEF grant costs of \$ 889 090 and \$ 20 000 in project management costs and \$ 21 999 043 in co-financing costs plus \$ 495 080 in co-financing project costs. We also see outlined the later revisions to this budget which reclassified funds, which will be discussed in the section on the project finance.

Table 4 - Project Financing Summary

	Approved Project Planned (CEO)	Planned Revision 2015	Actual
Cost to GEF Trust Fund	909,090	909,090	909,075 (15 unspent)
Cash from executing agency	152,853	152,853	825,870
In Kind Executing Agency	516,595	516,595	429,723
In Kind UN ENVIRONMENT	500,000	500,000	0
Mexican Government Cash	250,000	250,000	0
Mexican Government In- Kind	750,000	750,000	0
Third Party Co Finance	20,000,000*	----	453,729

	Approved Project Planned (CEO)	Planned Revision 2015	Actual
Third Party Co Finance In-kind	324,675	21,074,675	539,835**
Total	\$ 23,403,123	\$ 23,403,213	\$ 3,158,232**

*classified as bilateral grant (not in-kind) from USAID in CEO approval document and in-kind in PCA

**20,000,000 in baseline from USAID not listed in project co finance report or included in project total

4. Theory of Change

- 53. At the time of the design of this project, the Theory of Change (ToC) was not required, so it was necessary to develop one for purpose of the evaluation. This ToC was developed based on the CEO Endorsement Document, PIRs, final report and information gathered, in particular through the interviews.
- 54. A ToC methodology adopted by UN Environment is recommended for evaluations to help describe processes of change stimulated by projects through modeling factors including causal pathways linking project outputs (goods and services delivered), direct outcomes (changes resulting from use of outputs), through intermediate states leading to impact. The model also helps illustrate relevant assumptions that are the given conditions beyond project control, and key drivers that influence movement between outcomes and intermediate states.
- 55. Two diagrams were formulated, the first from the existing project information (CEO Endorsement Document and Annex 10 of the final report), which was included in the evaluation inception report (see Appendix E: Theory of Change at Inception). A second reconstructed model, the present ToC at Evaluation, was constructed integrating information gathered through the interviews conducted in the Mexico.

The reconstructed ToC at Evaluation maintains the description of project outputs as per Annex 10 of the project final report; restructures the outcomes by classifying them as direct and medium-term outcomes (in order to capture the timings of the policy making cycle, through which the project results can actually be integrated into national policies – see

56. Evaluation Methods); proposes intermediate states and impacts (with slight adjustments as compared to the ToC at inception) and identifies a set of assumptions and drivers from outputs to outcomes and from outcomes to intermediate states and impact.
57. Table 5, Table 6 and Table 7 below include the references to the original project components as include in the CEO Endorsement Document and/or in Annex 10 of the final report and the reconstructed proposal by the evaluation team, with comments explaining the changes.
58. Figure 4 presents the diagram of the ToC at evaluation. Figure 5, Figure 6, and Figure 7 are expansions of the ToC Diagram to describe in detail the assumptions and drivers between the different elements.
59. For the sake of this evaluation the following UN Environment Definitions have been used⁷:
- **Outputs:** the products, capital goods and services delivered by the project. Outputs are the direct result of completed activities and managers have a high degree of control over them (e.g. acquisition of new knowledge, access to products generated by the project);
 - **Outcomes:** the uptake, adoption or use of project outputs by the project beneficiaries, observed as changes in adopted behavior, demonstration of different attitudes, or the application of new/different knowledge or skills;
 - **Intermediate states:** changes required in between project outcomes and impact, e.g. wide-scale adoption of improved natural resource management practices, country-wide shift towards renewable energy sources;
 - **Impact:** long term changes in environmental benefits and human living conditions e.g. reduced human-caused global warming, conserved biodiversity, improved water quality;
 - **Drivers:** external conditions necessary for project results to lead to next-level results, over which the project has a certain level of control e.g. strong support from other development partners in-country, public pressure on policy makers and;
 - **Assumptions:** external conditions necessary for project results to lead to next-level results, over which the project has no control e.g. turn-over of government officials, global financial situation, technological advances.

⁷ See <https://www.unenvironment.org/about-un-environment/evaluation/our-evaluation-approach/theory-change>

Table 5 - Project components and results as per the CEO Endorsement Document, Annex 10 of the Final Report and ToC at evaluation – Output Level

COMPONENT (as per CEO Endorsement)	Original Outputs (as per CEO Endorsement)	Original Outputs (as per Annex 10 and PIR FY 2016)	Reconstructed OUTPUTS	Comments
Component 1. Characterization of methane, black carbon (BC) and co-pollutants from key emissions sources	<p>Output 1.1: Activity data and emission factors for methane and BC to define targeted mitigation measures;</p> <p>Output 1.2 Characterization of methane and BC from main sources;</p> <p>Output 1.3 Comprehensive emission inventories for SLCF.</p>	Output 1: Characterization of methane, black carbon and co-pollutants from key emission sources.	Output 1: Characterization of methane, black carbon and co-pollutants from key emission sources.	The output is worded the same as in Annex 10 and PIR FY 2016
Component 2. Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico	Output 2.1 Technical report including selection, evaluation and ranking of SLCF mitigation policies in terms of climate benefits, energy efficiency, health, agricultural production and ecosystem protection from sector specific data	Output 2: Assessment and selection of SLCF mitigation policies for implementation in Mexico	Output 2: Assessment and selection of SLCF mitigation policies for implementation in Mexico	The output is worded the same as in Annex 10 and PIR FY 2016
Component 3: Demonstration of SCLF mitigation technologies for key sources	Output 3.1 Demonstration of priority SCLF mitigation technologies as basis for learning and replication	Output 3: Demonstration of priority SLCF mitigation technologies for key sources	Output 3: Demonstration of priority SLCF mitigation technologies for key sources	The output is worded the same as in Annex 10 and PIR FY 2016

COMPONENT (as per CEO Endorsement)	Original Outputs (as per CEO Endorsement)	Original Outputs (as per Annex 10 and PIR FY 2016)	Reconstructed OUTPUTS	Comments
Component 4: Integration of SLCF mitigation measures into LEDS	Output 4.1: Results from components 1-3 compiled, integrated in LEDS, regularly updated and monitored	Output 4: Integration of SLCF mitigation measures into LEDS	Output 4: Integration of SLCF mitigation measures into LEDS	The output is worded the same as in Annex 10 and PIR FY 2016
Component 5: Capacity building, awareness raising, monitoring and evaluation	Output 5.1 Training and capacity building; Output 5.2: Organization of outreach and dissemination activities.	Output 5: Capacity building and awareness	Output 5: Capacity building and awareness	The output is worded the same as in Annex 10 and PIR FY 2016

Table 6 - Project components and results as per the CEO Endorsement Document, Annex 10 of the Final Report and ToC at evaluation – Outcome Level

Outcomes (as per CEO Endorsement and Annex 10)	Reconstructed Direct Outcomes	Comments	Reconstructed Medium-Term Outcomes	Comments
<p>Outcome 1: Improved knowledge on key emission sources and of mitigation potential of addressing SLCF.</p>	<p>Direct Outcome 1: The scientific community follows up SLCF emissions and mitigation technical and policy oriented research projects.</p>	<p><i>Outcomes 1,2 and 3 have been split into direct and medium-term outcomes, to reflect the speed at which the project is capable of producing behavioral change in stakeholders.</i></p> <p>Direct Outcome 1 reflects the immediate change the project has caused in the science community, namely related to the use of the knowledge created by the project outputs 1,2 and 3.</p>	<p>Medium-Term Outcome 1: INE and other policy relevant organizations (including at sub-national level) elaborate higher accuracy emissions inventories.</p>	<p><i>The medium-term outcomes reflect the fact that changes in behavior by public authorities as a result of the project will only take place later due to the timings and procedures of the inventories elaboration and of the policy making process.</i></p> <p>Medium-term outcome 1 reflects the fact that INE will only use EF after they have been peer reviewed and published and therefore will only be used in the inventory to be prepared after 2019.</p>

Outcomes (as per CEO Endorsement and Annex 10)	Reconstructed Direct Outcomes	Comments	Reconstructed Medium-Term Outcomes	Comments
Outcome 2. Decision making on priority SLCF mitigation policies based on improved data on emission sources and on quantified impacts, including co-benefits				Outcomes 2 and 3 are the basis for medium term outcome 2.
Outcome 2. Decision making on priority SLCF mitigation policies based on improved data on emission sources and on quantified impacts, including co-benefits			Medium-term Outcome 2: SEMARNAT, INE and other policy relevant organizations (including at sub-national level) develop science based SLCF mitigation strategies, including LEDS.	It has been redrafted to as to convey the change of behavior by the beneficiaries, related to use of the scientific information generated by the project in the elaboration of SLCF and CC policies (LEDS)

Outcomes (as per CEO Endorsement and Annex 10)	Reconstructed Direct Outcomes	Comments	Reconstructed Medium-Term Outcomes	Comments
Outcome 3. Increased knowledge on cost and benefits of promising SLCF mitigation technologies for decision making				
Outcome 4: Mexico's LEDS incorporate priority SLCF mitigation policies				Outcome 4 is now Intermediate State 1 to note the fact that the project timing was not perfectly timed with steps 2 and 3 of the LEDS elaboration process and that, therefore, this outcome is only achieved with direct inputs from the project many years after its conclusion (in 2019 for the SCCP and as late as 2023 for the NDC). Additionally, outcome 4 was not considered a medium-term outcome, but rather an intermediate state, because, it flows from medium-term outcomes 2 and 3 in particular, thus bringing it to a different layer of change in Mexico.

Outcomes (as per CEO Endorsement and Annex 10)	Reconstructed Direct Outcomes	Comments	Reconstructed Medium-Term Outcomes	Comments
Outcome 5. Enhanced capacity and knowledge in measurement of SLCF emissions and in evaluating and selecting mitigation policies	Direct Outcome 2: Project participants and trainees, the scientific community, other policy relevant organizations (including at sub-national) have increased capacity to perform measurement and to model projection of SCLF emissions and mitigation potentials and co-benefits	Outcome 5 has been redrafted as direct outcome 2, in order to more clearly refer to the stakeholders that will have enhanced capacity and what that enhanced capacity entails		
	Direct Outcome 3: International partners are aware of the mitigation potential and of the benefits of SLCF policies	Direct Outcome 3 is based on the CEO endorsement document outcome 5, to reflect the international component of the project's awareness raising.		

Table 7 - Project components and results as per the CEO Endorsement Document, Annex 10 of the Final Report and ToC at evaluation – Intermediate State and Impact Level

Reconstructed Intermediate States	Reconstructed Impact	Comments
<p>1. The Inter-Ministerial Commission on Climate Change adopts, as per proposal from SEMARNAT, Mexico's LEDS incorporating priority SLCF mitigation policies</p> <p>2. LEDS including SLCF policies are implemented and MRVed in Mexico and in other national contexts</p> <p>3. Increased energy efficiency and greater share of clean energy in Mexico and in other national contexts</p>	<p>Low Emissions Development in Mexico and in other national contexts, with reduced effects on human health, ecosystems and agriculture</p>	<p>The reconstructed Intermediate States and the Impact are proposed by the team, taking into account the overall goal of the project as per the CEO Endorsement Document and the project overview in the same document (the CEO endorsement and Annex 10 make no reference to these components).</p> <p>CEO endorsement Outcome 4 is now Reconstructed Intermediate State 1, It takes into account that the project timing was not perfectly aligned with steps 2 and 3 of the LEDS elaboration process and that, therefore, this Intermediate State is only achieved with direct inputs from the project many years after its conclusion (in 2019 for the SCCP and as late as 2023 for the NDC).</p> <p>Outcome 4 has been slightly redrafted as Intermediate State to reference stakeholders using project information.</p>

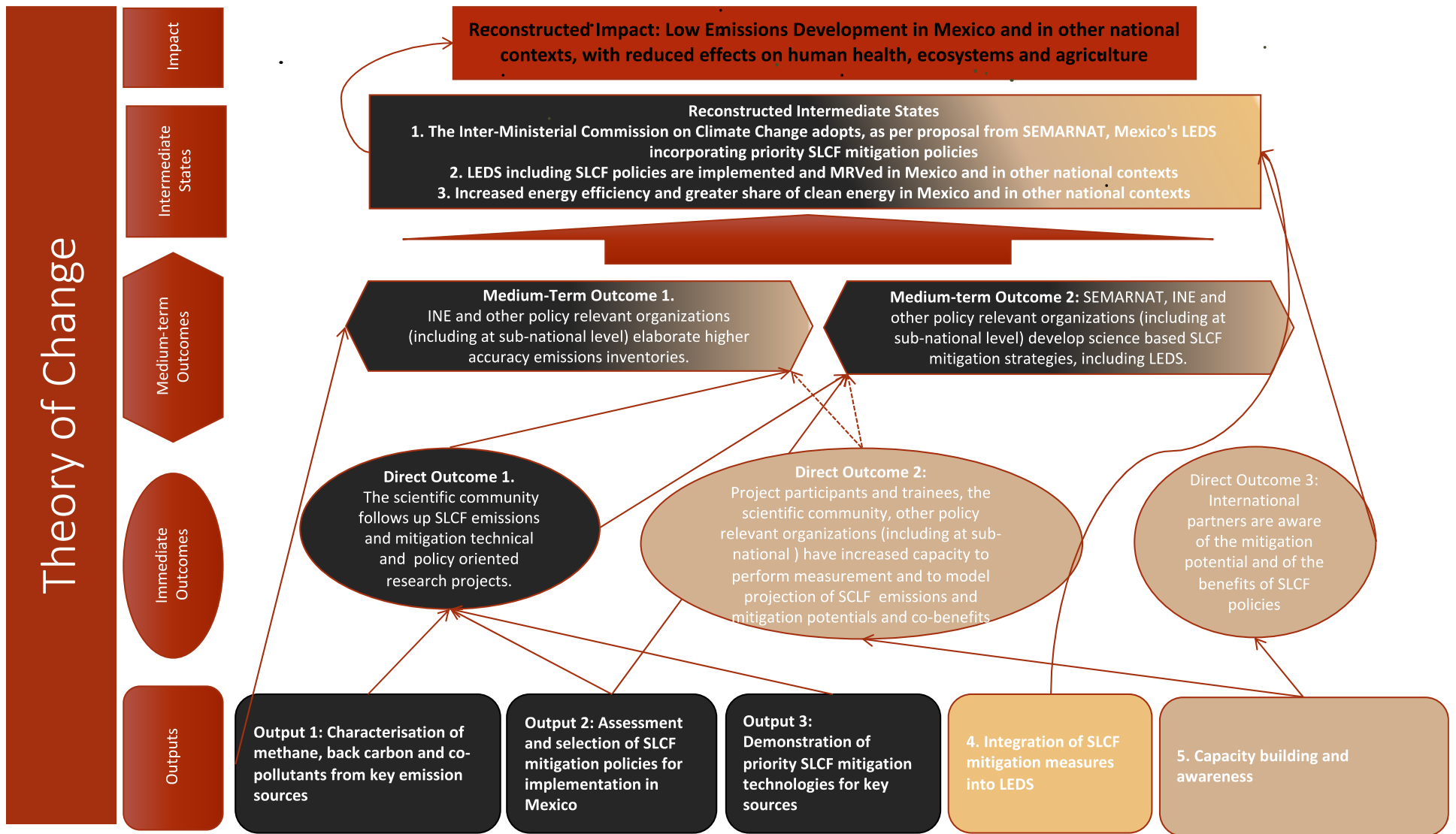


Figure 4 - Reconstructed Theory of Change

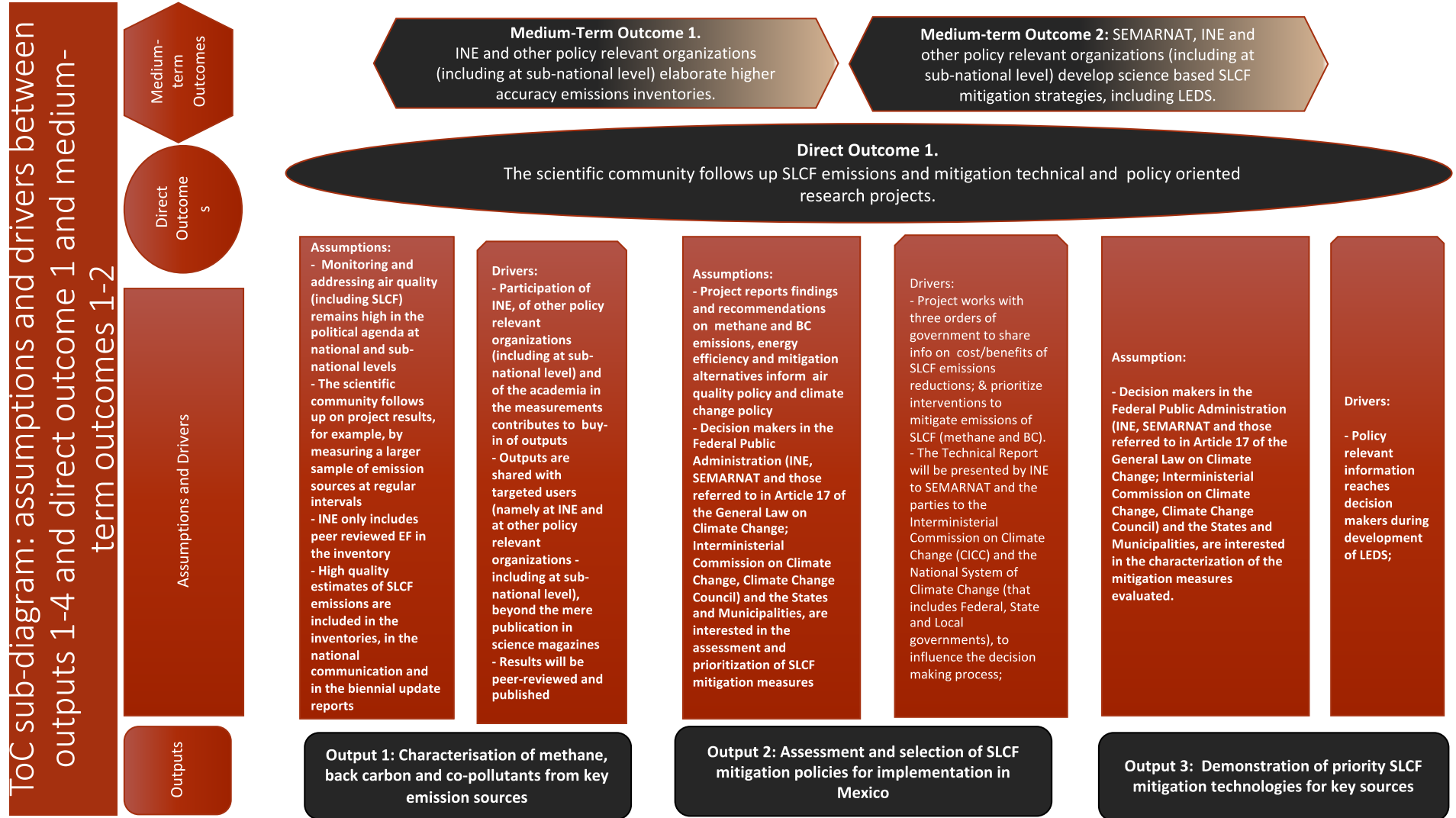


Figure 5 - ToC sub-diagram: assumptions and drivers between outputs 1-4 and direct outcome 1 and medium-term outcomes 1-2

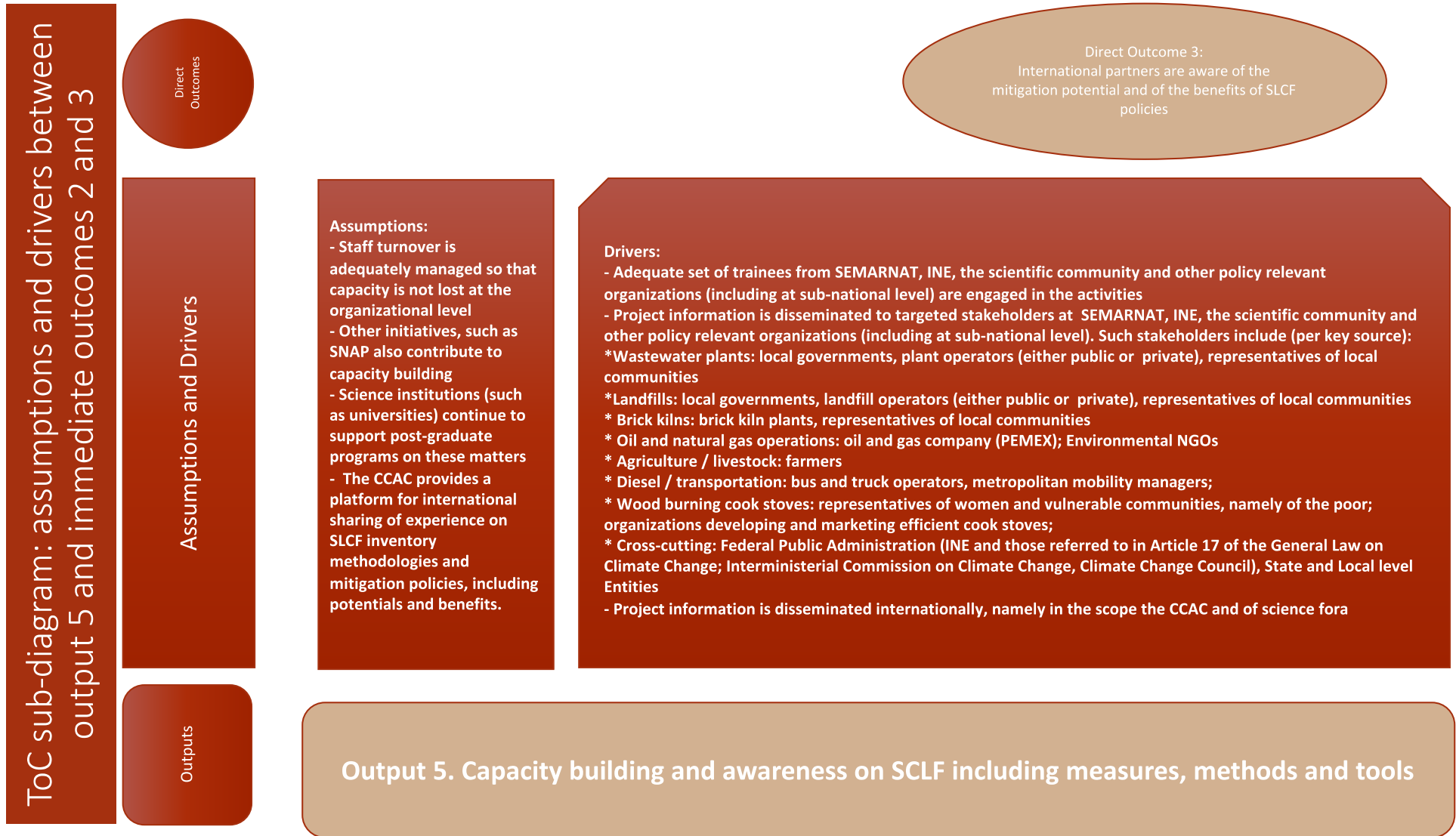


Figure 6 - ToC sub-diagram: assumptions and drivers between output 5 and direct outcomes 2 and 3

ToC sub-diagram: assumptions and drivers between outcomes and intermediate states



Figure 7 - ToC sub-diagram: assumptions and drivers between outcomes and intermediate states

60. In the context of the Theory of Change, **two Impact Pathways** have been identified: Impact Pathway One: Knowledge Development and Impact Pathway Two: Strengthened Capacity and Knowledge Sharing.

4.1. Impact Pathway 1: Knowledge Development – from Outputs 1, 2 and 3 (and 4) to Project Impact

61. Outputs 1, 2 and 3 scientific knowledge produced by the project team aimed at informing policy decision.
62. **Output 1: Characterization of methane, black carbon and co-pollutants from key emission sources** aimed mainly at the development of emission factors (EF) for the estimation of SLCF emissions to replace the default EF used so far and, thus, increasing the accuracy of the emissions estimates. This output has a direct contribution to **Medium-Term Outcome 1 INE and other policy relevant organizations (including at sub-national level) elaborate higher accuracy emissions inventories.**
63. The following assumptions and drivers need to hold for the full transition between Output 1 and Medium-Term Outcome 1.
64. Assumptions:
- Monitoring and addressing air quality (including SLCF) remains high in the political agenda at national and sub-national levels
 - The scientific community follows up on project results, for example, by measuring a larger sample of emission sources at regular intervals
 - INE only includes peer reviewed EF in the inventory
 - High quality estimates of SLCF emissions are included in the inventories, in the national communication and in the biennial update reports
65. Drivers:
- Participation of INE, of other policy relevant organizations (including at sub-national level) and of the academia in the measurements contributes to buy-in of outputs
 - Outputs are shared with targeted users (namely at INE and at other policy relevant organizations - including at sub-national level), beyond the mere publication in scientific journals
 - Results will be peer-reviewed and published

66. **Output 2: Assessment and selection of SLCF mitigation policies for implementation in Mexico** aimed at selecting and assessing quantified impacts, including co-benefits of key SLCF mitigation measures for the relevant key sources.
67. **Output 3: Demonstration of priority SLCF mitigation technologies for key sources** aimed at demonstrating the key benefits of mitigation measures in terms of human health and crop yields.
68. These outputs contribute directly to Medium-term Outcome 2: SEMARNAT, INE and other policy relevant organizations (including at sub-national level) develop science based SLCF mitigation strategies, including LEDS.
69. The following assumptions and drivers need to hold for the full transition between Output 2 and Medium-Term Outcome 2.
70. Assumptions:
- Project reports findings and recommendations on methane and BC emissions, energy efficiency and mitigation alternatives inform air quality policy and climate change policy
 - Decision makers in the Federal Public Administration (INE, SEMARNAT and those referred to in Article 17 of the General Law on Climate Change; Inter-ministerial Commission on Climate Change, Climate Change Council) and the States and Municipalities, are interested in the assessment and prioritization of SLCF mitigation measures
71. Drivers:
- Project works with three orders of government to share info on cost/benefits of SLCF emissions reductions; & prioritize interventions to mitigate emissions of SLCF (methane and BC).
 - The Technical Report will be presented by INE to SEMARNAT and the parties to the Inter-Ministerial Commission on Climate Change (CICC) and the National System of Climate Change (that includes Federal, State and Local governments), to influence the decision-making process;
72. The following assumption and drivers need to hold for the full transition between Output 3 and Medium-Term Outcome 2.
73. Assumption:
- Decision makers in the Federal Public Administration (INE, SEMARNAT and those referred to in Article 17 of the General Law on Climate Change; Inter-ministerial Commission on Climate Change, Climate Change Council) and the States and Municipalities, are interested in the characterization of the mitigation measures evaluated.

74. Drivers:
- Policy relevant information reaches decision makers during development of LEDS;
 - Outputs 1, 2 and 3 contribute directly to Direct Outcome 1: The scientific community follows up SLCF emissions and mitigation technical and policy oriented research projects. The drivers and assumptions described above apply to the transition between outputs 1, 2 and 3 and direct outcome 1.
75. Direct Outcome 1: The scientific community follows up SLCF emissions and mitigation technical and policy oriented research projects contributes directly to the two Medium-term outcomes, as the science community is actively engaged in support the policy making process in Mexico and will continue to deliver reliable up to date information for that process.
76. **Output 4: Integration of SLCF mitigation measures into LEDS** is a mere integration of Outputs 1, 2 and 3 (no additional knowledge created) and is therefore considered to contribute directly to Intermediate States.
77. **Direct Outcome 1 and Medium-Term Outcomes 1 and 2** also contribute directly to the three Intermediate States.
78. Intermediate State 1. The Inter-Ministerial Commission on Climate Change adopts, as per proposal from SEMARNAT, Mexico's LEDS incorporating priority SLCF mitigation policies
79. Intermediate State 2. LEDS including SLCF policies are implemented and MRVed in Mexico and in other national contexts.
80. Intermediate State 3. Increased energy efficiency and greater share of clean energy in Mexico and in other national contexts.
81. The following assumptions and drivers need to hold for the full transition between Direct and Medium-Term Outcomes and Intermediate States:
82. Assumptions:
- Mexico elaborates and publishes emissions inventories, national communications and biennial update reports on a regular basis
 - Scientific community continues to enhance the quality of information on emissions, mitigation potentials and co-benefits
 - LEDS are updated and adopted at regular intervals
 - LEDS implementation roadmaps are designed
 - There is continued political and financial support to tackling SLCF at SEMARNAT, INE, the scientific community and other policy relevant organizations (including at sub-national level)
 - A global climate change framework is in force
 - There is a clear international framework for SLCF

- Staff turnover is adequately managed so that capacity is not lost at the organizational level
- Project information is shared with international partners, namely in the scope of the CCAC and of scientific fora

83. Drivers:

- Project actively makes available emission inventories and models results for methane and BC to INE, the scientific community and other policy relevant organizations (including at sub-national level)
- Project information is submitted to the IPCC and the IPCC includes them in its guidelines for inventory preparation

84. The Intermediate States come into effect sequentially: two after one and three after two.

85. The project Impact: Low Emissions Development in Mexico and in other national contexts, with reduced effects on human health, ecosystems and agriculture flows directly from the intermediate states.

4.2. Impact Pathway 2: Strengthened Capacity and Knowledge Sharing – from Output 5 to Project Impact

86. Output 5: Capacity building and awareness contributes directly to Direct Outcome 2: Project participants and trainees, the scientific community, other policy relevant organizations (including at sub-national) have increased capacity to perform measurement and to model projection of SCLF emissions and mitigation potentials and co-benefits and to Direct Outcome 3: International partners are aware of the mitigation potential and of the benefits of SLCF policies. International partners are deemed to be aware when they engage in discussions (for example under the CCAC).

87. The following assumptions and drivers need to hold for the full transition between Output 5 and Direct Outcomes 2 and 3.

88. Assumptions:

- Staff turnover is adequately managed so that capacity is not lost at the organizational level
- Other initiatives, such as SNAP also contribute to capacity building
- Science institutions (such as universities) continue to support post-graduate programs on these matters
- The CCAC provides a platform for international sharing of experience on SLCF inventory methodologies and mitigation policies, including potentials and benefits.

89. Drivers:

- Adequate set of trainees from SEMARNAT, INE, the scientific community and other policy relevant organizations (including at sub-national level) are engaged in the activities
- Project information is disseminated to targeted stakeholders at SEMARNAT, INE, the scientific community and other policy relevant organizations (including at sub-national level). Such stakeholders include (per key source):
- Wastewater plants: local governments, plant operators (either public or private), representatives of local communities
- Landfills: local governments, landfill operators (either public or private), representatives of local communities
- Brick kilns: brick kiln plants, representatives of local communities
- Oil and natural gas operations: oil and gas company (PEMEX); Environmental NGOs
- Agriculture / livestock: farmers
- Diesel / transportation: bus and truck operators, metropolitan mobility managers;
- Wood burning cook stoves: representatives of women and vulnerable communities, namely of the poor; organizations developing and marketing efficient cook stoves;
- Cross-cutting: Federal Public Administration (INE and those referred to in Article 17 of the General Law on Climate Change; Inter-Ministerial Commission on Climate Change, Climate Change Council), State and local level entities
- Project information is disseminated internationally, namely in the scope the CCAC and of science fora

90. Direct Outcome 2: Project participants and trainees, the scientific community, other policy relevant organizations (including at sub-national) have increased capacity and/or awareness of SCLF measurement techniques, modeling tools, emissions factors, mitigation potential and health/climate impacts for key sectors contributes directly to Medium-term outcomes 1, 2 and 3.

91. Direct Outcome 3: International partners are aware of the mitigation potential and of the benefits of SCLF policies contributes directly to Intermediate States 2 (LEDS including SCLF policies are implemented and MRVed in Mexico and in other national contexts and to Intermediate State 3. Increased energy efficiency and greater share of clean energy in Mexico and in other national contexts. These, as mentioned above, flow into project impact.

92. The drivers and assumptions that need to hold for the transition between Direct Outcomes 2 and 3 and the Intermediate States are the same as drivers and assumptions

for the transition between Direct Outcome 1 and Medium-term outcomes 1 and 2 and the intermediate states and have been described above.

93. This ToC was used as a reference for the assessment of the effectiveness of the project, namely in relation to the delivery of outputs, and likelihood of achievement of (direct and medium-term) outcomes and impact.
94. The findings of the evaluation, including among others the evaluation of the effectiveness just described, are presented in the next section.

5. External Context

95. The nature of the external context is rated as *Moderately Favorable* to the project. This reflects an assessment of a generally stable environment with slight, but not drastic impacts of security, economics and politics on the project.
96. The research and policy focus of the project did not make it particularly vulnerable to climate or extreme weather events except for occasional decrease in measurement time because of challenging weather conditions.
97. With respect to politics, project implementation spanned one Presidential election in Mexico in 2012 during the beginning phase. During the early phases of project preparation, reorganization and this election was referenced with respect to delays and longer contracting processes. The elections led to administrative changes in personnel in one of the projects lead executing institutions, the Mexico National Institute of Ecology and Climate Change (INE formally INECC) who played a lead role in design. Changes in personnel had some impacts in terms of time for adjustment and adaptation among those acting in the steering committee role for example. The new government remained supportive of the project. At the level of the state government transitions influenced change in the governor in the state where brick kiln measurements took place that resulted in a short work stoppage. However, politics did not have major impacts on achieving project objectives.
98. Security was also a concern with some implications for the project operations. Field interviews affirmed challenges of moving expensive monitoring equipment across Mexico. This required extensive planning and concerns about logistics for the project's operational team.
99. Throughout the life of the project, the overall Mexican economic downturn during implementation impacted the receipt of almost one million \$ of expected funding (cash and in-kind) from the Mexican government. Although cash and in-kind funding was not provided by the Mexican government through INE, much of this was compensated through other nongovernmental sources and the agency continued to play a key leadership role throughout the project.
100. The nature of the External Context on the Project is rated Moderately Favorable according to the UN Environment Evaluation Office Criterion Ratings Matrix since there is evidence that three out of five possible impact areas (politics, security and economic conditions) had some slight influence on the project.

Rating of Nature of External Context: Moderately Favorable

6. Strategic Relevance

101. The project is fully aligned with key donor and UN Environment strategies and policies as well as regional, sub-regional and national priorities; and is complimentary with relevant initiatives identified by the evaluation team. Therefore, its strategic relevance is rated **Highly Satisfactory**.
102. The project is extremely relevant for national priorities as it supports the country's efforts to define and implement the nationally determined contribution (NDC) under the Paris Agreement. There are several important synergies and complementarities between the project and other projects, such as the SNAP Projects I and II and the LEDs initiative for Mexico. The project has used information from the National GHG Inventory and is producing information, which may be relevant for future editions. Finally, one of the projects activities aimed at sharing project results and methodologies with other Latin American developing countries, thus fulfilling requirement for South-South Cooperation as we discuss below.

6.1. UN Environment Mandate, MTS and POW

103. Both project design and implementation show good alignment with the UN Environment Medium- Term Strategy for 2010-2013 in terms of the climate change theme. The project aligns particularly with the articulated goal to "increase Mexico's access to climate change science and information for sound decision making" because of the extensive contributions to measurements, modeling, and publications provided by the project. For the MTS for 2014 to 17, the project aligns with the objective for the area of climate change of "strengthening the ability of countries to move towards climate-resilient and low emission pathways for sustainable development and human well-being" for the same reasons mentioned above. While Initial design documents do not specifically discuss alignment with Bali Strategic Plan but do allude to south-south cooperation in partner composition and strategies for application of lessons learned. It is also important to note that the UN Environment Programme of Work for 2018, although after the end of this project, specifically mentions the aim to work with the Climate and Clean Air Coalition work on short-lived climate forcers including through "catalyzing policies and practices that provide multiple benefits by improving people's health, increasing food security, enhancing energy efficiency and alleviating poverty". This reflects the importance of the increasing levels of attention given to the issues of SLCF's on the global environmental policy agenda. This addition reflects the fact that the Climate and Clean Air Coalition (CCAC) was created in 2012, with UNEP as was one of the founders

and also hosts the CCAC Secretariat. As such, SLCF has been important on the UN Agenda since 2012.

6.2. Donor Priorities

104. The project design and implementation were aligned with the GEF -5 (2010-14) Strategic Priority of Climate Change that includes the Climate Change Mitigation objective CCM1. This is aimed at promotion of demonstration, deployment and transfer of low carbon technologies in contrast to the high carbon technologies characterized by CO2 emissions with low efficiency combustion technologies. This was a point of comments and review amendments during the design phase, with a reviewer suggesting limiting the project primarily to CCM 1 and excluding mention of the later CCM strategies, which was agreed to by project formulators. GEF5 also supports enabling activities and capacity building related to the Convention.
105. The GEF – 6 Strategy (2014 – 2018) that was also part of the period of project implementation, highlights the need to incorporate BC, as well as other SLCPs including methane, hydrofluorocarbons (HFCs) and tropospheric ozone (O3) into climate change mitigation projects, although this did not provide specific direction on how countries should accomplish this goal ((GEF/R.6/20/Rev.04, STAP, nd). The GEF Climate Change Focal Area Programming Strategy mentions black carbon as part of a strategy to prioritize initiatives with transformational global environmental benefits (GEF/C/39/Inf.10).
106. While the project generally aligned well with donor and national priorities, the evaluation team found some mixed results related to the issue of alignment with gender analysis or gender-responsive results framework, in accordance with the GEF Gender Equality and Mainstreaming Policy (2011) requiring that all new projects conduct a gender analysis and be aligned with a gender responsive results-based framework (GEF, 2015). The project did indicate a variety of ways in which the project results were highly relevant for women, particularly in one segment of work, although there is not clear evidence of a full gender analysis (further discussed below in the section on gender and marginalized groups).

6.3. Project Complementary and Duplication

107. The project had close relationships to various initiatives with Interviewees stating the project “integrated initiatives in a way that had not been done before ... exploiting synergies between sectors”. Some of this related to the fact that the project emerged from ongoing streams of work being conducted, with some suggesting that the work was at times hard to distinguish. During the project implementation the Executing Agency for the project, the Molina Center, as well other key actors in the project such as INE, were also deeply involved in implementing the CCAC) **Climate and Clean Air Coalition to**

Reduce Short-Lived Climate Pollutants which Mexico joined in 2012, as a Founding member.

108. The Molina Center played a key role in the SNAP I initiative Project “Supporting National Planning for Short-lived Climate Pollutants” (SNAP). The SNAP project, described as “synergistic” to this project, was designed as an initiative to provide support for countries that sought to develop priorities for national strategy to reduce SLCP. A second aim of this project, as the name suggests was also to support integration of SLCP into existing national planning, which is an element which is also central to the core of this project. The process led to a document that embodied the first national action plan on SLCFs that was integrated into a range of other Mexico’s policies and programs. Working groups were organized to discuss and compile local information, including relevant programs and policies in place in Mexico and databases needed as input to identify mitigation policies specific for Mexico. SCLF project actors including the Molina Center and INE were actively engaged in information gathering on nine key sectors of black carbon and methane to create a Rapid Emissions and Scenario Assessment Toolkit. The end result was the SNAP-1 document for Mexico that includes both strategic review of mitigation options for reducing SLCFs in Mexico and implementation pathways. The teams continued their work through the SCLF project, participating in evaluation of mitigation measures, using improved emission factors and activity data available to estimate potential emissions reductions for CH₄ and BC, and giving updates on progress on emissions and mitigation strategies at the SCLF project meetings, attended by officials from SEMARNAT, INE, state governments, and relevant stakeholders. This led to development of mitigation scenarios and measures for reducing CH₄ and BC emissions used in estimating impacts on health and crops. A guidance note has also been put together by the CCAC in 2015 for countries wishing to include BC in their Intended Nationally Determined Contribution (INDC) (STAP, n.d.)
109. Figure 8 illustrates the galvanizing role of SCLF project managers that is characterized as the “Eye of the Storm”. This shows the influence particularly of the head of the executing agency, Luisa Molina, and ongoing connections among the various organizations in this project with bodies such as the CCAC, SNAP etc. as a policy subsystem. The interrelationships between the Molina Center, MCE2, and the various other influential institutions and actors are depicted in terms of close working relationships on various areas of policy related to moving forward attention to SLCFs in Mexico and in the global arena. Strong relationships with the various public and private

organizations including government organizations such as SEMARNAT, the Molina Center helps connect to and influence the scientific community in Mexico and abroad.

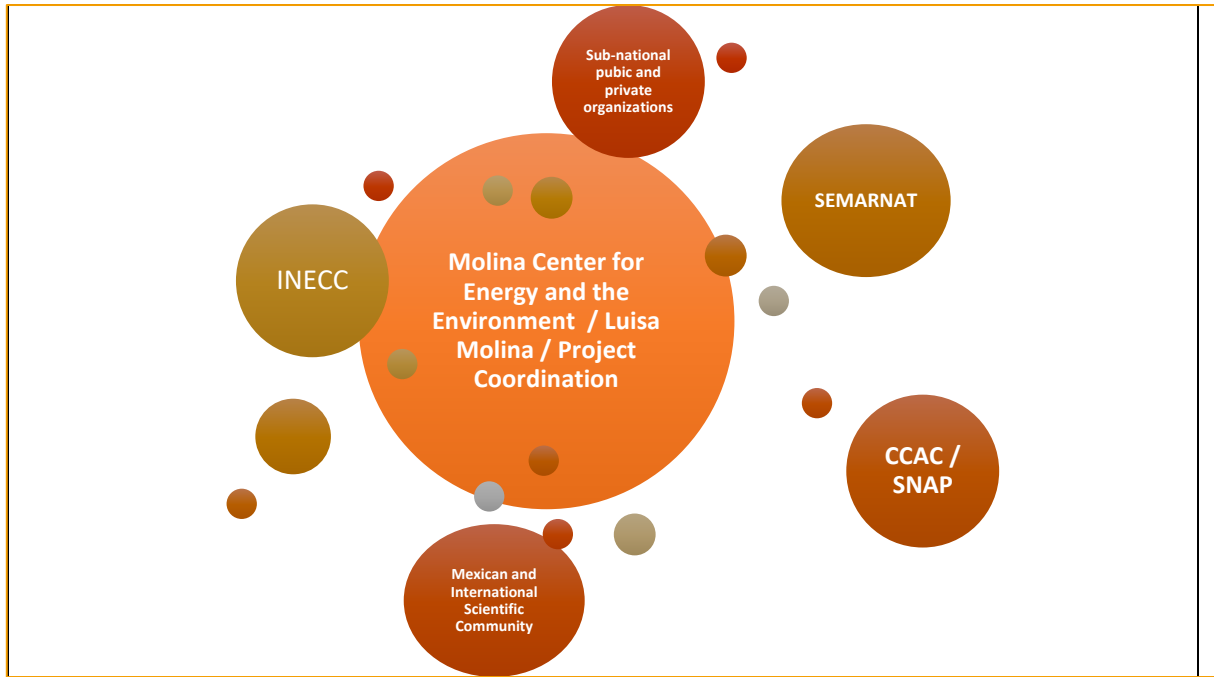


Figure 8 – The Molina Centre’s catalytic role in the project

110. Various aspects of the project also built on work related to other projects. For example, with respect to measurement of road transport emissions, a recent project was developed by the Eastern Research Group (ERG) to adjust the model’s default emission factors and deterioration rates for the gasoline fleet using remote sensing data obtained in major Mexican cities (Koupal et al., 2016). The resulting model, MOVES2014-Mexico, also considers Mexican vehicle emissions and fuel quality standards, vehicle population by age and state, fuel properties and fuel consumption.
111. The project also reported that it made contributions to the ECAIM (Estudios de Calidad del Aire y su Impacto en la Región Centro de México), project, which was sponsored by INE with the aim to conduct preliminary diagnosis of air quality in Central Mexico.

6.4. Regional, National and Sub-Regional Priorities

112. The project’s objectives are consistent with important challenges currently faced by Mexico and its commitments to address it. The country has a consistent leading position in terms of climate action for mitigating emissions and adapt to reduce risks from changing climate patterns.
113. By mandate of the National Planning Law, the Federal Government 2012-2018 prepared the National Development Plan 2013-2018 (PND); it included objectives, strategies and action lines to increase green growth, adaptation to impacts of climate change and

strengthen climate policy as means for the transition to a low carbon economy. By mandate of the Climate Change General Law (LGCC) and also the National Climate Change Strategy, a vision for 10, 20 and 40 years was prepared (ENCC). It represents long term planning towards implementation of the mandates from the LGCC. Derived from the ENCC, the Climate Change Special Program 2013-2018 (PECC) presented the mitigation and adaptation program of activities that the 2012-2018 federal administration will implement. The LGCC also mandates creation of the Climate Change National System, a coordination body with the participation of the federal, state and municipal authorities.

114. With that being the main climate framework, there were many initiatives in place to support decision making and implementation of activities. The National Greenhouse Gases Emissions Inventory (INEGEI) has been a key tool for decision making. Having good quality and extensive experience, there was the need not only to improve emission estimations of methane from several source categories and to include black carbon emission estimations as well, which were in alignment with this project.
115. The planning activities included development of information that helped to prioritize mitigation interventions. A core element was the Mexico Low Emission Development Strategy (MLEDS), an US-AID sponsored program that provided technical assistance to the INE and SEMARNAT on a national low-carbon development strategy, measuring and reporting GHG emissions and implementation of demonstration clean energy projects. As part of the mitigation activities, there were several Nationally Appropriate Mitigation Actions (NAMA) proposed and government was creating a NAMA registry. The cooperation with other development agencies, for example from Germany, Denmark, France and many others, helped prepare the country for the implementation of mitigation measures. Mexico's commitment towards climate change mitigation and adaptation was also expressed in other ways; among them, by being the only Non-Annex I country submitting five National Communications to the UNFCCC. There are varied examples of ways the project worked in close cooperation with initiatives and helped advance strategies for climate change and clean air at other levels below the federal level in Mexico during the project field work and implementation.

6.5. South-South Cooperation

116. With respect to South/South cooperation it is relevant that the project members and project work helped to contribute to other work such as the regional assessment of SLCFs in Latin America and the Caribbean (LAC) as well as the fact that the "Progress and Opportunities of Reducing Short-lived Climate Pollutants across Latin America and the Caribbean." This included contributions of some of the project team as coordinating or lead authors. Recently Aerodyne Research has been working with Chinese scientists to outfit their mobile laboratory to address airquality and greenhouse emissions in

Northeast China. Interviews affirm the project methodology was also of interest in various developing countries including China but also in Europe and California.

117. The involvement of the project team at CCAC meetings was reported to be influential in terms of discussions about the project work with other development countries particularly the work involving measurements, the use of the respiration chamber and role of Aerodyne. Uruguay, Peru and Argentina were reported to be particularly interested along with the FAO.
118. In sum, the project rates **Highly Satisfactory** in terms of strategic relevance based on the alignment with the UN Environment's Mandate, Medium Term Strategy and Thematic Priorities and with its capacity building and South-South cooperation policies; with regional, sub-regional and national priorities; with donor and funding agencies priorities and is complimentary with other relevant initiatives identified by the evaluation team.

6.6. Gender and Marginalized Groups

119. The evaluation also examined the extent to which the project applied the UN Common Understanding on the human rights based approach (HRBA), UN Declaration on the Rights of Indigenous People. Within this human rights context the evaluation assessed to what extent the intervention adheres to UN Environment's Policy and Strategy for Gender Equality and the Environment.
120. Gender and marginalized groups featured in the project in various ways throughout the project life cycle, which is another performance factor to be considered. At the design stage, the CEO Approval document included consideration of gender primarily in relationship to health impacts of reducing women and children's exposure because they were determined to "bear the greatest burden" from soot and burning dirty fuels". Linkage to SSA (former name for the federal Secretariat of Health) gender and health programs is emphasized including those dealing with rural women's wood smoke exposure, and occupational health in terms of brickworks and vulnerable groups. There was no evidence of including an array of gender related considerations in all phases of the project M & E planning.
121. With respect to the implementation phase, the projects testing of cookstoves involved local women from the community surrounding the test project and was focused on testing of the array of stoves used in the SEDESOL programs that is clearly relevant from a gender perspective. In terms of the capacity building output, women played an important role in the data gathering process as graduate students (for example taking a lead role in the data gathering related to wastewater treatment), thus benefitting from the project in capacity building. Women were also well represented in authorship of project publications, including some on which they are lead authors. Analysis of the four main "project meetings" in terms of gender participation shows the percentage of women ranged from just over one third (27-28%) in the meetings before the end of the project to just under half (43%) of the participants at the final meeting. Participation by gender is not an issue completely within project control since this relates to roles and

responsibilities of women in a wide range of academic, government, private sector and civil society organizations, however it is informative as a different measure of gender at various stages of the project.

122. With respect to stakeholders, the main subcontractor organization responsible for coordinating project activity on cookstoves, GIRA, has a long history of consultation with women and indigenous groups, is identified originally as a partner. They were active in project activities and were represented in most project meetings. SSA (Mexico's Ministry of Health) is not present as a project partner or represented in ongoing project meetings, although they are reported to have invited MCE2 to present on impacts of SLCF's at their conference. SEDESOL, an organization involved in welfare programs, is identified as a project actor and was reported to be present at the one project meeting related to cookstoves (See Appendix I). Additional outreach to these institutions should also be considered as part of follow-up.
123. With respect to the human rights-based approach and principles of inclusion of marginalized groups, the project also involved assessment of emissions from brick production and included extensive work with the brick kiln association, including worker concessions that were negotiated related to work stoppages to allow for measurements. The project's work in providing greater understanding of technical operations and emissions impacts is clearly highly significant for marginalized groups. SARGAPA, the Ministry working on Agriculture, Livestock, Rural Development, Fisheries and Food was an important project stakeholder who attended two project meetings.
124. In terms of project reporting and monitoring there is limited integration of focus on marginalized groups and gender analysis in a range of other aspects of the project including indicators and outputs (related to management, communication, participation in events, trainings, measures, policies, technology response), due to the lack of an explicit focus on this in the design outside of health impacts of SLCF's.
125. Overall attention to marginalized groups and gender is considered **Satisfactory** when both the noted strengths and weaknesses are taken into account. The project demonstrated many important strengths in this area, although some aspects of integration of attention might have been improved with respect to monitoring and reporting, slight changes in stakeholder participation and increased outreach to women's groups. Thus, Responsiveness to Human Rights and Gender Equality were rated **Satisfactory**.
126. Strategic relevance is thus considered **Highly Satisfactory** overall in terms of balancing the **Highly Satisfactory** level of alignment with UN Environment, donor and Mexican government priorities and **Satisfactory** rating with respect to a gender and human rights-based approach.

Rating of Strategic Relevance: Highly Satisfactory

7. Quality of Project Design

127. The Project Design review was made based on the CEO Endorsement Approval document and its appendices, prepared at the project's design stage. The Check List for the Full Proposal was also considered as part of this review. The project design received a score of **5.0** out of 6, justifying a **Satisfactory** rating.
128. Aspects of the design with the highest scores and considered as **strengths** of the project design include Strategic Relevance and Efficiency. Aspects that received the lowest ratings include Project Preparation, Governance and Supervision Arrangements; Learning, Communication and Outreach, and Financial Planning/Budgeting.
129. While the project design rating was **Highly Satisfactory** in Strategic Relevance, it should be noted that the design document is framed to respond to questions about consistency with the GEF Focal Area/LTCF/SCCF Strategy/NPIF Initiative rather than the Medium-Term Strategy or Programme of Work. Design documents do not make clear reference to MTS or POW alignment but do indicate that the project aligns with the GEF Climate Change Focal Area and the Climate Change Mitigation objective CCM1. As previously mentioned, the team affirms design shows alignment with the UN ENVIRONMENT's Medium-Term Strategy for 2010-2013, strategic priorities from the funding agency GEF as well as with Mexican priorities and needs at the time and is complementary to the Low Emissions Development Strategy (LEDS) under development at the time discussed in the design document. There is mention that SLCP emissions reduction was of great importance for Mexico and created opportunities to advance protection of public health and achieve climate mitigation goals. In 2012 Mexico was one of the six countries⁸ that joined UN Environment to create the Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants (CCAC). Initial design documents do not discuss alignment with Bali Strategic Plan but do allude to south-south cooperation in partner composition and strategies for application of lessons learned.
130. In terms of **Efficiency the project design is also rated Highly Satisfactory** because the design took advantage of initiatives already in place that could help to produce the final outputs; it specifically built upon the existence of the MLEDS initiative funded by USAID. It also addressed linkages and coordination with efforts to assess SLCP emissions and to foster mitigation measures; like the national targets set in the Climate Change General Law, the Special Climate Change Program (PECC), the participation of Mexico in the Global Methane Initiative (GMI) and the Climate and Clean Air Coalition (CCAC), or tools like the INEGI and INEM.
131. **Project Preparation** was rated **Satisfactory** with strengths in terms of the detailed problem and situation analysis. The project addressed most comments raised by UN Environment Project Review Committee, although a few needed additional clarity, including a more explicit statement addressing response to comments. With respect to gender, there was some focus on this in the design primarily in terms of pollutant

⁸ Countries that initiated the CCAC are Bangladesh, Canada, Ghana, Mexico, Sweden and the United States.

impacts on women and marginalized groups, particularly in the area of the cook-stoves. Although linkage to SSA Programs (Mexico's Ministry of Health) are highlighted with respect to gender there appears to be no consistent integration of this entity in the list of project partners. The discussion might have been strengthened with more detail on plans for consultation with other non-governmental organizations representing women and indigenous groups. There is limited integration of gender throughout various aspects of the project's M & E.

132. Regarding **Learning, Communication and Outreach**, the project communications were rather narrow and focused primarily to a specialized public with specific needs for information regarding SLCF given the focus on key sectors; that may leave, aside a wider array of other actors outside the project in various fields such as transportation, energy or agriculture that might be interested and better addressed with a communications plan, which may be absent partially due to the pilot nature of the project and limited funding. In the area of **Financial Planning / Budgeting**, minor issues were identified specifically related to the allocation of funds for the Terminal Evaluation, since the Part I of the CEO Endorsement document mentions the allocation of \$ 25,000, while the Appendix 8 it seems to allocate a different amount (\$ 10,000) under concept 5502 Project Evaluation. Although initially recorded as a co-finance to this project, \$ 20 million grant from the USAID was later clarified as the total amount allocated to the MLEDS initiative over a three-year period rather than allotted to this project only. In the area of **Governance and Supervision**, there were weaknesses in the design with need for more discussion on composition of the Technical Advisory Panel.
133. With respect to the **Logical Framework**, while this area was rated **Satisfactory**, the logical framework might have been improved slightly through reframing of some of the original project outcomes to be more specific. There were also unusual additions and slight inconsistencies of project components related to monitoring and project management in the original design categorization. Some of the narratives on expected results (for example on cattle) could be more specific (measuring bovine emissions for example). There were also no specifics about the level of government officials to be trained.
134. With respect to **External Context** the project is rated **Satisfactory** and the design document did include mention of potential external risks including climate change with identified risks determined to be low, including safety and environmental concerns with respect to equipment in spite of some known security challenges in the country. Weaknesses include the fact that there is no detailed exploration of other potential external threats or discussion of implications from a change in government, in spite of federal elections on the horizon at the time of the project design. However, the design insures involvement of key institutions and a rich array of partners both in and outside of government, like universities and research institutions, to mitigate potential risks.
135. In conclusion, while the initial design document does a good job of both setting the stage and presenting a compelling project rationale and structure, and there are strengths in strategic relevance, and efficiency, some rather minor improvements in the design of the

in terms of project preparation, strategy for communication, the log-frame and funding might have helped at the initial stages.

Rating of Project Design: Satisfactory

8. Effectiveness

136. The effectiveness of the project was determined to be **Satisfactory** overall based on three subcategories, Delivery of outputs, determined to be **Satisfactory**, Achievement of Direct Outcomes also classified as **Satisfactory** and the Likelihood of Impact which was determined to be Likely. Thus, the project was positive in terms of the overall ability to reach desired results. The evaluation team found that this project was part of a group of other initiatives implemented simultaneously to better understand the role of SLCF in the climate scenario in Mexico and to help define strategic planning for the upcoming climate action. While the project involved many technical components, the process contributed positively to both raising awareness and the policy making process.

8.1. Delivery of outputs

137. The achievement of the outputs has been rated **Satisfactory**. The project was evaluated against the following five outputs, three of which were rated **Highly Satisfactory** while Output 3 and 4 were rated **Satisfactory**:
- Output 1. Characterization of methane, black carbon and co-pollutants from key emission sources.
 - Output 2. Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico.
 - Output 3: Demonstration of SLCF mitigation technologies for key sources.
 - Output 4: Integration of SLCF mitigation measures into LEDS.
 - Output 5: Capacity building and awareness raising.
138. The output findings are discussed below with further details found in Appendix I. Delivery of outputs. A number of factors affecting performance are noted to have direct influence on the satisfactory rating related to delivery of the outputs. This includes issues surrounding **Preparation and Readiness of the project which is rated Satisfactory** (discussed further in 6.1.1). The necessary initial staff mobilization and stakeholder consultation helped to get the project ready for the implementation of outputs, although two meetings identified as “inception” meetings took place in the first month just after the project started in November, 2012 rather than during the period between project approval and before project funding. These touched on the project goals and objectives, but moved to planning of the measurement issues related to the field campaign. However, it was affirmed in interviews that a lot of work done even before this series of inception meetings in the period of August of 2012 that helped set the stage for various activities such as planning for field measurements. The period between final CEO Approval in late June 2012 and Council approval in mid-July and first disbursement in Oct 2012 is less than six months. There is also a **Highly Satisfactory level of management and supervision** of the project and good cooperation with UNEP staff that was instrumental and often praised that helped to move forward the various project

activities. The issues and impact of Communication and Awareness rated **Moderately Satisfactory** and stakeholder involvement rated **Satisfactory** are have an integral relationship to the projects capacity building and awareness raising which are discussed in Output 5 below. Several of the project activities (publications, meetings and events, measurements of brick kilns and cookstoves) also strengthen the **Satisfactory rating** on gender and human rights which is discussed in more detail in section 5.8 of this report.

139. Output 1. Characterization of methane, black carbon and co-pollutants from key emission sources.
140. The project was focused on measurement and characterization of emissions (mainly black carbon and/or methane, but also other pollutants) from sources that were identified as possible big emitters, but whose emissions had not been measured in Mexico.
141. Preparation and readiness is a performance factor linking this activity and project influence. Submission of the Fifth National Communication including the National Emissions Inventory for Black Carbon occurred shortly after the official project start in October 2012. Interviews indicate that because project personnel were informed earlier of project acceptance, work began before contract signature, allowing preparation and delivery of the BC emissions inventory in time to be included in the Mexican Fifth National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) prepared by INE and submitted in December 6, 2012⁹.
142. The evaluation team found similar estimates for the Fifth National Communication report and project estimates, validating contributions of the Project. (see Chapter IV of the Communication presents the National Emissions Inventory of Green House Gases (INEGEI). The INEGEI includes emissions and sinks for the greenhouse National Emissions Inventory for black carbon (BC), that presents emissions for 1990 to 2010. The total emissions reported for 2010 in the National Emissions Inventory for BC (104.517 Gg/year) are similar to the total emissions presented in page 36 of the Project Final Report (101.76 Gg/year)¹⁰.
143. Emissions factors produced by the Project's activities have also been included in different papers submitted to scientific journals. Those will be used for the next update of INEGEI (1990-2017), once papers are peer reviewed and published by the journals.
144. SEMARNAT prepares an estimation of BC emissions for the National Emissions Inventory (INEM). INEM includes emissions of local pollutants and precursors to secondary pollutants. INEM updates for 2008 and 2013 were not publicly available at the time of this evaluation; it is known however that in the draft version of INEM 2008, emission estimates for black carbon were 78.21 Gg/year. That is a 30% difference from

⁹ This according to the web page National Communication submissions from Non-Annex I Parties from the UNFCCC. Consulted in October 28, 2018 at: <https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-update-reports-non-annex-i-parties/national-communication-submissions-from-non-annex-i-parties>

¹⁰ The small differences (around 2.8%) can result from final review previous to the submission

the 101.76 Gg/year estimate mentioned in the final report for this project. The final report of the project may mention how uncertainty of this estimation could be reduced in the future.

145. Under Activity 1.4, the project produced the only black carbon emission factor reported from field studies of the oil and gas industry in Mexico.
146. The Activity “1.2. Collect and process meteorological and emissions activity data at the national and regional levels” was not explicit in the CEO Endorsement Approval document. The reason may be that the Project team was clear that such activities are included as part of the broader output 2.1 that calls for a Technical report including selection, evaluation and ranking of SLCF mitigation policies in terms of climate benefits, energy efficiency, health, agricultural production and ecosystem protection from sector specific data. The preparation of information to feed into models is intensive and time consuming: data sets need to be compiled, reviewed and pre-processed before to be fed into the models. Different models were used to estimate benefits of emissions reductions resulting from the measures that can be taken to reduce emissions of methane, black carbon and ozone precursors. Those models need different data sets to be fed in, including emissions and in the case of WRF-Chem, meteorology. For example, the Weather Research and Forecasting model coupled to Chemistry¹¹ (WRF-Chem) is the one used by the Project’s team to assess regional impacts of different emission sources of ozone precursors, BC, and PM_{2.5} on air quality in Mexico, comparing the situation in 2008 versus that in 2030 under diverse emissions reduction scenarios.
147. The project used a rigorous methodology for Activity 1.3 Execution of mobile laboratory measurements of methane emissions from wastewater treatment plants, landfills and oil and gas operations and development of emission factors. The methodology used could be helpful for further studies that help address the need for the field-based quantification of methane emissions to reduce the uncertainties in the inventory estimates. The project final report contains detailed descriptions of performed measurements.
148. Regarding wastewater treatment plants (WWTP), the emissions of methane were measured using a Portable Biogas Analyzer at fifteen WWTP in three regions (north, central and south) with three different technologies: stabilization ponds, activated sludge, and Up-flow Anaerobic Sludge Blanket (UASB) reactor. Additionally, emissions were measured with the Aerodyne Mobile Lab at three WWTP in three cities.
149. Methane emissions measurements were performed at two landfills using the Aerodyne Mobile Lab (AML). The Final Report confirms that landfills can be sources for significant methane emissions. Additionally, the methane emission measurements were performed at three facilities of oil and gas activities with the AML. However, methane emissions are reported as emission rates rather than as emission factors. The Final Report states that

¹¹ The official web site for the model is in the following address: <https://ruc.noaa.gov/wrf/wrf-chem/>

the emissions quantification results indicate a strong need for additional studies to collect more information both at the facility-level and on a regional scale.

150. The Final Report includes section 2.2.9 Agriculture: Crop Residue Burning. These measurements of black carbon and co-pollutants were not funded by GEF but are considered by the MCE2 as complementary to this project. Funding was provided by INE and CONACYT and results were presented in the Final Project Meeting and mentioned in the Final Report as it is complementary to this Project and of interest to INE.
151. The Activity 1.4 is the execution of mobile laboratory measurements of black carbon and co-pollutants emissions from brick kilns, oil and gas operations, cook stoves, on road diesel vehicle emissions and development of emission factors. For the artisanal production of bricks, there were measurements to determine the fuel, energy, and brick-based emissions factors as well as time-based emission ratios of BC, OC, inorganic PM components, CO, SO₂, CH₄, NO_x, and selected VOCs. Those measurements were performed at two traditional artisanal kilns and one MK2 kiln, using the tracer ratio sampling technique with the Aerodyne Mobile Laboratory. Simultaneous measurements of PM components, CO and CO₂ were also obtained using a filter-based sampling probe technique. As part of the results, there are several publications in specialized journals, with a full list of publications included in Appendix J of the Projects Final Report.
152. For cook stoves, it was confirmed that there is a large variability in the results of emission factors, as reported in the literature (Appendix D: List of Publications); that results from the multiple influencing factors, for example: of operating conditions, cooking practices, cook stove's design and materials, fuel characteristics, cooking cycles, among others. All these parameters do vary under real-world cooking conditions by location. Overall, cook stoves performance evaluation must focus on the main cooking tasks. The field tests are very useful in estimating the emissions rate during typical daily cooking activities in a rural household. The project report states that part of the significance of this project is that this is the first approach to evaluate performance of improved wood-burning cook stoves and open fire stoves using a laboratory protocol such as WBT and Controlled Cooking Test (CCT) in Mexico. It is also important to note the involvement of local women in this aspect of the project which helped to strengthen the satisfactory rating on the gender and human rights performance factor.
153. Regarding on-road diesel vehicles, emissions were measured from a group of 20 diesel-powered vehicles in both controlled experiments and real-world on-road driving conditions, using the AML. Additional measurements included the use of a cross-road remote sensing unit for the co-sampling of all tested vehicles, and the installation and operation of a Portable Emissions Measurements System (PEMS) to measure emissions in one of the vehicles. Additionally, with respect to the production of emission factors of black carbon and pollutants, comparison of the generated results versus emissions factors produced with the model MOVES 2014 adapted to Mexico is quite relevant. MOVES 2014 adapted to Mexico is a model developed by the US-EPA for estimating on-road emissions in the US at national, state, county, and project level; it incorporates emissions data obtained from field studies over a wide range of vehicle types, pollutants, emission processes, fuel types, and operating modes. It was adapted to Mexico in a

project supervised by INE, by adjusting emissions factors for gasoline vehicles considering the control technologies, fuels and deterioration rates. Nevertheless, no adjustment was done for the diesel vehicles. The results of the comparison point out that MOVES 2014 adapted to Mexico underestimated the CO, OC, and selected VOCs, but had better agreement for NO_x and BC emission factors. The final report states the need to adjust the model with local data when used outside the USA, to reduce uncertainty and improve results when it is used to assess emission reduction interventions. The final report also stresses the necessity of life cycle considerations when assessing the convenience of policy interventions that impulse shifting from diesel to natural gas technology to avoid particles emissions from diesel engines, fugitive emissions of natural gas along its life cycle make that the increased impact over climate to offset the advantages of reduced PM emissions. The limited availability of ultralow sulfur diesel fuel in the country has been a limiting factor for the market penetration of EPA-2010/Euro-VI diesel technology in Mexico and makes natural gas technology to appear as an alternative to reduce particle matter emissions. Section G10 in Appendix G of the final report presents a list of relevant SLCF Mitigation Policy Recommendations that could guide the decision making for policy interventions.

154. Off-road vehicles are not listed among the other categories in the outputs of Activity 1.4 because it was not in the original proposal, but was added as an additional complementary activity. According to the Project's Final Report this is the first pilot study of emissions from off-road vehicles (construction and farming) in Mexico. The project team measured particulate matter and gaseous emissions of eleven diesel-powered off-road mobile sources under real-world operating conditions, using on-board portable emissions measurements systems (PEMS), with and without emissions control devices. The selected vehicles / engines included two backhoes, one tractor, a crane, an excavator, two front loaders, two bulldozers, an air compressor, and a power generator. For a selected number of these vehicles, the emissions were further characterized with wall-flow diesel particle filters (DPFs) and partial-flow DPFs (p-DPFs) installed. The Project's team conclude that the results from the pilot study suggests there is the need for further studies of the emission characteristics of off-road vehicles under real-world operating conditions, to refine and increase the available datasets of emission factors for inventory purposes; given the potentially large emission reductions involved, there is a strong need to further study the emission benefits of control technology for retrofitting diesel-powered vehicles in Mexico.
155. Referring to Activity 1.7. Methane emissions from enteric fermentation (cattle), methane emission by livestock were measured for the first time in Mexico using two different methods (High time resolution in-vivo measurements of methane fluxes and the Respiration Chambers Technique) in two different climate regions (the temperate climate zone of central Mexico and the tropical region of southern Mexico). Methane emissions were measured in dual purpose Cebu and Holstein cows with two different feeding strategies (one of this is the business as usual and the other the emissions mitigation strategy). The Project's Final Report affirms that information generated in the respiratory chamber in the tropical region demonstrated the significant contribution of

cattle consuming tropical grass to methane emissions and the possibilities of reducing such emissions by means of the manipulation of rumen fermentation in both cattle and sheep and points to the need for further research to find the adequate levels of inclusion of these substances to avoid or minimize negative influence over the cattle performance in terms of milk yield or weight gain. The results suggest that methane emission factors for tropical cattle in Mexico are lower than previously reported in literature for cattle in similar regions of the planet feed with similar grasses. The Project Final Report mentions that methane emissions factors for high yielding dairy cows and dual-purpose cows measured using the dual tracer method were higher than obtained from the respiration chamber method, although within the range of uncertainty. It is also mentioned that both the dual tracer and respiration chamber methods captured the significant observation that the dual use tropical cattle had much lower emissions than their temperate counterparts.

156. Related to Activity 1.8 Development of model-ready emissions data, the process of preparation of emissions data sets to feed into models is time intensive. There were different computing models used in the process for this Activity. LEAP-IBC (Long-range Energy Alternatives Planning System-Integrated Benefits Calculator) is a tool that can be used to calculate human health, vegetation and climate benefits for a target country resulting from addressing short-lived climate pollutants. It was used to assess the mitigation benefits for health and crops associated with PM and ozone. LEAP-IBC links emissions to the GEOS-Chem global chemical transport model to estimate the concentrations of PM and ozone, and subsequently calculates the benefits of SLCF mitigation for health and crops using concentration-response functions for related mortality of PM and ozone and for crops impact from ozone. Additionally, projection of future emissions inventories produced were fed into the Weather Research and Forecasting model coupled to Chemistry (WRF-Chem) which is the model used by the Project's team to assess the regional impacts of different emission sources of ozone precursors, BC, and PM_{2.5} on air quality in Mexico, comparing the situation in 2008 and that in 2030 under diverse emissions reduction scenarios.

8.1.1. Output 2. Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico.

157. The output 2 has been rated **Highly Satisfactory** since all planned/approved activities were delivered at the time required to maximize their intended use and are deemed to be of excellent quality / utility by users and reviewers. For example, the integrated evaluation of selected mitigation measures was based on data from mitigation assessments performed with the help of different models and development of SLCF mitigation scenarios and implications for climate, health and agriculture. There is also a

high level of user ownership, since intended users of key outputs were closely involved in and participated in their preparation.

158. The project final report contained the mitigation measures proposed for each sector, with the corresponding emissions reduction. The Molina Center was executing for both this project and CCAC–SNAP, allowing for further joint analysis. This project also received research support on cost curves from the USAID–MLEDS project; SLCF reduction measures were compared with all mitigation measures. Based on this analysis, the project team and UNAM did further modelling of various scenarios.
159. On Activity 2.1. Preliminary selection of SLCF mitigation measures and evaluation of mitigation potential, there is a language change in the title, from how it is presented in the CEO Endorsement Approval document to how it is written in the Project’s Final Report. The original language used says: “Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico”. Some interviews with the MCE2 and INE personnel, as well as the Final Report, have explained that simultaneous to this project, the MCE2 was coordinating the CCAC-SNAP Project, that resulted in the publication of the technical report, “Supporting National Planning for Short-lived Climate Pollutants Initiative (SNAP) in Mexico” (first part), which describes how the analysis from the joint effort has resulted in the identification of potential mitigation measures that could be introduced in Mexico to reduce black carbon and methane emissions, and the relevant pathways for implementation.
160. Following the publication of the SNAP-1 document, the project team continued evaluating selected mitigation measures, using improved emission factors and activity data available to estimate potential emissions reductions for methane and black carbon, with the support and collaboration of INE personnel. This process led to the development of the mitigation scenarios and the estimation of health and crop benefits presented in Section 3.2 Emissions Reduction of Mitigation Measures of this Project’s Final Report. The project team has also estimated the health benefits for the projected emissions reductions for the year 2030 resulting from the implementation of the Nationally Determined Contributions (NDC) the Paris Agreement, submitted by Mexico to the UNFCCC.
161. In the Project’s Final Report, Table 3.2 Mitigation measures of BC and CH₄ emissions for each sector in 2030, presents the list of mitigation measures considered for each sector, as well as a potential emission reduction. From those, only the one with the biggest mitigation potential was selected and subject to further analysis. The Section 3.2.1 NDC Emission Mitigation presents the mitigation measures included into the Mexican NDCs and their mitigation potential for the year 2030.
162. Regarding Activity 2.2. Integrated evaluation of selected mitigation measures based on improved emission data and data from mitigation assessments with the help of the WRF Chem model and development of SLCF mitigation scenarios and implications for climate, health and agriculture. The Project’s Final Report discusses some of the different models that were used to estimate the benefits of emissions reductions resulting from the measures that can be taken to reduce emissions of methane, black carbon and ozone

precursors. Those models need different data sets to be feed in, including emissions and in the case of WRF-Chem, meteorology. There were different computing models used in the process for this Activity. The LEAP-IBC (Long-range Energy Alternatives Planning System-Integrated Benefits Calculator) previously mentioned was used to assess the mitigation benefits for health and crops associated with PM and ozone. LEAP is a widely-used software tool for energy policy analysis and climate change mitigation assessment developed at the Stockholm Environment Institute (SEI)¹². LEAP-IBC links emissions to the GEOS-Chem adjoin global chemical transport model to estimate the concentrations of PM and ozone, subsequently calculate the benefits of SLCF mitigation for health and crops using concentration-response functions for related mortality of PM and ozone and for crops impact from ozone. GEOS-Chem is a global 3-D chemical transport model (CTM) for atmospheric composition driven by meteorological input from the Goddard Earth Observing System (GEOS) of the NASA Global Modeling and Assimilation Office¹³. Additionally, projection of future emissions inventories was produced to be feed into the Weather Research and Forecasting model coupled to Chemistry¹⁴ (WRF-Chem) which is the model used by the Project's team to assess the regional impacts of different emission sources of ozone precursors, BC, and PM_{2.5} on air quality in Mexico, comparing the situation in 2008 and that in 2030 under diverse emissions reduction scenarios. The WRF-Chem simulates the emission, transport, mixing, and chemical transformation of trace gases and aerosols simultaneously with the meteorology. The model is used for investigation of regional-scale air quality, field program analysis, and cloud-scale interactions between clouds and chemistry¹⁵.

163. Concerning Activity 2.3 Cost and benefit analysis of selected mitigation measures and prioritization of evaluated mitigation measures, it is relevant to note that the project team estimated the cost to benefit ratio for implementation of the identified measures for three sectors: 1) cook stoves, b) brick kilns and c) transport. Mexico's Federal Government through SEMARNAT and INE has been addressing this issue and published in May 2018 a report titled "Costs of the Nationally Determined Contributions of Mexico. Unconditional Sector Measures" (in Spanish)¹⁶. The production of this report is the result of a two-year process that started in May 2016 and required the participation of several Ministries of the Federal Government, with the support from international cooperation agencies like the Mexico-Denmark Climate Change Mitigation and Energy Program (CCMEP), the UN Development Program (UNDP) and international NGOs like World Wildlife Fund (WWF), among many others stakeholders and technical support participants. Even though this report, published two years after the end of the Project

¹² With information from <https://www.energycommunity.org/>

¹³ With information from: <http://acmg.seas.harvard.edu/geos/index.html>

¹⁴ The official web site for the model is in the following address: <https://ruc.noaa.gov/wrf/wrf-chem/>

¹⁵ This description is taken from the webpage of the National Center for Atmospheric Research – Atmospheric Chemistry Observations and Modelling (NCAR - ACOM) at: <https://www2.acom.ucar.edu/wrf-chem>

¹⁶ Costos de las Contribuciones Nacionalmente Determinadas de México. Medidas Sectoriales No Condicionadas. Informe final. Instituto Nacional de Ecología y Cambio Climático (INECC, 2018), México. Available at: https://www.gob.mx/cms/uploads/attachment/file/330857/Costos_de_las_contribuciones_nacionalmente_determinadas_de_Mexico_dobles_pginas.pdf

could provide the cost information for the selected mitigation measures included in the NDCs, but still there is no costs information of the other mitigation measures included in the benefits scenario.

164. The Project's team received some technical support from the United States Agency for International Development (USAID) and supported Mexico Low Emission Development Strategy (MLEDS) project on cost analysis of the mitigation measures. The MLEDS team developed the cost curves that include both the cost of mitigation (in terms of carbon dioxide equivalent or CO₂eq) and the mitigation potential for each mitigation measure. Such analysis was performed using a methodology developed for this type of analysis by the Climate Works Foundation (CWF). The intention was to allow the comparison between SLCF mitigation measures with all other mitigation measures. The project also did "what if" analysis, for example, what if there were no cook stoves replacement programs? This analysis was performed by team members from the Center for Atmospheric Sciences (CCA) at the National Autonomous University (UNAM).

8.1.2. Output 3: Demonstration of SLCF mitigation technologies for key sources.

165. The output 3 has been rated **Highly Satisfactory**, since most (81-99%) of the planned/approved activities were delivered fully. The most important outputs to achieve outcomes were delivered in time to allow high levels of use. Nearly all the delivered outputs, including the most important to achieve outcomes were deemed to be of very good quality / utility by users and reviewers. For instance, the project produced emissions data from off-road diesel fueled vehicles for the first time in Mexico. Also, there is evidence of good levels of user ownership - intended users of key outputs meaningfully involved in / party to their preparation.
166. Activity 3.1. Demonstration of selected SLCF mitigation technologies and evaluation of mitigation potential (diesel, cook stoves, brick kilns, livestock enteric fermentation). The project demonstrated mitigation strategies, including: a) The use of diesel particle filters to remove black carbon emissions from on-road and off-road vehicles; b) The use of improved wood-burning cook stoves and brick kilns in reducing black carbon and co-pollutants emissions; c) The effect of different anti-methanogenic fodder plants and treatment compounds for reducing methane emissions in two species of cows in two different regions. Although this Activity does not mention the emission reductions in WWT, the Final Report includes the demonstration of mitigation strategies of different

technologies (activated sludge with anaerobic digesters, up-flow anaerobic sludge blanket, and stabilization ponds) for reducing methane emissions from WWTP.

167. Activity 3.2. Cost and benefits analysis for three sectors (transport, cook stoves, and brick production) were estimated. The results show that upgrading cook stoves has the largest benefit/cost ratio, followed by the cleaner diesel vehicle technology scenario.

8.1.3. Output 4: Integration of SLCF mitigation measures into LEDS.

168. The output 4 has been rated **Highly Satisfactory**. There is only one activity under this output: Activity 4.1. Embedding of priority mitigation policies in the context of Mexico's LEDS. The contributions from this project made synergies with other initiatives, informing climate policy and further assessments and realization of co-benefits.
169. The evaluation also concludes that the project successfully influenced major components of the Mexico's Low Emissions Development Strategy (LEDS) because of the significant influence on helping decision makers and technical personnel to better understand key components of their objectives, long-term vision and actions needed to deal with the challenges of climate change. The project helped to put attention to include black carbon in the emissions inventory as part of the Fifth National Communication, the Mexican National Strategy on Climate Change and the Special Climate Change Program through inclusion of BC emission reductions interventions and the inclusion of BC as part of the NDC submitted by Mexico to the UNFCCC in December 2015. The project's final report affirms the role as part of Mexico's efforts towards the LEDS process. While this is therefore considered **Highly Satisfactory** overall, it should be noted that increased attention might have also been given to more specific discussion in the final report of the status, progress and methods of integration within MLEDS.
170. This report previously mentions the critical role of USAID in providing support for the MLEDS process in Mexico. The analysis of project activities also has discussed the integration with MLEDS activities such as cost analysis of the mitigation measures. The evaluation concludes that the project successfully influenced major components of the Mexico's Low Emissions Development Strategy (LEDS) because of the significant influence on helping Mexico better understand key components of their objectives, long term vision and actions needed to deal with the challenges of climate change. MLEDS has been working to further the goals the General Law on Climate Change, tools for measuring reporting and verification and encouraging implementation of renewable energy projects with INE playing an important role in the process.
171. This project furthered these aims helping influence attention to black carbon in the inventory in the Fifth National Communication, Mexican National Strategy on Climate Change and Special Climate Change Program through inclusion of emission reductions of SCLF's as part of climate change mitigation and the submission and inclusion of BC in the NDC submitted by Mexico to the UNFCCC COP21 in Paris in December 2015 and BC emission inventory as part of the CCAC SNAP I initiative that Mexico delivered to the CCAC in September 2013. In July 13, 2018, the latest reform to the General Law on

Climate Change was published. Among other things it includes the mitigation goals of the country included in the NDCs. It is hard to know to what extent this specific project influenced this decision but it did influence policy makers according to interviews.

172. The project's final report affirms the relationship of the project as part of Mexico's efforts towards the MLEDS process. USAID, also made contributions to the project in the area of assessment of emissions from off road vehicles. INE has played an instrumental role in coordination between MLEDS and this project. While this is therefore considered quite **Satisfactory** overall, it should be noted that two areas might have improved including a) more detailed discussion of this coordination and linkage in the projects final report and b) it is also noteworthy that USAID also did appear to have a prominent role in project meetings or as a project partner, although INE played a lead role.

8.1.4. Output 5: Capacity building and awareness raising.

173. The output 5 has been rated **Highly Satisfactory** since all planned/approved outputs were fully delivered, and also deemed to be of excellent quality / utility by users and reviewers. It is also observed a high level of users and team partners' ownership. For instance, the updated black carbon inventories developed inputted into CCAC – SNAP and the mitigation measures were included in the LAC report by CCAC/ UN Environment. With INE, the project trained university students and Mexican officials in air quality sampling methods, climate action planning and prepared guidance documents for future use. The students have since published PhDs drawing on their related training in sampling, modelling and analysis.
174. Activity 5.1 Organization of training on applied measurement methodologies and modeling tools. The training activities on applied measurement methodologies and modeling tools occurred along the implementation of the project. The Project's Final Report mentions that several postdoctoral associates, graduate students and undergraduates from Mexican institutions and technical personnel from government agencies were involved in the field measurements. They participated in various aspects of the project, worked with experts in atmospheric sciences and Mexican officials involved in air quality management and climate action planning, participated in international conferences, presented key results derived from this project and prepared manuscripts for peer-reviewed journals. The MCE2 hosted a Ph.D. student and an undergraduate student who spent several months at the Center analyzing the field data and conducted literature survey with support from the Center staff. In this way, the project provided an opportunity to raise awareness, build capacity for research, education, and policy as well as contributed to international exchange.
175. Related to Activity 5.2. Development and dissemination of education and outreach material on requirements for developing SLCF emission inventories and on selecting and evaluating targeted SLCF mitigation measures, a Guidance Document for Addressing SLCF Emissions and Impacts was developed as part of the Project's results. It is included as Appendix K to the Project's Final Report. In addition to the presentations shown in the

Project's technical meetings, there were also presentations at international conferences delivered by Project researchers and students that participated in the field campaign or the following analysis of results. As result, several manuscripts have been prepared or submitted or published by different journals. There have been Project's results presentations at the plenary of the CCAC and also presentations at the American Geophysical Union (AGU). The PhD student work on wastewater treatment plants resulted in two published papers on emission factor improvements to the ones proposed by the methodologies of the IPCC. From the modelling part there was no publication apart from the Project's Final Report. The black carbon and co-pollutant emissions data developed as result of this project have also been provided to the CCAC-SNAP Initiative and was the basis for three relevant publications that have been published after the end of the project:

- "Integrated Assessment of Short-Lived Climate Pollutants in Latin America and the Caribbean", (UN Environment, CCAC, 2018).
- "Integrated Assessment of Short-Lived Climate Pollutants in Latin America and the Caribbean: Summary for Decision Makers", (UN ENVIRONMENT, CCAC, 2018).
- "Progress and Opportunities of Reducing Short-lived Climate Pollutants across Latin America and the Caribbean", (UN ENVIRONMENT, CCAC, 2018).

176. Some publications provided to the evaluation team, for example Medina, et al (2017); Santiago-De La Rosa et.al (accepted for publication); Ortinez-Alvarez A, et.al. (2017) do not specifically mention / acknowledge the project. Although this demonstrated continuity and synergies with other initiatives, it may create some confusion with respect to formal linkages and attribution. Additional clarification indicated that some of the publications listed were complimentary to the project although they were funded by other sources.

177. Activity 5.3. Organization of technical workshops and outreach meetings. The MCE2 together with INE, organized four technical project meetings devoted to presentation, discussion and evaluation of generated data and mitigation strategies. These meetings were attended by project participants, collaborators from government agencies, private companies and representatives from the UN ENVIRONMENT, the implementing agent. The four meetings and the dates when those had place were:

- First Project Meeting (April 24th, 2013).
- Second Project Meeting (October 17th, 2013).
- Third Project Meeting (July 1st, 2014).
- Fourth Project Meeting (November 18th, 2015).

178. Previously to the project, in 2011 the MCE2 in collaboration with INE, hosted several workshops on the science and policy of SLCFs, previous to the Ministerial Meeting on

SLCFs hosted by GoM and attended by high-level representatives from more than 20 countries, to promote international cooperation on SLCFs.

179. Regarding Activity 5.4 Presentation of project results in scientific meetings and publications in peer reviewed journals. Project investigators and students presented key results at project meetings, workshops and international conferences. Several manuscripts have been submitted and published, and some are under preparation. In addition to the various publications which often take time for production and peer review field interviews also affirm that various doctoral thesis were also developed as a result of the project. There is a relatively high level of diversity by gender in this phase of the project.
180. Concerning Activity 5.5 Monitoring and evaluation, the CEO Endorsement Approval document includes Annex A: Project Results Framework; this framework was relevant along the Projects implementation to monitor and report the progress achieved by the Project. It is not clear that it was appropriate to group M & E as a formal project activity in the way it was organized in this project. M and E issues are further analyzed in detail in the section on Monitoring and Evaluation of this report.
181. Communication and public awareness is linked to the discussion of capacity building and awareness raising as one of the factors affecting performance. This is rated **Moderately Satisfactory**. The project included some aspects of communication and public awareness. There is evidence of some general news and media reports that resulted from the project that was presented. In addition, the project generated a large number of publications, although these are more appropriate for specialized audiences rather than the general public. As noted previously in the design section there did not seem to be a detailed communication plan incorporated into the design. This may have been a missed opportunity since the project generated a large array of presentations that were disseminated through project meetings which seemed aimed primarily, with highest attendance, by those with close relationships to the project rather than seeking to engage a wider audience. This may be due to the technical nature of many aspects of this project. In terms of information on the project the MCE2 website includes information on the first three project meetings but not the last meeting however access at the time of review of this site seemed to be restricted in terms of needing a user name and password. Additional clarification indicated that this was because these results were preliminary and there was concern about being quoted by readers before completion of the final analysis.
182. Stakeholder Participation was another relevant factor affecting performance strongly related to the activity of capacity building and awareness which is rated **Satisfactory**. A wide array of stakeholders including government, NGO's, academics and civil society members were actively involved and engaged in the project. This is discussed in the tables in the Appendix H. Stakeholder Analysis: Project Design and Implementation in the stakeholder discussion and analysis including their participation in project meetings. It should be recognized that this project was highly technical in focus, presenting some challenges with respect to participation and communication. At the same time, there is evidence of working with an array of varied types of stakeholders at appropriate stages

of the project as part of the effort to negotiate moving forward project goals. Thus, participation was both broad, but at the same time somewhat focused, which speaks to a relatively strong effort towards what was needed based on the demands of this project.

Rating of Delivery of Outputs: Satisfactory

8.2. Achievement of Direct Outcomes

183. The achievement of the direct outcomes has been rated **Satisfactory**, as **Direct Outcomes One**: The scientific community follows up SLCF emissions and mitigation technical and policy oriented research projects **and Direct Outcome Three**: International partners are aware of the mitigation potential and of the benefits of SLCF policies, **have been achieved and Direct Outcome 2**: Project participants and trainees, the scientific community, other policy relevant organizations (including at sub-national) have increased capacity to perform measurement and to model projection of SCLF emissions and mitigation potentials and co-benefits, **has been partially achieved**. All identified assumptions between the outputs and direct outcomes hold and all but one driver is in place, while the remaining one is partially in place.
184. Direct Outcome 1: The scientific community follows up SLCF emissions and mitigation technical and policy oriented research projects.
185. **This direct outcome has been achieved**. Several PhDs, Masters and follow up research projects have used project information and/or methodologies. The intense interaction between the science community and the policy-making institutions (such as SEMARNAT, INE or state/city level governments), ensure that several channels (each student, professor, project) are established (presently and in the future) between project generated knowledge and Short-lived climate forcers and Climate Change decision-making (relevant for medium-term outcome 2, as well as medium-term outcome 1 in relation to the elaboration of inventories). In this context, in relation to factors affecting performance, the team rates the Stakeholder participation and cooperation as **Satisfactory**.
186. During the interviews, the Evaluators were made aware of several initiatives started during the project, using project-generated knowledge, methodology or follow-up project results. Several researchers continue to work on SLCF issues, including publishing papers and defending PhD thesis based on project results. Some examples of scientific work include:
- Continued use of LEAP-IBC by graduate and undergraduate students
 - PhD thesis CH4 emissions from wastewater treatment plants
 - Two PhD thesis on emissions from cook stoves and biomass burning
 - Publication of articles with proposed Emissions Factors with a view to its integration in the IPCC default EF database
 - 1 master thesis

187. Perhaps one of the most notable initiatives is one located at UNAM for the installation of a national network for measurement of black carbon, comprising 10 cities one BC monitor each. Interviewees pointed out, however, that lack of funding may jeopardize the initiative.
188. The most important driver identified by the Evaluators related to the transition between outputs 1-3 and this outcome is “Participation of INE, of other policy relevant organizations (including at sub-national level) and of the academia in the measurements contributes to buy-in of outputs”. This driver, focused on what many academics are concerned, seems to be fully in place. There were no relevant assumptions identified for this outcome.
189. It is also important to recognize once again the influential role and catalytic impact of the project leadership (the described “Eye of the Storm” seen in Fig. 8) discussed in the section on Strategic Relevance in facilitating and driving connections.

8.2.1. Direct Outcome 2: Project participants and trainees, the scientific community, other policy relevant organizations (including at sub-national) have increased capacity to perform measurement and to model projection of SCLF emissions and mitigation potentials and co-benefits

190. **This direct outcome is only partially achieved.** Currently, only at the academic level can a considerable capacity increase (and prospects of maintenance) be noticed. While there are instances of capacity building at the level public administration (federal, state and local), this does not seem to be structured or comprehensive. The team recognizes that the project did not include what was labeled as trainings or other specific capacity building focused activities (although there were project meetings, workshops and capacity building among those involved in various tasks), which may explain the lower levels of awareness of project methodologies and results outside the restricted number of staff that participated directly in the project.
191. Nonetheless, the team must note that, in accordance with interviews, this project is part of a strategic approach to capacity building in Mexico that started with the initiative “Emerging Themes” (where burning issues for Mexico in the environmental field were identified, including SCLF – with the participation of project coordinator). Interviewees stated that this structured, continued approach contributes to capacity maintenance, as knowledge and skills acquired in one project or initiative will be used in subsequent projects.
192. Interviewees have highlighted some areas where, in their opinion, capacity has been built or which project elements contributed more for capacity building:
 - Enhanced capacity on generation of local data to replace IPCC default emission factors
 - Enhanced grasp of field work methodologies

- Enhanced capacity in the use of the model LEAP-IBC: after this project, several students used LEAP; it is now made available for any organization wanting to use it in Mexico (with no cost for NGOs)
 - Cooperation with Aerodyne was an important capacity building element
 - Knowledge transfer not only through published papers, but through direct interaction, namely with INE staff
193. Other evidence of capacity building from which Mexico will continue to profit include:
- New project with UNAM for the installation of a national network for measurement of black carbon in about 10 cities (however, lack of funding is an issue).
 - Mario Molina Centre (in Mexico) is working in cost curves with industry in particular. Focused on GHG, but crossing over to air quality to profit from synergies. Not using directly results from GEF project but is aware that indirectly it is profiting from capacity that project built.
 - After the project, PEMEX started making (non-permanent) measurements both for CH₄ and BC.
 - After the project, Instituto Mexicano del Petróleo has started several measurement projects/initiatives. Mostly on CH₄.
 - One project team member is now advising the government of Guanajuato precisely on modernizing kilns.
194. Three assumptions identified for the transition between Output 5 and Direct Outcome 2 hold:
- Staff turnover is adequately managed so that capacity is not lost at the organizational level
 - Other initiatives, such as SNAP also contribute to capacity building
 - Science institutions (such as universities) continue to support post-graduate programs on these matters
195. There is evidence of staff permanence at federal organizations such as INE, but also of staff rotation into jobs where skills previously acquired are relevant.
196. Drivers identified are mostly in place, namely with regards to the engagement of the adequate stakeholders in the project activities.
197. The team notes, in relation to factors affecting performance, that due to the scientific nature of the project, focused mostly on determining local emission factors and modeling mitigation potentials and co-benefits, stakeholder engagement was limited. This, in the Evaluators' view does not hinder project quality. The Evaluators note,

however, that the lack of a clear project results dissemination plan, reduces the ability for a more widespread capacity building and maintenance.

8.2.2. Direct Outcome 3: International partners are aware of the mitigation potential and of the benefits of SLCF policies.

198. **This outcome has been achieved.** The team notes, however, that this is the case because the project is part of a medium-long term strategy by Mexico to increase knowledge and raise the political importance of SLCF mitigation both domestically and internationally. Strictly considered, in isolation, the team considers that project activities and outputs would most likely not have achieved this outcome and that the catalytic effect of the Molina Centre (namely its networking) might have played an important role.
199. Mexico's key international platform to engage on this matter is the Climate and Clean Air Coalition, of which it was a founding member. This project profits from many synergies with the SNAP projects (Supporting National Action and Planning on Short-Lived Climate Pollutants), which are funded by the Coalition.
200. The CCAC is an important forum for exchange of information and practices on integration of climate change and air pollution policies, which so far are mostly uncoordinated all over the world.
201. In accordance with an interviewee, Mexico is a leading country, but more on the climate change arena rather than on air quality. The project and the country's engagement in the CCAC will allow it to also lead on the SLCF front.
202. Canada, the USA and Mexico (the administrations of Trudeau, Obama and Peña) signed an agreement to reduce fugitive methane emissions from oil and gas by 40 to 45%, which created an opportunity for Mexico to share information on SLCF with international partners. However, change in administration in the US has halted this cooperation stream.
203. The assumption (the CCAC provides a platform for international sharing of experience on SLCF inventory methodologies and mitigation policies, including potentials and benefits) holds, and the driver (project information is disseminated internationally, namely in the scope the CCAC and of science for a) is in place.

Rating of Project Achievement of Direct Outcomes: Satisfactory

8.3. Likelihood of Impact

8.3.1. Achievement of medium-term outcomes

204. As mentioned in the methodology, the Likelihood of Impact examines whether the following are in place:
- assumptions and drivers between the direct outcomes (achieved 1-2 years post project completion) and the medium-term outcomes (5- 7 years post project completion)
 - assumptions and drivers between the medium-term outcomes (5- 7 years post project completion) and the intermediate states (8 plus years post project completion) and the (much longer term) impact
205. The medium-term outcomes, the intermediate states, the impact and the relevant assumptions and drivers are described in detail in the section on the Theory of Change.
206. Taking the above into account, the team **rates the project impact as Likely**, noting that the implementation of recommendations, in particular those directly related to drivers (namely in relation to sharing project results with policy makers at federal, state and city levels), could create the conditions for a highly likely impact.

8.3.1.1. Medium-Term Outcome 1: INE and other policy relevant organizations (including at sub-national level) elaborate higher accuracy emissions inventories¹⁷.

207. This medium-term outcome is highly likely to be achieved.
208. Evidence from interviews confirmed that Mexico City is integrating project Emission Factors into its update of SLCF EF database while finalizing the 2016 inventory.
209. In addition, interviews indicated that the Federal Government will only use the project's emerging emission factors (being peer reviewed at the time of this evaluation), once they are published (this is a key assumption for the achievement of this intermediate outcomes and it holds). In this context, the latest Emissions inventory¹⁸ that was submitted as part of the 6th National Communication (NC) in the 28 of November 2018, still does not include such EF. Project team members are, nonetheless, already contributing to the 6th National Communication on the state of the art on the atmospheric chemistry in relation to SLCF.
210. Beyond the direct influence described above, the project's indirect influence is visible through the adoption of some methodological approaches by INE and in turn, the broader

¹⁷ It has been labeled as medium-term due to the periodicity in which inventories are prepared and due to the fact that INECC only uses Emission Factors that have been published in peer reviewed magazines.

¹⁸ Mexico's commitment under the Climate Change Convention requires it to submit inventories every two years, but the pace of submission has been much slower recently.

scientific community, which provides inputs (and often consultancy) for the elaboration of inventories.

211. Furthermore, the following three assumptions also hold:

- Monitoring and addressing air quality (including SLCF) remains high on the political agenda at national and sub-national levels – there is no indication that in the medium-term (a 6-year administration took office in November 2018), will not keep this issue high in the agenda.
- The scientific community follows up on project results, for example, by measuring a larger sample of emission sources at regular intervals – as can be seen in the description of the achievement of direct outcomes 1 and 2.
- High quality estimates of SLCF emissions are included in the inventories, in the national communication and in the Biennial Update Reports (BUR) – the 5th NC and the 1st BUR set the benchmark for the inclusion of SLCF emissions in the inventory. The 6th NC, reportedly, also includes the SLCF emissions inventory.

212. The drivers identified are mostly in place:

- Participation of INE, of other policy relevant organizations (including at sub-national level) and of the academia in the measurements contributes to buy-in of outputs – in place; the team was made aware of the close interaction and cooperation among the actors mentioned (please also refer to description of achievement of direct outcome 1 and 2).
- Outputs are shared with targeted users (namely at INE and at other policy relevant organizations - including at sub-national level), beyond the mere publication in science magazines – the team notes that this is still not fully in place.
- Results will be peer-reviewed and published –there is extensive evidence of publications that have been continuing to be accepted in scholarly journals post project, including of the EF.

8.3.1.2. Medium-term Outcome 2: SEMARNAT, INE and other policy relevant organizations (including at sub-national level) develop science based SLCF mitigation strategies, including LEDS.

213. **This medium-term outcome is likely to be achieved:** while the assumptions hold, additional efforts need to be made to ensure the drivers are in place, namely in relation to sharing project results with policy makers at federal, state and city levels.

214. The analysis of current policy documents (such as the Climate Change Strategy, the Special Climate Change Plan, the Nationally Determined Contribution and the 5th National Communication), show the inclusion of SLCF mitigation policies: nothing was

brought to the attention of team that may lead to believe that this will change in the future.

215. Additionally, several interviewees noted that the project conclusions are extremely relevant to policy and therefore will most likely be taken into account. The team notes however, that there was a change in administration during the evaluation and that it was not possible to interview anyone (other than informal advisors on transition) from the new administration.
216. Several interviewees acknowledge the indirect (informal) influence of the project results in some of the current policy documents:
- “These are background studies, extremely important for decision making. Not possible to say what would have happened if this study did not exist, as this was a priority for Mexico before. What can be said is that the quality of the measures, the proposals included in NDC and PECC would not be as high.”
 - “For the INDC, Luisa’s expert advice was taken into account, but not the figures of the project, because they were draft and had not been peer reviewed.”
 - “Luisa’s rigor, depth is taken to the level of obsession” and therefore her work is very legitimate for policy decisions. As soon as there are clear signs of a pathway, we take it.”
217. While INE only wants to use EF in the inventory once they have been published and peer reviewed, data such as that created through the project outputs are sufficient for public policy (“they are from the technical and scientific world, we are from politics”).
218. As far as the team is aware, the Assumptions below hold:
- Project reports findings and recommendations on methane and BC emissions, energy efficiency and mitigation alternatives inform air quality policy and climate change policy – the team found policy makers aware and enthusiastic about project findings. There is evidence of informal influence on current policies. The team was not made aware of any circumstances that would lead to a change in this scenario.
 - Decision makers in the Federal Public Administration (INE, SEMARNAT and those referred to in Article 17 of the General Law on Climate Change; Inter-Ministerial Commission on Climate Change, Climate Change Council) and the States and Municipalities, are interested in the assessment and prioritization of SLCF mitigation measures – as for the assumption above, the matter of air quality, SLCF and climate change and the respective policy coordination, is high on the agenda of the federal government (SEMARNAT), of several state governments (such as Guanajuato or Jalisco) and/or city (such as Mexico City). The team believes that this situation will likely be maintained (in particular as air quality is a pressing issue, with clear immediate impacts on human health and agricultural yields and, therefore, with clear and immediate benefits when tackled).

219. The team believes that additional work needs to be done in order for the Drivers to be fully in place:
- Project works with three orders of government to share information on cost and benefits of SLCF emissions reductions; and prioritize interventions to mitigate emissions of SLCF (methane and BC) – additional efforts need to be made to share project results in addition to the publication of peer reviewed papers.
 - The Technical Report will be presented by INE to SEMARNAT and the parties to the Inter-Ministerial Commission on Climate Change (CICC) and the National System of Climate Change (that includes Federal, State and Local governments), to influence the decision-making process – this is yet to be done, but the team believes there is still time to do it ahead of the upcoming policy cycle.
 - Policy relevant information reaches decision makers during development of LEDES” requires additional effort to be fully in place. The team believes that there is still time to do it ahead of the upcoming policy cycle.
220. The team believes that the project communication and public awareness could have been more ambitious and structured. We believe that a more targeted communication of results beyond the mere publication of peer-reviewed papers, could have great impact in the project’s effectiveness and impact. As a factor affecting performance, the team rates the projects communication and public awareness at **Moderately Satisfactory**.

8.3.2. Intermediate States and Impact

221. The project impact is “Low Emissions Development in Mexico and in other national contexts, with reduced effects on human health, ecosystems and agriculture”.
222. The intermediate states and impact as well as relevant assumptions and drivers have been described in detail in the section on the Theory of Change.
223. Intermediate State 1: The Inter-Ministerial Commission on Climate Change adopts, as per proposal from SEMARNAT, Mexico’s LEDES incorporating priority SLCF mitigation policies is highly likely to be achieved. It is the natural follow up to medium-term outcomes 2 and 3. A LEDES can take many forms in Mexico, such as the Special Climate Change Program (SCCP), the Climate Change Strategy (CCS), or the Nationally Determined Contribution (NDC). Each of these LEDES has a specific cycle: the SCCP at

the beginning of each administration (every six years), the CCS at longer intervals (10-15 years or more) and the NDC (every 5 years, with the next foreseen for 2023).

224. In accordance with interviews, Mexico is also preparing (with international support) the road map for NDC implementation (2020-2030), which is also a relevant document.
225. In this context, Mexico is expected to adopt a SCCP in the first half of 2019 and an NDC road map before 2020.
226. For this intermediate state, the following assumptions are particularly relevant:
 - LEDS are updated and adopted at regular intervals
 - LEDS implementation roadmaps are designed
227. As explained above, these assumptions hold as both LEDS and implementation roadmaps will be prepared soon.
228. The driver “Project actively makes available emission inventories and models results for methane and BC to INE, the scientific community and other policy relevant organizations (including at sub-national level)” requires specific efforts to be in place.
229. **Intermediate State 2: LEDS including SLCF policies are implemented and MRVed in Mexico and in other national contexts** is likely to be achieved. It does not automatically flow from intermediate state 1: during interviews, the team was made aware that the implementation of the SCCP, for example, could be lagging behind. One interviewee also noted that MRV of measures was potentially not very effective. This may be an indication of potential capacity gaps in relation to implementation. However, one interviewee noted that “This is a state matter. Mexico has decided to act on these issues in an integrated manner and therefore does not believe that changes in administration will significantly impact the approach. The legal framework is established which provides some stability.”
230. In this context, the team believes that LEDS will be fully implemented, even if with some short to medium-term hesitations.
231. The following assumptions are relevant for this intermediate state:
 - Mexico elaborates and publishes emissions inventories, national communications and biennial update reports on a regular basis – this is relevant in particular for the MRV of measures. *The assumption holds as Mexico is regularly publishing National Communications and BURs, including inventories.*
 - Scientific community continues to enhance the quality of information on emissions, mitigation potentials and co-benefits. The assumption holds. This evaluation report highlights in several places the engagement of the capacity built in the scientific community in Mexico.
 - There is continued political and financial support to tackling SLCF at SEMARNAT, INE, the scientific community and other policy relevant organizations (including at sub-national level). *This assumption is believed to hold at least partially. There is evidence of continuous political support for CC and SLCF mitigation policies at the different public*

governance levels. There is less evidence of the availability of the required financial resources.

- A global climate change framework is in force. This assumption holds, as the Paris Agreement entered into force in 2016.
- There is a clear international framework for SLCF. *This assumption currently does not hold.*
- Staff turnover is adequately managed so that capacity is not lost at the organizational level. There is evidence of staff permanence and of rotation management. Therefore, the team believes the assumption holds.
- Project information is shared with international partners, namely in the scope of the CCAC and of scientific for a. This assumption holds, as there is extensive evidence of knowledge sharing. This assumption is particularly relevant for the last part of the intermediate state “...and in other national contexts.”

232. The driver: Project information is submitted to the IPCC and the IPCC includes them in its guidelines for inventory preparation *is partially in place. The team is aware that the emission factors have been submitted to the IPCC, but a decision on its inclusion on the IPCC methodologies will only take place in 2019.*

233. **Intermediate State 3: Increased energy efficiency and greater share of clean energy in Mexico and in other national contexts** is a natural consequence of Intermediate State 2: LEDS including SLCF policies are implemented and MRVed in Mexico and in other national contexts. Therefore, intermediate state 3 is as likely as intermediate state 2.

234. The assumptions and drivers are also applicable to both intermediate states and therefore, the assessment made above is sufficient.

235. The team believes that the country ownership and driven-ness of the project provides an important support for the effectiveness and for the likelihood of impact: Mexico has identified and prioritized tackling SLFC emissions in the context of its CC policy and is making great efforts to build an agenda on the topic both domestic and internationally. The team rates country ownership and driven-ness as **Highly Satisfactory**.

236. Taking the above into account, the team **rates the project impact as Likely**, noting that the implementation of recommendations, in particular those directly related to drivers, could create the conditions for a highly likely impact.

Rating of Project Likelihood of Impact: Likely

9. Financial Management

237. Project financial management is rated as **Satisfactory** overall. With respect to the completeness of financial information the necessary financial items required were determined to be **Satisfactory**. In the area of communication between financial and project management staff, the project was deemed **Satisfactory** because of the evidence that the project manager and FMO had relatively good awareness of the projects financial status, regular contact, evidence of proactive strategies to resolve financial issues and the fact that narrative and financial reports were reviewed.
238. This project is described in this report as a \$ 3 158,232, project rather than the \$ 23 403 213 million project originally estimated, since the classification of the large \$ 20 million grant from USAID as a “baseline” part of the project lends confusion to understanding project finances since this allocation did not play a direct project role. Interviews and reports reinforce the fact that that this amount is clearly baseline funding only rather than specific project funding related to implementation. Interviews affirmed that money was contributed towards MLEDS but did not play a specific role in the project. Thus, this figure is not added to the project total in the tables here. The \$ 20 million was transmitted by USAID for MLEDS, with one company tasked with responsibility for implementation. The funding helped finance a range of projects run by various private sector firms and NGO’s. The decision to show this funding as “baseline” in the original design document for this SCLF project was part of an effort to demonstrate that this project was part of a larger initiative to support LEDS. The actual direct project funding from USAID is noted below in Table 16.

Table 17 Financial Management Table

NON-GEF AND GEF PROJECTS			
Financial Management Components		Rating	Evidence/Comments
Completeness of project financial information		S	Good details and extensive financial documentation provided however some improvements suggested in small aspects of financial information noted below.
Provision of key documents to the evaluator (based on responses to A-G below)		HS:HU	
A.	Co-financing and Project Cost’s tables at design (by budget lines)	MS	The CEO Endorsement document contains both an original co-financing by source and UN ENVIRONMENT budget line and GEF project cost tables by component and UN ENVIRONMENT budget line—however original design tables and narratives on the role of the 20 million grant from USAID (e.g. as “baseline” versus direct project funding) lead to challenges with perception in implementation and reporting.
B.	Revisions to the budget	MS	There were two revisions to the budget. The first project revision (Revision 1) is 15/11/2013. There was also a Budget Revision in March 2015 labeled Rev 2 in March 2015. Steering committee members approved (discussed) although documentation does

NON-GEF AND GEF PROJECTS			
Financial Management Components	Rating	Evidence/Comments	
		not use the same form as Rev 1, which should have been corrected.	
C.	All relevant legal agreements (e.g. SSFA, PCA, ICA)	S	Reviewed signed PCA Sept 14, 2012 between UN Environment and Molina Center
D.	Proof of fund transfers	S	Reviewed summary of cash advances for the life of the project see narrative below
E.	Proof of co-financing (cash and in-kind)	MS	Final reports of co-financing provided show cash and in-kind; Includes co-financing reports of various project partners; only challenge is that one sheet of planned and actual co-finance for Molina Center does not have clear headings separating planned versus actual and there are no formal signatures; Discrepancies also may exist in the role of Mexican government in-kind funding (through INE) which is noted as providing this type of support (PIRS/interviews etc.) but there is no value documented in final in-kind reports
F.	A summary report on the project expenditures during the life of the project (by budget lines, project components and or on an annual level	HS	Final expenditure report by year made available to cover GEF funding (includes 5 subcontracts).
G.	Copies of any completed audits and management responses	S	Two audits were completed and made available to evaluators. Did not receive evidence of "management responses" but were informed that the audits were accepted
H.	Any other financial information that was required for this project	MS	Evaluation team sought additional clarification on co-finance documentation/ alignment of totals by budget line between figures in summary Report of Co-finance GFL-2328-2722-4C58) and attached documents Report of Planned and Actual Co-finance by Budget Line for various project partners but did not receive follow up, however informed that final clearance on this documentation was received by project manager Nov 2016.
Any gaps in terms of financial information that could be indicative of shortcomings in the project's compliance with the UN Environment or donor rules		S	The financial information is generally complete and there is no evidence of gaps in compliance with UN Environment or donor rules.
Project Manager, Task Manager and Fund Management Officer responsiveness to financial requests during the evaluation process		S	Project Manager, Task Manager and Fund Management Officer were all generally responsive to financial requests except one final question noted
2. Communication between finance and project management staff		HS	The project manager indicates that they spoke regularly including skype conversations and email. The regular communication is also confirmed by finance staff
Project Manager and or task manager level of awareness of the projects financial status		S	Both show awareness of project financial status

NON-GEF AND GEF PROJECTS		
Financial Management Components	Rating	Evidence/Comments
Fund Management officer's knowledge of project progress status when disbursements are done	S	Fund Management Officer report knowledge of project progress status through the technical progress reports and Project Implementation Reports (PIR) received from Molina Center;
Contact communication between the Fund Management officer, project manager/task manager during the preparation of financial and progress reports	HS	PM reports regular communication with the fund management officer; Fund manager indicates that the reports were filled out promptly in comparison to other projects and reports tended to be in good shape and that necessary communication occurred; One small issue is that the PIR report in 2015 shows risk on finance increased to medium but there is no narrative explanation
Overall rating	S	

Table 16 Project Co-Financing

Co-financing (Type/Source)	UN Environment Own Financing (\$)		Government (\$)		Other (\$)		Total (\$)		Total Disbursed
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	
Loans									
Credit									
Equity Investments									
In-kind support	500 000 ¹⁹	0	750 000 ²⁰	0	841 270 ²¹	969 558 ²²	2 091 270	969 558	969 568
Cash Grants	0	0	250,000 (INE)	0	20 152 853 ²³	1 279 599	20 402 853	1 279 599	1 279 599
Totals	500 000	0	1 000 000	0	20 994 123	2 249 157	22 494 123	2 249 157	2 249 123

239. The project was approved in 2012 with a total planned budget of \$ 23 403 213. The project planned budget included GEF cash of \$ 909 090 (3.9%), co-financing grants

¹⁹ GEF through UN ENVIRONMENT

²⁰ INECC

²¹ MCE2: \$516 595; ARI: \$50 000; UNAM CCA & II: \$257 175; UAEM \$ 12500; GIRA \$5 000

²² MCE2 \$429 723; ARI \$78 473; UNAM CCA \$152 421; UAEM \$84 962; UADY \$223 479; GIRA \$500

²³ \$20 000 000 (USAID) \$152 853 (Molina Center)

reported at the time as confirmed of \$ 20 402 853 (87.2%), and co-finance in kind reported as confirmed of \$ 2 091 270 (8.9%). These plans projected “confirmed” funding of which a large bulk (\$ 20 000 000) classified first in design (CEO) documents as a “grant” from USAID, but in the signed Project Cooperation Agreement as “in-kind” support, which was to be a part of \$ 34 million allocated over a 5-year period towards Mexico LEDS. Other grant co-financing included \$250 000 from the Mexican government through INE, and \$152 853 from the implementing organization, the Molina Center. The rest of the funding was in-kind including \$500 000 from UN ENVIRONMENT, another \$750 000 from INE with the Molina Center project to allocated 516 595, UNAM CCA and II contributing \$ 257 175 in kind and three other smaller sources including ARI contributing \$ 50 000, UAEM \$ 12 500 and GIRA \$ 5 000 in in-kind support.

240. By the end of the project there was confirmed spending of \$ 909 075 or 98.9% of the GEF budget by July 31, 2016, as well as \$ 2 249 157 co-finance received, of which \$ 1 279 599 was in cash and \$969 558 in kind. Another additional \$ 10 000 was also spent for M&E contributing to the Terminal Evaluation which took place after 2016.

Table 14 - Yearly Project Expenditures

Year	Actual Expenditures (\$)	% of Total GEF budget
2012	64 480	7.1%
2013	606 120	66.7%
2014	132 391	14.5%
2015	2 800	0.3%
2016	93 284	10.3%
Post 2016	10 000	1.1%
Total	909 075	100%

241. Table 14 shows the yearly expenditures for the project with an analysis of these figures as a percent of the total GEF budget of \$ 909 090. As previously mentioned, the total expenditures for the project reported as Final Expenditures to July 31, 2016 were \$ 899 075 with a cumulative unspent balance of \$ 10 015. Because another \$ 10 000 was added for the final evaluation which was completed after 2016, the project total rose to \$ 909 075. As we can see from this table the largest amount of the total budget was spent in 2013 which accounted for well over half of the total expenditures (66.7%). This reflected the period of the field measurement campaign, which was a central part of the project. The two years of 2014 and 2016 were the second and third highest years for expenditures, although these only accounted for 14.5% and 10.3%, or about one quarter, of the project’s total expenditures. The lowest year for spending was in 2015. One

unusual aspect of this is that 2015 was the year with one of the highest level of project activities including the final project meeting which was held.

Table 15 Expenditures by Budget Component (GEF funding)

Budget Component	Planned (\$)	Actual expenditure (\$)	Percent Deviation
Project Personnel (project personnel and travel)	240 094 (26.4%)	240 094 (26.4%)	0%
Subcontracts	618 608 (68%)	618 593 (68%)	.0024%
Group Training/Meetings	8 408 (0.92%)	8 408 (0.92%)	0%
Misc (Operating and Maintenance, Reporting, Sundry and Evaluation and Monitoring)	41 980 (4.6%)	41 980 (4.6%)	0%
Total	909 090	909,075	.0016%

242. Table 15 shows the GEF expenditures analyzed according to the planned and actual expenditures by the end of the project as reported in the final expenditures until July 31, 2018. We can see that the largest percentage of planned spending was on the subcontracts which accounted for 68% of the GEF funds. This was followed by project personnel and travel which was just over one quarter of the total (26.4%). As we can see the project reported actual spending of \$ 909 075 or 99.9% of the total GEF planned funding of \$ 909 090. The actual spending followed the planned totals almost exactly with the only variation in sub-contractual spending which was just under the planned total for the five entities ARI, UNAM CCA, UNAM II, UAEM and GIRA which accounted for 68.8% of the final expenditures.

9.1. Co-financing

243. The planned project co-financing was \$ 22 494 128. The final project co-financing total in the co-financing report was \$ 2 249 157 which was the actual amount of co-financing received. This is -89.9% of the original amount or \$ 22 249, 157 if the additional USAID

baseline funding of \$ 20,000,000 is considered. We see from the table below that the co-financing varies quite widely between planned and actual by project contributor.

Table 8 -Co-financing: planned vs actual

Co- Financing Planned Versus Actual							
Name	Cash Planned	Cash Actual	In Kind Planned	In Kind Actual	Total Planned	Total Actual	Percent Change
MCE 2	152,858	825, 870	516,595	429,725	669,448	1,255,593	87.6%
ARI			50,000	78,473	50,000	78,473	56.9%
UNAM-CCA & UNAM II		125,112	257175	152,421	257,175	277,533	7.91%
UAeM		41,746	12500	84962	12,500	126,708	930%
UADY				223,479	0	223,479	**
MIT Molina Fellowship		86,397			0	86,397	**
USAID	20,000,000**	100,000			20,000,000**	100,000***	-99.5%
CINAM		100,474			0	100,474	**
INE	250,000**		750,000		1,000,000	0	-100%
GIRA			5000	500	5000	500	-90%
UNEP			500,000		500,000	0	-100%
Total	20,402,858	1,279,599	2,091,270	969,558	22,494,128	2,249,157	-89.9%

**Listed as “grant” without stating “cash”; considered as baseline

***Actual project contribution without funds to LEDS, with LEDS funding this is 20,100,000

9.2. Co-Financing In-Kind

244. The planned co-financing that was in-kind from other sources included \$ 500 000 in funding from UN Environment, with \$ 750 000 from the Mexican government through INE and another six sources in the other category including the Molina Center (\$ 516 595), UNAM-CCA (\$ 209 675), UNAM II (\$ 47 500), UAEM (\$ 12 500), ARI (\$ 50 000) and GIRA (\$ 5 000). Thus, a total of \$ 2 091 270 was expected in-kind support. Of this only \$ 969 558 was realized. This is just below half of the expected amount of 46.3%. A somewhat ambiguous aspect of the project surrounds the large \$ 20 million grant from USAID. This is originally classified as a “grant” in the CEO endorsement document (and is clearly not in the in-kind listing) but is in-kind in the PCA. By the end of the project however this amount does not appear in any type of co-financing reports.
245. While UN Environment and the Mexican national government were originally supposed to provide respectively \$ 500 000 and \$ 750 000 through INE, this was apparently not realized according to the in-kind final report. Project reports in 2016 affirm the fact that the economic situation in Mexico caused delays to cash co-finance but in-kind support was provided by “government collaborators”. It should be noted however that INE played a lead role in the project, and their contributions may not be fully reflected in formal reporting of in-kind funding.
246. With respect to in-kind support, project reporting affirms that some instruments used in the project were not provided by the GEF budget and were instead supported by other funding agencies, including the control dilution system constructed by UNAM-CCA, the respiration chamber constructed by UADY, the head-box constructed by UAEM, the diesel particle filters used by the MCE2 team. The largest amount of in-kind support for the project was from the Molina Center who provided \$429 723 followed by UADY who provided \$ 223 479. The next largest amount of in-kind financing was from UNAM-CCA who provided \$ 152 421, with UAEM providing \$ 84 962, ARI \$ 78 473 and UADY providing \$ 500.

9.3. Cash Co-financing

247. The project received cash co-financing in the amount of \$ 1 279 599. Of this co-financing reports show the large bulk of the contributions (64.5%) came from the Molina Center who contributed \$ 825 870. The second largest contribution came from UNAM II who contributed \$ 125 112. CINAM also gave \$ 100 474 while US AID allocation was \$ 100

000 in cash. The MIT Molina Fellowship followed with \$ 86 397 with the lowest contribution from UAEM with \$ 41 746.

9.4. Completeness of Financial Information

9.4.1. Finance Completeness

248. **High level project budget:** The CEO endorsement document includes two budget related documents, Appendix 1 which shows an incremental cost analysis by project component and Appendix 8 which is the GEF Budget by project component and UN ENVIRONMENT budget line. The budget is detailed and well organized. A few small challenges noted in the original budget include the fact that a webmaster is only provided funding for the first year rather than considering that communications need to be ongoing and particularly at the end of the project, secondly meetings and conferences are only budgeted for the first two years and it is unclear how the subsequent and particularly the final meeting is provided for and finally there are very low amounts allocated for the final evaluation which do not seem to align with requirements. For the Appendix 1 which is the incremental cost analysis the allocation of the multimillion AID funding as part of the baseline for the LEDs process was a bit confusing to understand the linkages although this is explained in varied ways throughout project documentation reports.
249. **Project budget by funding source** (secured and unsecured funds): The CEO endorsement document includes a detailed budget by funding source. This includes a table indicating how much of the co-financing was deemed confirmed at the time.
250. **Disbursement funds document** from funding source: There were UN ENVIRONMENT cash advance statements reviewed by the evaluators for all of the project periods except 2012, Jan to April 2013, March to Oct 2014, Jan to Oct 2015. In addition, one seems to be signed by Molina Center but not UN Task Manager or certifying officer; Evaluators were informed that there were Cash Advance Statements submitted for each cash request to the UN Fund Financial Managers with a copy to the UN Implementer. There were a total of 8 requests between 2012 and 2016.
251. **Project expenditure sheet to date:** Evaluators review found quarterly reports were provided for all project periods except two: March to July 2014, Oct to Dec 2015. Further clarification was given that Quarterly Expenditure reports were submitted for all project

periods except Oct to Dec 2015 because there was no expenditure charged to UNEP during this period and that the report for April to June 2014 was delivered July 18, 2014.

252. **Detailed project budget by outcome for secured funds:** There are expenditure reports that are from Oct 2012 to July 31 2016 that show the budget Rev 2 that is a detailed project budget.
253. Partner legal agreements & amendments: PCA received.
254. **Proof of delivery of in-kind contributions:** An extensive set of planned and actual co-finance reports by budget line were provided for the implementing agency and project partners including for:
- Aerodyne Research: two-year period Nov 2012-Aug 2014;
 - Molina Center: all project years
 - GIRA/CIECO: Jan 2013 through Oct. 2013;
 - UNAM CCA: full year 2013; Jan 2014-June 2015,
 - Universidad Autónoma de Estado de México: April-Dec 2013; Jan 14-June 2015
 - Instituto de Ingeniera UNAM II: All 2013; Jan 14-June 30, 2015;
 - UADY: Jan 2014-June 2015;
 - Universidad Autónoma de Yucatán: April -Dec 2013;
 - MIT Molina Fellowship: Report covers all project years
 - USAID: Mar 3/20-2014-Dec/31/2014;
 - CINAM (Colegio de Ingenieros Ambientales de México AC): 2014-2016;
 - Co Finance Summary Up to June 30 2016
255. **Audit reports executing agency:** The Molina Center submitted the two audit reports which cover the whole project period (for 2013 and the second for Jan 2014 through July 2016 period). These found that the expenditure reports followed sound accounting principles.
256. **Management response to audit:** Management indicates the two audits were accepted and agreed to although there is no document called a management response.

The project is deemed Satisfactory with respect to completeness of financial information.

9.5. Communication between FMO and project

257. Interviews with UN Environment Financial staff indicated that communication seemed to be good between the project team and UN ENVIRONMENT. All parties indicated that they communicated regularly either by skype or email, mostly related to the financial reporting process. Quarterly expenditure reports were sent by the project manager to the FMO and copied to the UN implementer, technical reports were half yearly reported delivered to the UN implementer and PIRS would come from the UN. The final technical report was also delivered to the FMO as requested. They would talk and exchange emails related to the reports such as the quarterly reports. The finance management did not

attend any project meetings or gatherings of the steering committee but would get updates from the UN project manager. Emails seemed to be used frequently to resolve issues.

9.6. Challenges with Partners Affecting Financial Management.

258. One of the related issues was lack of receipt of the Mexican government funding which relates to the Mexican financial crises. INE was one of the primary project managers and although their in-kind support is not formally listed, comments suggest they contributed substantially. Mexican government funding through INE is noted in various places such as PIR reports as having been received, but does not appear in final project in kind summary reporting. It was noted however that their collaboration and in-kind support to the project and funding to complementary activities not included in the original project proposal was instrumental to the project success. Another challenge identified was that although payments were regular they sometimes took time. The discrepancy related to USAID funding previously discussed, shows they contributed actual funding of \$ 100,000 only to work on characterization of emissions from off road diesel vehicles rather than \$ 20 million noted in design. In general, challenges of the adequacy of funding for needed work was often highlighted in interviews with partners, rather than excessive funding available to the project. Another issue is that work stoppages by workers at various sites to allow for project fieldwork might have been compensated if appropriate foresight about this matter had occurred.
259. In summary, project Financial Management is rated as **Satisfactory** because with respect to the completeness of financial information the necessary financial items required in the UN Environment Criteria Matrix were **Satisfactory** to date. In the area of communication between financial and project management staff, the project was deemed **Satisfactory** because of the evidence that the project manager and FMO had relatively good awareness of the projects financial status, regular contact, evidence of proactive strategies to resolve financial issues and the fact that narrative and financial reports were reviewed. The project also was **Satisfactory** in terms of compliance.

Rating of Financial Management: Satisfactory

10. Efficiency

10.1. Efficiency: Timeliness and Cost Effectiveness

260. Project efficiency was rated **Satisfactory**. The project had only some slight delays in implementation which had a slightly negative impact on the rating, while adaptive management, time saving measures and use of existing institutions, agreements, partnerships and data sources had a positive impact. It meets the UN Environment Evaluation Office criteria for a **Satisfactory** rating as the project sequenced activities efficiently and received only a six-month extension in the project completion as justified in the formally approved framework.
261. As previously noted, but to help set the stage, for the discussion here this project received final CEO Approval at the end of June with Council approval July 18, 2012. The project was officially targeted to start in August 2012 with closure September 2015. However, the PCA was not signed until September 24, 2012, with first disbursement not until Oct 3 2012, with work commencing that month, leading to only a small portion of the 2012 budget expended.
262. With respect to the phase of project implementation, the only project revision, (necessitated for changes in the original budget due to unexpended amounts for the first year due to the initial delays), shows the project still running August 2012-September 2015 and left the overall budget and workplan unchanged. In June 2015 a six-month extension was requested and verified in interviews as granted moving technical completion to the end of that year with mid 2016 as the target for all reporting. Technical parts of the project were completed by the end of 2015, including a final project meeting in November with the formal project end in July 2016.
263. With respect to the performance factor **of preparation and readiness**, in the initial period the only formally identified “inception meetings” were held just after November, 2012 rather than the inception period between project approval and before project funding. These gatherings touched on project goals and objectives and planning of the field campaign. However, interviews also mentioned a series of meetings in August of 2012

because of the need to do advanced planning for field measurements with evidence of consultation with stakeholders.

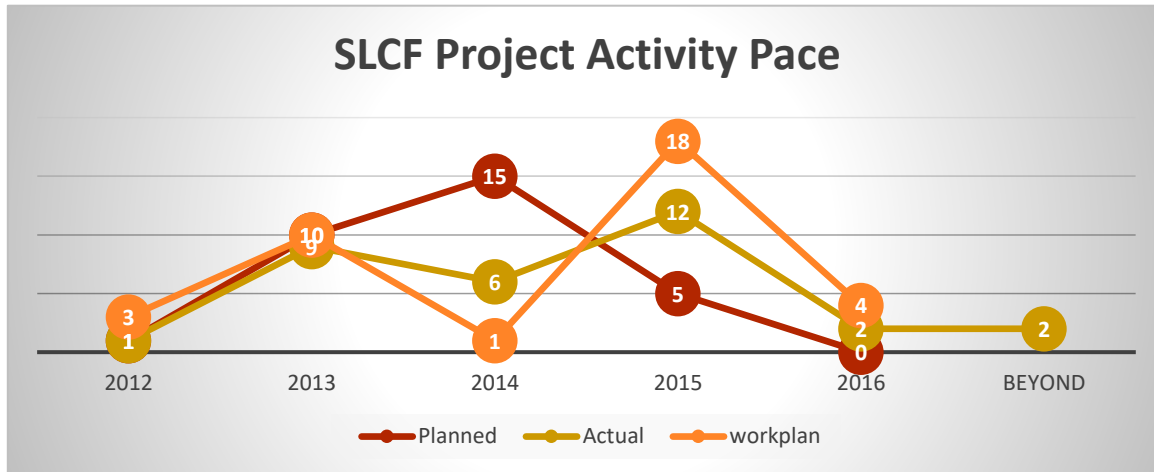


Figure 9 - Project Pace

264. Figure 9 shows a visual image of the project comparing the planned and actual work pace from three perspectives. The orange shows the revised formal workplan for the project in terms of the number of completed activities per year that moves more completion targets into 2015. The darkest red shows the PIR planned completion dates (probably based on the original workplan before revision) which had more activities ending in 2014 and then a process of winding down in 2015. The gold shows the actual pace of completed activities (based on PIR reports).
265. This displays a slightly lower than anticipated rate of completion at the beginning of the project and in 2014, with more activities moving into completion in 2015 and the project winding down in 2016. Some early reports mention contracting challenges and some issues related to changes in government although these are not reported to have influenced reaching objectives. The field measurements originally planned for the fall of that year were slightly delayed due to logistics. Later in 2015 a number of activities were moved to “ongoing” or pushed to the end of the year, with a “medium risk” to work flow reported. Challenges in that period touched on issues related to equipment, measurements for methane, integrated evaluation of mitigation measures and cost benefit analysis. However, technical activities were completed by the end of 2015 and by the end of the project in 2016 all activities are completed except for two outside of project managers control including completion of the terminal evaluation (delayed due to UN Environment) and publications (known to take longer because of the process of publication acceptance and peer review).
266. Cost effective approaches, strong project management and supervision are factors in performance that played an important role in project efficiency (and therefore are rated **Satisfactory**). Interviews affirmed that teams involved in implementation worked well, demonstrating collaborative management. In addition to main project gatherings (discussed in the narrative on outputs) there were many small, almost daily, working

meetings, involving actors related to various sectors. The small size of the executing agency with close working relationships among involved staff was another reported strength. Good communication between members of the project team, project manager and UN Environment also helped. Challenges related to geographic logistics, were solved through ongoing communication involving many skype calls and videoconferencing. Adaptive management and problem solving helped solve a number of logistical problems due to managing sites in the field campaigns and modelling. Negotiations with actors. An additional strength reported was that many involved organizations had close working relationships which had evolved over many years in other projects and studies.

267. In summary, the project had only one revision (which should have but did not formally change the workplan because outside of factors within project control) and one extension, (which needed improvements in forms for recording). Thus, although the project experienced some delays, it was completed in a relatively efficient manner.

10.2. Time Saving Measures

268. Timing had other technical implications. It was noted that with the cookstove measurement process conducted by GIRA who used Water Boiling tests that the sampling time was “very limited” with not enough time. As a result, more studies are noted to be needed. With respect to the work on the measurement of black carbon in cookstoves in the initial planning the idea was to bring the mobile lab to one of the communities however when it was found that this would not be possible the team decided to build a replication kitchen and build facilities for the mobile lab in a community on some land owned by GIRA. With respect to the work in this area there were also initial discussions about a third stage of work which would involve measurements in rural households but there was not time to do this phase of the work.

10.3. Cost Effectiveness

269. With respect to the adequacy of funding for the project many of those interviewed affirmed the pilot nature of the project and the fact that the resources needed in relation to the work were quite limited. This required cutting back on expectations and resource allocations from the implementing partners and lays the foundation for additional work that is needed. One of the challenges noted was due to the fact that some equipment used was co-financed by other funding agencies and at times the project experienced delays obtaining necessary resources and equipment. The limited nature of funding for

M & E was noted in one interview. In addition, it was previously indicated that some expected funding from the government of Mexico did not materialize.

10.4. Building on, and use of, pre-existing institutions, agreements, partnerships, data sources

270. This project reflected a variety of examples of where the project made use of not only pre-existing institutions, but also agreements, partnerships and data sources. The wealth of partners involved in the project (described in the partnership structure) showed reliance on preexisting institutions and interviews affirm strong relationships between a variety of involved actors that were developed over many years.
271. We have previously described the deep interconnectedness of the project work with initiatives such as SNAP and the fact that the scope of the project itself grew from work and participants involved in actions such as the workshop series on SLCF' s which had taken place in the years prior to the project. With respect to data sources for example, the methodologies used in calculations for the national emissions inventory of black carbon used sources such as the National GHG emissions inventory for 1990-2010 and data from the National Energy Balance.
272. With respect to work on the calculations of methane emissions from waste water treatment plants, existing plant operational records were drawn upon as an important data source to provide important background data. For many of the sectoral areas of the project, there are examples of where background preexisting literature reviews provided important contextual data. Various other examples of tables and citations are in the Final Report (see Table E8 pg. 219 summary of literature on the static flux chamber in wastewater treatment plants). The work on the transportation analysis in Mexico City on diesel noted the value of the wealth of preexisting background data and reports on air quality. In addition, the MATLAB® based program named *Fleet Builder* created by the CCA-UNAM used local documents and literature to develop the fleet, size and technology distribution. The discussion notes existing initiatives in the transportation sector related to substitutions for super emitters.
273. The Project's Efficiency is therefore rated **Satisfactory** on the basis of their performance on the timeliness and cost effectiveness dimensions according to the UN Environment Evaluation Office Criterion Ratings Matrix.

Rating of Efficiency: Satisfactory

11. Monitoring and Reporting

274. Monitoring and Reporting was rated **Moderately Satisfactory**, based on the Evaluation Office of UN Environment criteria for three areas including balancing of monitoring design and budgeting that was rated **Satisfactory**, monitoring of project implementation was rated **Moderately Satisfactory** and project reporting that was rated **Moderately Satisfactory**

11.1. Monitoring Design and Budgeting

275. The project was launched with a monitoring and evaluation plan. The plan covers the types of activities, person responsible, time frame and budget. There is a standard log frame with indicators, baselines, targets, sources of verification, and risks and assumptions. The monitoring plan covers the people responsible for all of the indicators rather than responsibility for monitoring each. Monitoring and evaluation is also incorporated into one of the project components which is rather unusual. The budget includes lines for M&E. The funds for M&E were noted by the UN Environment FMO to be slightly less than what is standard protocol. The M&E plan is not disaggregated in a way that clearly includes gender and minorities.
276. The project design only calls for a final evaluation and does not include a midterm evaluation or rationale for omission however we were informed that this was standard for a project of this size. With respect to the **Logical Framework** while this area was **Satisfactory**, the logical framework might have been improved slightly through reframing of some of the original project outcomes to be more specific (SMART). There are instances of places where the sources of verification needed to be more clearly specified and aligned with indicators. There were places where more specifics might have helped such as the level or type of “staff” to be trained. Project reviews during implementation make subsequent comments that some of the indicators such as “strengthened robustness, transparency and comparability of SLCF emission inventories” was found to be formulated in a way that did not facilitate measurement during the process of monitoring, although generally there were no recommendations for changes in indicators over time.

Monitoring design and budgeting is rated Satisfactory.

11.2. Monitoring of Project Implementation

277. The project PIRs collect and report on data by indicators which were shared on a regular basis with the other steering committee members. These documents were produced yearly throughout the project implementation through 2016. One challenge was that the project began in the fall of 2012 and the PIR report for 2013 indicates that this report covers July 2013 to June 2014—therefore not formally covering the ten- month period

before July 2013. The 2013 report does include some discussions of the activities during that period, which were important for the project.

278. The PIR reports were generally thorough, detailed and well organized. There were aspects of the report which needed a bit of improvement in terms of more detail in narrative notes and documentation of follow up to expand on issues in ratings. There were areas such as governance reported correctly as low risk but no mention of key decisions such as those made by the steering committee, and in sections no more nuanced discussion of differences in stakeholder involvement or in 2013 no further notes about political changes. Some challenges also relate to some inconsistencies between the original CEO design document and the project PIR structure in the log frames. For example, wording changes in the language of the outputs, for example, the number of activities change for the various project components (for example in component 1 the activities change from ten to seven). There are also missing indicators for five activities which is further documented in the outputs analysis tables of this report. The heading on the outputs table for the 2013 report does not have the date for implementation status.
279. The final report was well written and organized but might have included more summarization of final recommendations and next steps (perhaps by sector in an appendix) and an appendix table facilitating easier analysis of final status of project indicators. A GEF Tracking Tool is provided but seems to be only partly completed.

Monitoring of implementation is rated Moderately Satisfactory.

11.3. Project Reporting

280. There is an appendix to the CEO endorsement document which includes a detailed outline of components for project reporting required. This includes 18 items for which there are reporting requirements.
281. **Procurement Plan and Inception Report.** The project began in 2012 with a mission report mentioning a meeting in April of 2013 that highlights need for an “inception meeting” which should be held by July 2013. The report further indicates the inception meeting should cover the project status, partner roles, mid-term targets, expenditure plans, plans for the scientific advisory panel, workplan and budget. There is evidence of a first project meeting that the first PIR labeled as a “project implementation meeting” with 68 participants held in July 2013. Thus, although no clear evidence is available of a recorded “inception meeting” within the specified period after funding where the framework of the project was defined, there is however a report about the design phase mentioning early meetings between the Molina Center and INE and SEMARNAT personnel to coordinate the project design. With respect to the actual project inception phase, there were meetings with a variety of participants just after the project was signed in September 2012, with detailed documentation of a rigorous process of planning activities throughout October and November of the first project year which are not clearly labelled as an inception report. Additional clarification was provided that there were several site

visits and meetings with relevant stakeholders between Aug 2012 and Jan 2013 which were all part of the planning/inception activities.

282. **Progress Reports and PIRS:** The PIR reports are discussed in the narrative above. They were noted to be **Satisfactory**. Progress reports were required on a half yearly basis or before 31 January. The project produced detailed reports covering the period July through Dec 2013; July through Dec 2014 and July through Dec 2015. Each were filed in January. There are also detailed project minutes for a meeting in November 2015 and a project meeting PowerPoint for April 2013. A few challenges in the PIRS are discussed in the section on monitoring of implementation above.
283. **Audit and Co-finance Reports:** Two audit reports for expenditures were made available for 2013 and another for 2016. The audit report concluded that the expenditure schedule from Jan 2014 to July 2016, “fairly, in all material respects, incurred expenditures subject to budget limitation, in accordance with the accounting principles generally accepted in the United States of America.” There is a final co-finance report as well as an extensive set of planned and actual co-finance reports by budget line were provided for the implementing agency and project partners including:
- Aerodyne Research for the two-year period Nov 2012-Aug 2014;
 - Molina Center from Oct12 through Dec 13; and June 15 with attachments as well as a final Molina Center and Collaborators Co Finance Final Report: from 2012 through July 31 2016;
 - GIRA'/CIECO for the ten- month period from Jan 2013 through Oct. 2013;
 - UNAM CCA Jan 2014-June 2015,
 - Universidad Automoma de Estado de Mexico, Apr -Dec 13- Jan 14-June 2015;
 - Instituto de Ingeniera UNAM II—Jan 14-June 30, 2015; Jan 1 2013-Dec 2013;
 - UADY, Jan 2014-June 2015;
 - Universidad Autonoma de Yucatan, April 2013-Dec 2013;
 - UNAM CCA Jan 13-Dec 13;
 - MIT Molina Fellowship Jan 1 2014-July 31 2016;
 - USAID 3/20-2014-12/31/2014;
 - CINAM—2014-2016;
 - Co Finance Summary Up to July 2016 MCE; Report to Dec 2013
284. Two of the four project team meetings were held in the 2013 time-period which many have been a flaw in terms of the formal requirements.
- **Steering Committee and Mission Reports:** While the members of the steering committee seemed to meet, interviews indicated that the members of this body met in conjunction (before or after) with the meetings of the CCAC and the project meetings. Minutes of this body were not produced or disseminated on a formal basis although there was reported recording of some aspects in documents such as mission reports, which led to challenges with final tracking of various aspects key decisions made related to the project. There were a series of Project Meetings that were held regularly throughout the project (4 over the course of the project and 1 mitigation meeting). The Scientific Advisory Committee included the head of the work going on in each of the key sectors

of the project. This team is reported to have communicated regularly on issues. This group came together in project meetings but also in subgroup meetings, however there were no clear reporting or minutes of the Scientific Advisory Committee other than the main minutes of the four project meetings. These project meetings are documented with agenda, participants, and well designed, detailed and clear PowerPoints of presentations. There were two mission reports recorded of meetings with UN Environment.

- **Final Inventory of Equipment/Equipment Transfer Letter:** There was no inventory of nonexpendable equipment or final inventory of non-expendable equipment made available. Although further explanation was given that this was not funded from the GEF grant, but it is unclear if the related inventory was still necessary even if equipment was supplied through in-kind support from the government or project partners.
285. **Final Expenditure Statement/Midterm Evaluation and Final Audit:** The project did not have a mid-term review or evaluation although we were informed that is not unusual for a project of this size. The two audits mentioned above included one that was for the full project period from Jan 2014 through 2016 which coincided with the end of the project. The completion of the project was the July 31 2016 although technical work for the project was completed by technical part prior to December 2015 with the final project meeting on November 18, 2015. All required reports were submitted (financial, technical and audit) prior to July 31, 2016.
286. **Independent Terminal Evaluation:** This report is the independent Terminal Evaluation required for the project. It should be noted however that this was not done within the six-month project completion date but the timing was not a decision made by project personnel. The project did complete a detailed Final Report which was well organized and comprehensive in the body of the report although final recommendations could be slightly more specific and an appendix with final status of indicators might have provided more linkage to evaluation.
287. **Disaggregated Data Gender Marginalized Groups:** There is no clear evidence of project data being reported by gender and marginalized groups, although there is some mention of the health risks of the project for women as noted previously. This issue relates to challenges in the M & E plan.
288. **Other Project Reporting Not on the List:** Progress reports were made available for Oct 2012-June 2013, July-Dec 2013 that are clearly labelled and detailed in scope. There is a report dated May 5 2014 in the attachment line but a date is not clearly in the body of the report. There are also detailed reports July-Dec 2014 and July to Dec 2015. Thus, there seemed to be one set of progress reports missing for the first part of 2015. Clarification was given that since the PIR 2015 covered the period Jan-June of that year no separate half yearly report was prepared. The same was reported to be the case for the Jan-June 2016 period which was covered in the PIR 2016. The progress reports are generally detailed and well organized. The Final Report was delivered in July 2018, which

was updated in June of that year after receiving comments from the UN and project participants.

289. The organization and completeness of most reports and requirements was positive for the project but the absence of steering committee meetings, and gender disaggregation and documentation on equipment were a weakness for this project in terms of reporting.
290. The Project's Reporting is rated **Moderately Satisfactory** according to the UN Environment Evaluation Office Criterion Ratings Matrix.
291. Thus, monitoring and reporting was rated **Moderately Satisfactory**, based on the Evaluation Office of UN Environment criteria for three areas including balancing of monitoring design and budgeting that was rated **Satisfactory**, monitoring of project implementation was rated **Moderately Satisfactory** and project reporting rated **Moderately Satisfactory**.

Rating of Monitoring and Reporting: Moderately Satisfactory

12. Sustainability

292. Sustainability is understood as the probability of direct outcomes being maintained and developed after the close of the intervention. The evaluation identified and assessed the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct outcomes (i.e. 'assumptions' and 'drivers').
293. The sustainability of the project was rated **Satisfactory**. In terms of socio-political sustainability, the project is rated **Satisfactory** as it presents a high degree of dependency on socio-political factors, although there is strong ownership, interest and commitment among government and other stakeholders. In relation to institutional framework sustainability, the project was also rated **Satisfactory**, because sustainability of project outcomes has moderate dependency a robust mechanism that is in place to sustain/support the institutionalization of direct outcomes and the fact that capacity of relevant individuals has been enhanced (in particular at the level of universities which have great influence on policy decisions). Regarding financial sustainability, the project is also rated **Satisfactory** as it is moderately dependent on future funding and there is some evidence of past capacity to raise funds.

12.1. Socio-Political Sustainability

294. The likelihood of sustainability based on socio-political factors is **Satisfactory**, with a moderate level of dependency and a 75-99% level of mitigation.
295. As long as the direct outcomes reflect a change in behavior by relevant stakeholders, they are necessarily dependent on socio-political factors. Such factors include in particular, society's interest in climate change and SLCF mitigation policies and policy makers' decisions to prioritize such issues on the political agenda.
296. For this project, the team believes there is a moderate degree of dependency, as society's interest is likely to remain high as long as the problem is not solved and there is the same continued mobilization by policy entrepreneurs. Some of this builds on catalytic role of the head of the executing agency. Air quality is an issue that concerns Mexican's as the impacts of bad air quality can be felt immediately in human health and agricultural yield. Unlike climate change that requires a higher level of informed awareness due to the longer-term effects, air quality issues are present. In this context, it is also likely that political attention will not be lowered.
297. The team has seen evidence of strong ownership, interest and commitment among government officials (which permeates several federal administrations and can be seen at several government, state and city levels) and among other stakeholders, which to some extent extends to the critical levels of government which have the power to sustain project outcomes. The inclusion of SLCF emissions and mitigation policies in the National Communication and in the key legal and policy document (such as the climate

change law and the climate change strategy) are important mechanisms to ensure continued support to project outcomes.

298. The scientific community is deeply committed to continuing research on SLCF emissions and mitigation as well as on broader air quality issues, which is likely to continue to provide information for sound policy decisions.

Table 9 - Dependency on socio-political factors and mitigation: S (Satisfactory)

Dependency	<i>High</i>	HU	HU	U	MU	MS	<u>S</u>
	<i>Moderate</i>	HU	U	MU	MS	S	HS
	<i>Low</i>	U	MU	MS	S	HS	HS
	<i>None</i>						HS
		<i>None</i>	<i>0-24%</i>	<i>25-49%</i>	<i>50-74%</i>	<i>75-99%</i>	<i>100%</i>
	Mitigation						

12.2. Financial Sustainability

299. Sustainability of financial resources is **Satisfactory**. The team believes there is a moderate level of dependency (mostly limited to one of the direct outcomes – the other two direct outcomes present a low dependency). With respect to mitigation measures, the team believes there is a 75 to 99% level mitigation in terms of mechanisms to secure funding for universities and for the functioning of the relevant organizations.
300. The team believes the scientific communities use of improved project information for projects has a high level of dependency on financial inputs. Research projects require funding that needs to be made available for specific projects. Research funding priorities are determined at the policy level and that has great impact on the sustainability of the outcomes. Awareness of international partners has some (but not a necessary) dependency on financial inputs.
301. The capacity maintenance related to direct outcome 2 is less dependent on such additional financial inputs, although there is some level of dependency.
302. The awareness of the international partners about SLCF activities is also moderately dependent on financial factors.
303. There are several instances where funding (including from international sources) has been secured in the past for activities that are relevant for the sustainability of outcomes, which provide some assurance of the capacity to continue raising of financial inputs in the future. It can also be said, that, with some necessary fluctuations at times, funding for universities and research projects can also be said with a certain level of certainty to be likely to be available. Fluctuations in funding by governments is influenced by policy priorities of administrations, however a subcommittee of the CCAC also focuses on finance related to SCLCF at the international level, and a finance initiative has been

created to “catalyze investment” through a focus on “policies, technologies and projects”, although finance varies by sector.

Table 10 - Dependency on financial factors and mitigation: S (Satisfactory)

Dependency	<i>High</i>	HU	HU	U	MU	MS	S
	<i>Moderate</i>	HU	U	MU	MS	S	HS
	<i>Low</i>	U	MU	MS	S	HS	HS
	<i>None</i>						HS
		<i>None</i>	<i>0-24%</i>	<i>25-49%</i>	<i>50-74%</i>	<i>75-99%</i>	<i>100%</i>
Mitigation							

12.3. Institutional Sustainability

304. The likelihood of institutional sustainability of project outcomes is **Satisfactory**, as there is a high level of dependency on institutional support as well as a robust mechanism to mitigate such dependency in place sustain/support direct outcomes.
305. Since the outset of the project it is noted that a core element of sustainability is the implementation of the LEDS which has been identified as a firm commitment of the Mexican government. The previously mentioned passage of the Mexico Climate Change Law incorporates a low carbon development strategy; Mexico’s National Strategy on Climate Change (June 2013) and the Special Climate Change Program (PECC 2013-2014) have included SLCFs as one of the climate change mitigation strategies which supports the involvement of an array of government institutions in achieving project outcomes.
306. Sustainability is also linked to the capacity building activities of the project which were supported through a range of informative meetings, data collection and analysis activities which involved a range of government officials, students and NGO’s who will contribute to the sustainability of the work engaged in through the project.
307. The two organizations involved in project management are another building block in sustainability. The Molina Center is now working with government institutions including INE on activity data. INE and CONACYT, the National Council for Science and Technology) are also collaborating on activity data on off road emissions. INE is doing ongoing related work since the time of this project on transport in terms of measurement of emissions, remote sensing and scenarios related to transport. They have also been working on a study to analyze the social and economic characteristics of the production market for the brick kiln sector with the results of this available in the year following the project. This study was reported to be important in terms of a useful follow up in understanding more about additional opportunities for moving forward on efficient

mitigation strategies. Additional work in this area was reported to be in the planning stages.

308. The development of the CCAC SNAP (Supporting National Planning for Action on SLCFs) initiative for Mexico is another significant building block in terms of sustainability of work on the issues related to this project. The Molina Center and other key actors are involved in the work on the SNAP 2 project which is continuing related work. In addition, another network has emerged, REDCAM, as a network on air quality and climate in Mexico that is serving as a mobilizing force on the issues relevant to the project which will help to strengthen sustainability. MCE2 is serving as a member of this network and will serve to sustain integration of the issues.
309. At the time of this evaluation, preparations were ongoing for the 2016 inventory. MCE2 also reports involvement in working on quality assurance and review of emission factors.

Table 11 - Dependency on institutional factors and mitigation: S (Satisfactory)

Dependency	<i>High</i>	HU	HU	U	MU	MS	<u>S</u>
	<i>Moderate</i>	HU	U	MU	MS	S	HS
	<i>Low</i>	U	MU	MS	S	HS	HS
	<i>None</i>						HS
		<i>None</i>	<i>0-24%</i>	<i>25-49%</i>	<i>50-74%</i>	<i>75-99%</i>	<i>100%</i>
	Mitigation						

310. Overall the Project's Socio-Political, Institutional and Financial Sustainability is **Satisfactory** according to the UN Environment Evaluation Office Criterion Ratings Matrix

Rating Sustainability: Satisfactory

13. Conclusions, Findings and Lessons Learned

311. The project Integrated Responses to Short-lived Climate Forcers Promoting Clean Energy and Energy Efficiency in Mexico aimed to support a comprehensive, sustainable Low Emissions Development Strategy (LEDS) for Mexico by promoting clean and efficient energy through integrated assessment of short-lived climate forcers, as well as development and demonstration of targeted SLCFs mitigation policies.
312. The project began formally on September 24, 2012 and was completed four years later in July 31, 2016. The project met many of the central objectives in terms of improving knowledge about sources and mitigation potential as well as enhancing knowledge and capacity in measurement and evaluation and policy selection. A full evaluation of the balance between project strengths and weaknesses led to a final rating of the project as **Satisfactory**.
313. The importance of the project as one of the first GEF sponsored efforts focused on integrated responses to SCLF's is appreciated. It should be recognized however that this was a pilot effort, to enhance the Mexican government's and scientific community's ability to be proactive in furthering exploration of threats of SCLF's, providing greater clarity for decision makers about the best way forward, given tradeoffs between mitigation potential and economic costs. The work conducted through this project made important discoveries with practical implications which provide direction to help bridge the gap between future research studies, policy and action.
314. We see many examples of important breakthroughs in knowledge, with implications for policy in various sectoral areas. In transport, the project determined emissions factors for black carbon for diesel and off-road vehicles in real world driving conditions for the first time in Mexico. For wastewater treatment plants, recognition was given to limitations of generic application of IPCC methodologies, with the project making important breakthroughs with respect to concrete recommendations for methane correction factors to Tier I IPCC guidelines. With respect to brick kilns, the project developed a rich and unique dataset for understanding real world implications of production, and emissions of specific kiln types. This has potential to influence future design, operation and regulation, such as production certification schemes and a national database on production. In addition, in the work on oil and gas, the importance of locally based measurements as a basis for inventories emerged from the research as an important theme.
315. The project was highly relevant to a range of overarching policies and objectives at the national level of government in Mexico, project donors' objectives on climate change and policies at the regional and local level. The project brought together a wide range of sectoral actors, helping to focus understanding of the implications of SCLF's, building upon, and in many cases moving forward from existing policy platforms, as part of the framework of analysis. The project also helped advance Mexico's contributions to global climate change policy, helping to put Mexico on the cutting edge. We see the project therefore as unique, primarily in its technical contribution to measurements of SCLF's as

well because of its collaborative approach to other key initiatives and coalitions related to the issues, with deeply embedded project members helping to play an important role.

316. The project was able to deliver on a range of important outputs sometimes in the face of various types of obstacles faced. While there were some challenges to work through with respect to initial contracting, logistical issues in the field campaign, and delivery of financing, the project worked towards successful targets in an adaptive manner. Thus, the project is considered **Satisfactory** in this respect. Recognition should be given to the range of ways in which collaborative management and creative leadership often helped navigate the way forward.
317. Another central question for this evaluation related to the extent to which the intervention helped bridge the gap between science and policy, as well as action and implementation of the national strategy related to SLCF. The project clearly helped navigate some of the existing divide between the spheres of air quality and climate change, which were central to its focus. The initiative helped engage a range of diverse partners in discussions, within each of the five project spheres of activity. This enhanced appreciation of the rationale and specific means for achieving energy and energy efficiency through SLCF mitigation strategy as well as benefits for human health, crop production and ecosystems. While project links to and the prominence of the stated goal of energy efficiency was originally questioned by reviewers during the design phase, the project's subsequent work during implementation in a range of areas including transportation, brick kilns and cookstoves is clearly germane. The project also helped increase understanding of the extent to which the challenges of SLCF control can be addressed through existing policies related to climate change, air quality and development as well as providing direction in terms of where future research and policy change is needed.
318. Although the project went a long way to help build increased capacity, this was primarily among involved academic institutions and project participants that included a wide, but somewhat limited number of government agencies, private sector entities and NGO's. The project meetings, reports and data gathering activities helped build increased understanding about both challenges and opportunities for mitigation of SCLF, with efforts to engage and train a range of involved intellectuals, scientists and students. In spite of this solid foundation, attention is still needed for outreach, culturally sensitive dissemination and future funding to ensure this effort is maintained and the issues have broad reach and future follow up.
319. While this project was unique in building localized understanding of emissions monitoring of SLCF's we have identified various ways the effort was embedded in a range of broader initiatives and partnerships, particularly the work of the CCAC and SNAP as well as other efforts going on in Mexico related to issues relevant to SLCF (cookstove dissemination, pollutant control transportation). Recognition should be given to the important work done by the project, helping to coordinate and link with institutions and lead actors involved in these efforts, as a proactive partner. At the same time the success of the work means that future efforts should build on some of these foundations and

capitalize on expressed interest of some involved actors in new opportunities to disseminate, share and expand project results.

320. With respect to the issue of gender, the evaluation examined the role that gender played in the project through a review from a gender lens of original design documents and project logframes, analysis of the role of gender in implementation in terms of activities and products including participation in project meetings, and publications and interviews in the field with organizations/experts in Mexico working on gender related issues and questions in stakeholder interviews. The analysis shed light on ways initial attention to gender emerged in the project design primarily related to work on cookstoves, where the project importance is linked to health impacts for women. During implementation, we see women at various ends of the spectrum playing a role, with women from local communities involved in cookstove assessment and women engaged as academics and scientific researchers in sectoral studies, helping to further understanding of this complex field. We also cannot overlook the fact that this project is illustrative of the dynamic leadership of a female “policy entrepreneur”, who has been a driving force in moving forward and shaping the agenda on the issues of SLCF’s in Mexico and further afield for many years. The project clearly highlights the need for new funding for scientific projects related to cookstoves to further explore project findings, and we found women still slightly underrepresented in project meetings, with not enough focus on gender in some aspects of monitoring, engagement and policy. Thus, further engagement on these issues including linkages with women’s groups thus should be considered as part of future strategies.
321. In conclusion, while the project made significant strides, it was also clear that this was merely a beginning of what needs to be sustained level of focus and attention to SCLF’s in terms of future financing, technology, research, and regional and intergovernmental cooperation. Although this project is an important building block, there is still a way to go to resolve important aspects of uncertainty in the broader scientific community about various aspects of SLCF measures and policy.

Table 12 - Summary of Evaluation Assessment and ratings

Criterion	Summary Assessment	Rating
A. Strategic Relevance		HS
<i>Alignment to MTS and Pow</i>	Alignment with climate thematic priority MTS 2010-13/2014-17 POW-18	HS
<i>Alignment to UN Environment/GEF/Donor Strategic Priorities</i>	Clear alignment to UN Environment MTS/GEF/Donor strategic priorities	HS
<i>Relevance to Regional, Sub-regional and National Environmental Priorities</i>	Project highly relevant to national, regional and sub-regional priorities although relationship to the states remained an ongoing project challenge	HS
<i>Complementarity with existing interventions</i>	The project demonstrated strong complementarity with many important interventions although there was also some evidence of overlap/duplication	HS

Criterion	Summary Assessment	Rating
Quality of Project Design	Strong project design but a few aspects of design structure might have been improved	S
Nature of External Context	Project generally moved forward successfully, but some evidence of influence from aspects of political transitions, security and the financial crises in the country influenced the project but were overcome in various ways.	MS
Effectiveness		S
<i>Achievement of Outputs</i>	Outputs including characterizations, policy assessment, demonstrations, capacity building modelling were developed and largely considered of high quality by most.	HS
<i>Achievement of direct Outcomes</i>	Important strides and developments in achievement of direct outcomes, including acceptance of project findings, endorsement of project recommendations for policies and strategies and increased technical capacity including assumptions and drivers however additional steps still needed for full achievement	S
<i>Likelihood of impact</i>	The achieved direct outcomes include the most important to attain intermediate states; assumptions for the change to intermediate states hold; drivers to support transition to intermediate states are in place.	Likely
Financial Management		S
<i>Completeness of project financial information</i>	Most aspects of project financial information available	S
<i>Communication between finance and project management staff</i>	Good communication between finance and project management staff	S
<i>Compliance with UN Environment standards and procedures</i>	Project determined to be in compliance with UN Environment standards and procedures	S
Efficiency	The project had one revision against the original results framework that involved one extension and two budget revisions; some periods of moving forward but some project delays were overcome by the end of the project;	S
Monitoring and Reporting		MS
<i>Monitoring design and budgeting</i>	Many aspects of monitoring design and budgeting are good but systems need later review and revision to be SMART; Some outcomes needed to be improved.	S
<i>Monitoring implementation</i>	No mid-term evaluation (as per this size project), generally good evidence of detailed monitoring of project implementation with a few gaps, extensive data shared with evaluators; aggregated data by gender not embedded into project but this was not part of the stated requirements	MS

Criterion	Summary Assessment	Rating
<i>Project reporting</i>	Substantial documentation of project progress and generally good communication except improvements could be made in some aspects of documentation and use of forms for all revisions.	MS
Sustainability		S
<i>Socio-political sustainability</i>	Mexico historically a leader on SLCFs and climate change issues, with governments showing interest in these issues	S
<i>Financial sustainability</i>	Some evidence of financial sustainability although additional funds needed to move beyond the pilot stage for the project.	S
<i>Institutional sustainability</i>	The institutional arrangements for policy decision making in Mexico have a good foundation through project involvement although some uncertainty because of a new government. Nonetheless, there is a good track record of institutional capacity at federal level, and in key civil society stakeholders.	S
Overall Project Rating		S

13.1. Findings and Lessons

Table 13 - Summary of Lessons

Lessons	
Lesson #1 Finding	<p>Attention to outreach, inclusion and engagement, including with actors outside of direct engagement with the project needs to take place.</p> <p>An important strength of the project was that it included a wide array of partners, although most engagement involved a specialized group of actors and results were still not translated or fully disseminated more broadly as part of a strategic communication plan. In addition, some of those actors originally targeted were not fully engaged based on assessment of project meetings, thus some additional outreach might be appropriate.</p>
Lesson # 3 Finding	<p>Alignment of the total budget with the funding actually needed for implementation is useful throughout the life of the project.</p> <p>Inclusion of baseline funding (such as the large multimillion allocation from USAID to the Mexico Low Emission Development Strategy - MLEDS) which did not have direct linkages to project implementation created some degree of confusion for various actors and stakeholders and was challenging in terms of tracking the project budget as well as project monitoring and reporting.</p>

Lessons	
Lesson # 4 Finding	<p>Attention to detail in monitoring, reporting and evaluation (M&E) processes needs to be strategic, consistent and structural to facilitate evaluation.</p> <p>Some aspect of forms and tables were challenging for project tracking including the fact that the project timetables did not use tables that easily track completion date adjustments. In some cases, names of components, activities and/or outputs also did not remain consistent throughout the project. Thus, clearer documentation of such changes and decisions should be kept.</p>
Lesson # 5 Finding	<p>Project steering committees with only a small group of actors heavily involved in on-going project operations may lose some benefits of formality in decision tracking.</p> <p>Projects of this type should align with recommended guidelines on funding for M & E, consistent record-keeping for bodies such as the Steering Committee meetings and decisions and forms for budget revisions. Small committees such as this project’s Steering Committee, where members are highly collaborative, might benefit from appointment of another less involved actor (even if they join meetings remotely) to help ensure meeting and process formality, decision making, objectivity and recordkeeping.</p>
Lesson # 6 Finding	<p>Participation in project meetings and workshops was successfully documented with participant names but there was no additional measure of involved actor’s views about content.</p> <p>Application of participant surveys during Project technical meetings helps shed light on degree of satisfaction with content and organization.</p>

Table 14 - Recommendations

Recommendations		Lead Actors	By When
1	Evaluators found that communication and awareness building activities was mainly targeted within a specific group of involved organizations, such as academia. However, policymakers in different fields in Mexico need to know the relevance of project results, benefits from emissions reductions and cost benefit ratio. Thus, it is necessary that participants in the project are proactive and ensure that information is disseminated and presented to correct audiences, agencies and institutions in appropriate languages.	MCE2 / INE	Within four months

	Recommendations	Lead Actors	By When
	<p>The project’s final results need to be more widely disseminated. The following actions should be taken:</p> <ol style="list-style-type: none"> a. The Project’s Final Report translation into Spanish should be completed. b. The Final Report needs to be further disseminated to all partners in the project, key actors around the new federal administration in Mexico, subnational governments, researchers and open to interested stakeholders. Additional efforts should be made to reach key government agencies and organizations representing programs related to/representing women and marginalized groups. c. Create a more complete SLCF Project website that consolidates and displays all project information including Final Report, publications, all project meetings including the final project meeting and presentations; include information on results relevance, limitations and the way forward and make the website easy to access. A “key highlights” one pager or small interactive video on the website would further quick understanding of important project elements and findings. d. Partner organizations for the project should be further encouraged to create additions to their websites highlighting the Project’s goal, findings, publications and reports particularly INE. Link to other key partners about making this material available. This might also include outreach regarding MLEDS. 		
2	<p>Evaluators identified the need for ongoing funding to ensure sustainability, particularly in the areas of additional scientific research identified by the project. This project is noted to be a pilot that presumes this stimulates follow up projects.</p> <p>A process of related projects could be furthered by targeted research and development of a list of</p>	<p>INE / MCE2/CCAC</p> <p>Other involved actors might include:</p> <ul style="list-style-type: none"> • SEMARNAT • CONACYT • Finance subcommittee of CCAC 	<p>Within six months</p>

Recommendations		Lead Actors	By When
	<p>potential interested foundations and or funding sources and key contacts.</p> <p>The start of a new federal administration is an opportune time to include initiatives into working plans.</p>	<ul style="list-style-type: none"> • Network of experts on air quality (Redcam) • CCAC finance subcommittee • Involved project academic institutions might be tapped to provide internship or other logistical support to help with this task of investigation of funders 	
3	<p>The evaluators affirm the importance of the recommendations in the final report mentioned in the discussion of project reporting, but determine that with respect to project sustainability, attention should be given to moving key concepts forward, including consideration of follow up related to specific sectors.</p> <p>To achieve that, we recommend a scoping/ assessment meeting among a small group of the key actors involved in the project (can be in person or through videoconferencing) to explore the current status of final report recommendations as well as opportunities to scale up visibility of project results and the future related to SLCF research and mitigation.</p> <p>The meeting should also discuss needs/potential for meetings/ additional follow up with other parties such as the Inter-Ministerial Commission on Climate Change (CICC) and the National System of Climate Change (that includes Federal, State and Local governments), to further influence the decision-making process, legislators (at federal and subnational levels), researchers, academia, key NGO's, private sector, cooperation agencies and other relevant environmental actors, and the National Council of the 2030 Agenda for Sustainable Development and representatives from organizations linked to women's and marginalized groups (Women's</p>	INE/MCE2/SEMARNAT	Within six months

	Recommendations	Lead Actors	By When
	Institute, etc.). Programs linked to women and occupational health should also be considered.		
4	<p>Evaluators assessment of activities/ outputs affirmed need for additional capacity building. The second agenda for the meeting above will be to review potential and determine need for creating a plan for a new capacity building initiative/program in order to ensure sustainability and achievement of medium-term outcomes and intermediate states. Such program:</p> <ul style="list-style-type: none"> • Should help to train and develop capabilities of personnel from participant entities and other interested parties, regarding the different tools, methods and analysis technics used and developed during the project. • Could benefit from interest expressed by partnering agencies in being more involved and/or taking more responsibility to prepare an integrated report of results of the different project components and in its dissemination. • Should consider skills and capabilities required in the Plans for follow-up projects. 	INE/ MCE2/SEMARNAT	Within six months

Appendix A: List of Documents Consulted

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- Benaouda M., Ronquillo M.G., Molina LT., Ortega Y.O., (2017) Status of research on enteric methane emissions and mitigation strategies in Latin America. *Mexican Journal of Agricultural Studies* 8 (4): 965-974.

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Appendix B: List of Interviewees Consulted

Name	Organization	Role / reason to be interviewed
Luisa Molina, PhD.	Molina Center for Energy and the Environment (MCE2)	Lead the project in all phases. Provided a general overview of the project and answers to specific questions of the evaluation.
Amparo Martinez, PhD.	INE	General Director. Leads INE, the institution that produces environmental applied research to support decision making for environmental policy in Mexico.
Victor H. Paramo, PhD.		General Coordinator on Pollutants and Health. Supported the design of the mobile emissions sampling while at SMA-Gob of Mexico City. Leads research on air pollution and health.
Abraham Ortinez		CCAC SNAP consultant.
L. Gerardo Ruiz, PhD.	National Autonomous University of Mexico (UNAM). Centre for Atmospheric Sciences (UNAM-CCA)	Lead the cookstoves characterization. Leads the research group on atmospheric physical-chemistry.
Agustin Garcia, PhD.		Performed the assessment of mitigation scenarios. Researcher in the group on air quality. Played a role in mitigation policies scenarios and participated in the design of tools and policies for AQ management.
Aron Jazcilevich, PhD.		Performed the emission measurement and mitigation scenarios for diesel vehicle fleet. Works on motor vehicles emissions.
Adalberto Noyola, PhD.	UNAM. Institute of Engineering (UNAM-II).	Former director of the Engineering Institute at UNAM. Specialist on waste water treatment plants from both the technical and policy sides. Lead the emissions characterization for wastewater treatment facilities.
Magdalena Hernandez Garcia	Network of Ibero-American Women for Budget Equality between Women and Men (MIRA)	General Director of a network of academics, grassroots women, legislators and public servants. She provided a general overview on the gender perspective in Mexico and how projects can better inform policies and embrace women (including those on climate, science and sustainability) to help to reduce inequity. Also President, Advisory Council of the Women's Institute of Mexico City and Coordinator of the Binational Campus of Urban Thinkers Mexico-Peru of the UN-Habitat World Urban Campaign
Juan C. Arredondo, PhD.	Secretariat for Environment and Natural Resources (SEMARNAT).	General Director for Climate Change Policy. Policy maker, set the national strategies to achieve Nationally Determined Contributions (NDC) to the Paris Agreement.
Ana P. Martinez		General Director for Air Quality. Lead the AQ monitoring branch at CENICA-INE; supported the project. Lead the AQ policy making from the Federal Government of Mexico, including preparation of the National Emissions Inventory (MNEI) that includes CO and black carbon (BC), as well as VOCs (precursors to tropospheric ozone).
Antonio Mediavilla, PhD.	Mexico Low Emissions Development Strategy (MLEDS)	Lead the energy efficiency projects branch at the MLEDS. The United States Agency for International

Name	Organization	Role / reason to be interviewed
		Development (USAID) funded the development of the MLEDS.
Francisco Barnes, PhD	Bain & Company Mexico Inc.	Former General Director of INE. Expert in the firm's Oil and Gas Practice. He provided an overview on the relevance of the project and how it created value for the scientific and policy making stakeholders.
Gustavo Sosa, PhD.	Mexican Institute of Petroleum (IMP).	Supported the emissions characterization of oil and gas emissions at the facilities of the company Mexican Petroleum (PEMEX). Expert on emissions from the oil and gas industry in Mexico
Beatriz Cardenas, PhD.	Mexico City Government.	General Director for Air Quality. Supported the project team to obtain the collaboration from state officials while at INE.
Anaid Velasco and Giselle Garcia	Mexican Centre for Environmental Law (CEMDA).	Research coordinator; air quality researcher. CEMDA plays a key role in advocating for a strengthen legal framework for environmental and public health protection in Mexico. Work in both AQ and climate change. They understand the importance of the project and represent the general public that could benefit from better informed policies.
Julia Martinez	Consultant	General Director for Research in Climate Change Mitigation at INE at the project initiation time, thus first Project joint-coordinator
Victor Berrueta	Interdisciplinary Group of Rural Appropriate Technology (GIRA).	Coordinator of the Rural Energy Program. Hosted the cook stoves emissions characterization; perform energy efficiency for cook stoves. Participates in the development of cleaner cook stoves and worked to impulse their use.
Enrique Kato,	Center for Applied Innovation in Competitive Technologies (CIATEC)	Supported the brick kiln measurements in Guanajuato by contacting the brick producers. He led the AQ policies in Guanajuato State when at State Institute of Ecology-Guanajuato (IEE).
Martin Okun	UN Environment	Finance Manager
Seraphine Haeussling	Climate and Clean Air Coalition	Program management officer & overall initiative oversight. Task manager can provide insights to their role in oversight and perceptions of strengths and weaknesses of project delivery and design.

Appendix C. Evaluation Matrix

Table 15 - Evaluation Framework Matrix: Evaluation Questions, Respondents, Indicators and Data Sources

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
A. Strategic Relevance										
1. To what extent were project objectives and implementation strategies consistent with national and sub regional environmental issues and needs?								Respondent perceptions, level of achievement of objectives and outcomes	Interviews, Project document, Final Report, reviews background literature/Mexico reports	
2. To what extent were project objectives and implementation strategies consistent with (i) UN Env mandate and policies at the time; and (ii) the GEF Climate Change focal area, strategic priorities and operational programme(s).								Respondent perceptions, project design Duplication and consistency other projects	Review UN Env mandates and policies e.g. POW/ UN Environment Medium Term Strategy, Thematic Priorities and Programme of Work/Final Report; South South policy; GEF Strategy on Climate Change, Gender, Bali Strategy Plan; Review final report; interview questions	
3. Were project objectives realistic, given the time and budget allocated to the project, the baseline situation and institutional context?								Respondent perceptions, project delivery and level of achievement	Interviews, PIRs and Final Report	

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project Govt	Stakeholders:	Stakeholders	Stakeholders	UN			UN
4. To what extent did UN Env and GEF engage national stakeholders in project design, implementation, monitoring and reporting?									Respondent perceptions, project delivery and level of achievement	Interviews, PDF reports
B. Achievement of Outputs										
5. How successful was the project in achieving its planned outputs, considering aspects such as quantity, quality, sequencing, timeliness and usefulness? To what extent have project outputs contributed towards the expected outcomes? Output 1 Characterization of methane, black carbon and co-pollutants from key emission sources Output 2: Assessment and selection of SLCF mitigation policies for implementation in Mexico Output 3: Demonstration of SLCF mitigation technologies for key sources 4: Integration of SLCF mitigation measures into LEDS Output 5: Capacity building and awareness								Respondent perceptions, project delivery and level of achievement	Interviews, Final report PIRS Steering Committee and Advisory Committee minutes Project articles, presentations and publications	
C. Effectiveness: Attainment of Objectives and Expected Outcomes										
6. How and to what extent did the project succeed in achieving the objective of developing and implementing a more comprehensive and sustainable LEDS Strategy for Mexico through an integrated assessment of SLCF and the development and demonstration of targeted SLCF mitigation policies?										

EVALUATION QUESTIONS	Respondents							Indicators	Data Source
	Project Team	Project	Project	Stakeholders: Govt	Stakeholders	Stakeholders	UN		
									Respondent perceptions, Project documents, Final Report, PIR Reports, Review background info and publications LEDES Strategy, Review of reports and interview probes on updates to Mexican national inventory to include black carbon inventory. Review of report or interview questions about whether Mexican GHG inventory (INEGI) includes tier 3 methane missions and or black carbon
7. To what extent has the project had an impact on the improved knowledge on key emission sources and of mitigation potential of addressing SLCF?								Respondent perceptions –MNEI includes black carbon measurements from project– –Model- ready black carbon emission inventory available –new national communication completed to include methane –INDC commitment to reduce SLCFs	Interviews PIRS Final report National Communication review INDC documents
8. How and to what extent did the project improve decision making on efficient SLCF mitigation policies based on improved data on emission sources and on quantified impacts including co-benefits								Respondent perceptions, # SCLF mitigation measures evaluated for # emitting sectors; completeness of	Interviews Final Report, PIRS

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project Govt	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
									emitting sector coverage # measures per most emitting sector evaluated for future emissions scenarios. (How evaluated/type scenarios, type of model, how were results used)	Interviews Final report Project publications Reviews and descriptions of models
9. To what extent has the project ensured that there is increased knowledge on cost and benefits of promising SLCF mitigation technologies for decision making?									Respondent perceptions, # of measures from SCLF emission sources/promising technologies demonstrated	Interviews, Final Report, PIRS Discussion/documentation of demonstrations (who involved, how, when etc.) Get data for chart
10. To what extent did the project ensure that Mexico's LEDS incorporate priority SLCF mitigation policies?									Respondent perceptions, # SLCF mitigation measures incorporated within LEDS objectives and supported activities (are there targeted priority mitigation measures included)	Interviews, LEDS reports Review of Mexico National Strategy on Climate Change; documents on Mexico Climate Change Program documents , PIR and Final Reports; Steering Committee and Technical Committee minutes

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
										Final project meeting presentations or minutes/agenda/list of attendees
11. To what extent did the project serve to enhance capacity and knowledge in measurement of SLCF emissions? To what extent did the project enhance capacity and knowledge about evaluating and selecting mitigation policies?									Respondent perceptions, And evidence of procedures and requirements for developing SLCF inventory identified, documented and communicated. Evidence of expression of interest by at least two countries to apply project approach	Interviews, PIRS Final reports Copy National Action Plan Guidance Document Dissemination lists/ dissemination strategy .minutes Steering Committee, Technical Panel Interviews; PIRs, CCAC meeting minutes or other reports on replication
D. Sustainability										
15. <i>Socio-political</i> : Are there any social or political factors that influence positively or negatively the sustenance of project results and impacts?									Respondent perceptions, continuity of project-supported initiatives	Interviews, Final Report Literature reviews
16. To what extent did the Molina Center, INE and UN ENVIRONMENT and GEF engage the participation of national stakeholders in project									Respondent perceptions, workshops and consultation events	Interviews, PDF reports PIR reports Steering Committee reports

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
design, implementation, monitoring and reporting?									during design and project implementation phase	
17. Is there sufficient government/stakeholder commitment to enforce and implement the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?									Respondent perceptions, policies of new government, budget and staff allocations	Interviews
18. <i>Financial</i> : To what extent is the continuity of project results and their impact dependent on continued financial support? Will adequate financial resources be made available to ensure the continuity of programmes, plans, agreements, monitoring systems etc. that were prepared and agreed upon under the project?									Respondent perceptions of financial sustainability.	interviews.
19. <i>Institutional</i> : To what extent is the sustenance of the results and progress towards impact dependent on national institutional frameworks and governance? To what extent are institutional governance structures and capacities in place to sustain processes, policies, agreements and legal/regulatory aspects that were supported by the project?									Respondent perceptions of institutional sustainability	Interviews Literature reviews
<i>Catalytic Role & Replication</i> : Has the project had a catalytic role in promoting institutional change, changes in behavior, policy changes, new opportunities or follow-up support?									Respondent perceptions of catalytic role and replication	Interviews Literature reviews
E. Efficiency										

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project Govt	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
21. Did the project apply any time or cost-saving mechanisms in order to achieve results within the approved timeframe and budget?									Project expenditure and delivery trends, project work plans and budget revisions	Interviews, project unit documentation, signed budget revisions, PIRs, progress reports
22. Did the project face any obstacles (financial, administrative, managerial) and to what extent has this affected its efficiency?									Respondent perceptions, project expenditure and delivery trends, recruitment and procurement timelines	Interviews, MTE, PIRs, Steering Committee and technical panel minutes, Final Report
23. To what extent did any delays in implementation affect the delivery of the project outcomes?									Respondent perceptions, project delivery trends (recruitment, procurement, contracts) in comparison with planned timelines	Same as above.
24. To what extent did the project succeed in securing the necessary funds to implement the educational strategy?									Co-financing is made available.	Project financial reports.
25. Were the required progress and financial reports prepared satisfactorily and submitted on schedule?									Reports submitted on time and accepted.	PIRs, financial reports Interviews
F. Factors affecting Project Performance										
<i>Preparation and Readiness:</i>										
26. Were the project's objectives and components clear, practicable and feasible within its timeframe?									Respondent perceptions, project performance and delivery trends, positive appraisal of project document	Interviews, project document, Quality Assurance assessment,

EVALUATION QUESTIONS	Respondents							Indicators	Data Source
	Project Team	Project	Project Govt	Stakeholders: Govt	Stakeholders	Stakeholders UN	UN		
27. What factors influenced the quality-at-entry of the project design, choice of partners, allocation of financial resources etc.?								Same as above.	Same as above, PDF reports
28. Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities) and enabling legislation assured? Were adequate project management arrangements in place?								Respondent perceptions, institutional arrangements and counterpart contributions clearly spelt out in project document.	Interviews, project document, PDF reports
<i>Project Implementation and Management:</i>									
29. To what extent were the project implementation mechanisms outlined in the project document effective in delivering project outputs and outcomes? Were adaptations made to the approaches originally proposed								Respondent perceptions, project performance and level of achievement of outputs/outcomes.	PIRs, Final Report
30. How effective and efficient was project management by the Molina Center and the PMU, and how well did they adapt to changes during the project lifetime?								Same as above.	Same as above.
31. To what extent did the Steering Committee provide guidance and contribute to effective project implementation?								Respondent perceptions, implementation of SC decisions/recommendations	Interviews, minutes of SC meetings
32. To what extent did the project management and national partners respond to the guidance/recommendations provided by the Steering Committee and the UN ENVIRONMENT Task Manager								Respondent perceptions, implementation of SC/UN ENVIRONMENT/ recommendations by PMU/CNAs	Interviews, minutes of SC meetings, PIRs,

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project Govt	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
33. Identify any operational and political / institutional problems and constraints that influenced implementation, and how the project partners tried to overcome these problems.									Respondent perceptions; identified obstacles/constraints and remedial actions taken	Interviews, minutes of SC meetings, Pairs, Final Report
<i>Stakeholder Participation and Public Awareness</i>										
34. What approaches were used to identify and engage stakeholders in project design and implementation?									Respondent perceptions, evidence of workshops or other consultation mechanisms	Interviews, PDF reports, PIRs, Final Report
35. To what extent have project partners and stakeholders collaborated/interacted effectively during project design and implementation?									Respondent perceptions, documented interactions	Same as above.
36. Did the project promote mechanisms for stakeholder participation in decision-making in the programs, plans and other initiatives that it generated?									Respondent perceptions, evidence of stakeholder participation in planning and decision-making	Same as above.
<i>Country Ownership and Driven-ess</i>										
37. To what degree has the Molina Center /INE/SEMARNAT assumed responsibility for the project and provided adequate support to project execution, including the cooperation received from the various public institutions involved and timeliness of counter-part funding?									Respondent Perceptions, performance of the Molina Center/INE and project team in implementation, timeliness of project delivery	Interviews, PIRs, MTE, Final Report

EVALUATION QUESTIONS	Respondents							Indicators	Data Source
	Project Team	Project	Project Govt	Stakeholders: Govt	Stakeholders: Stakeholders	UN	UN		
38. To what extent have the national and regional political/institutional frameworks facilitated project performance?								Respondent perceptions, consistency of approaches to SLCF in Central America, synergies with other countries through regional coordination and activities	Same as above Literature reviews
<i>Financial Planning & Management</i>									
39. Were sufficient financial resources made available and disbursed in a timely manner to the project and its partners?								Respondent perceptions, timeliness of disbursements, budget revisions	PIRs, budget revisions, financial reports
40. Were administrative processes such as staff recruitment, procurement of goods and services (including consultants), and preparation/ negotiation of cooperation agreements conducted efficiently and in a timely manner?								Same as above.	Same as above
41. Were co-financing commitments met as programmed and made available in a timely manner?								Same as above.	Same as above.
42. Were additional resources – financial, in-kind – leveraged by the project, beyond those that were already committed prior to the project's approval?								Budget revisions, increased allocations to existing/new budget lines through co-financing	Same as above.

EVALUATION QUESTIONS	Respondents							Indicators	Data Source
	Project Team	Project	Project Govt	Stakeholders: Govt	Stakeholders	Stakeholders UN	UN		
43. Identify irregularities (if any) in procurement, use of financial resources and human resource management, and the measures taken by the Molina Center or UN ENVIRONMENT to correct/prevent such irregularities.								Documented irregularities, interrupted procurement/disbursement processes	Interviews, PIRs, audit reports
<u>UN ENVIRONMENT supervision and backstopping:</u>									
44. Assess the quality and efficiency of UNENVs supervision plans, outcome monitoring, PIR reporting and financial/administrative services								Respondent perceptions, timeliness and acceptance of PIR and financial reports; timeliness of disbursements and administrative support services by UNENV	Interviews, PIRs, Steering Committee minutes
<u>Monitoring and evaluation></u>									
45. Did the project's design include a viable M&E plan that is based on outcomes and includes indicators?								Monitoring Plan is included in the project document.	Project document; CEO Endorsement document
46. Did the project's design include a monitoring budget?								Project document includes monitoring budget line.	Project document.
47. Have monitoring findings influenced adaptive management and contributed towards resolving implementation problems?								Respondent perceptions, evidence of technical/management decisions based on monitoring findings	Interviews, monitoring reports
48. Are there specific indicators for each of the project objectives? Are the indicators measurable, attainable (realistic) and relevant to the objectives? Are the indicators time- bound?								Indicators are included in Results Framework for each objective.	Project document.

EVALUATION QUESTIONS	Respondents							Indicators	Data Source	
	Project Team	Project	Project	Stakeholders: Govt	Stakeholders	Stakeholders	UN			UN
49. Have the responsibilities for M&E activities been clearly defined? Were the data sources and data collection instruments appropriate? Was the frequency of various monitoring activities specified and adequate? In how far were project users involved in monitoring?									Designated parties conduct monitoring activities periodically with inputs from project participants. The monitoring approach is considered methodologically appropriate by the evaluator and most respondents.	Interviews, monitoring reports.

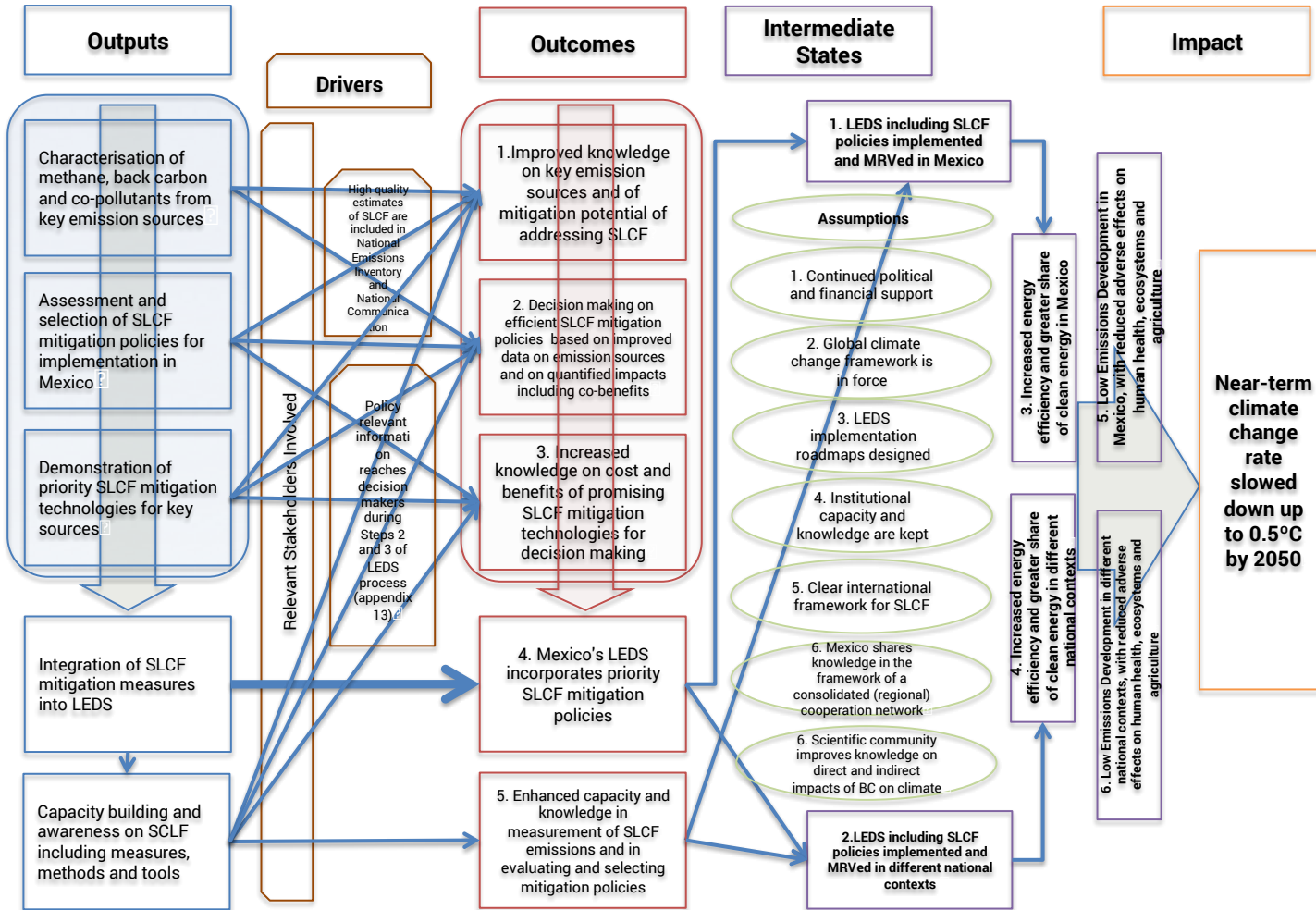
Appendix D: List of Publications Reviewed

- Benaouda M., Ronquillo M.G., Molina L.T., Ortega Y.O., Status of research on enteric methane emissions and mitigation strategies in Latin America. *Revista Mexicana de Ciencias Agrícolas* 8 (4) 2017: 965-974.
- Carabali G., Castro T., De La Cruz W., Peralta O., Varela A., Amelines O, Rivera M., Ruiz Suarez G., Torres-Jardin R., Martines-Quiroz E., Polincronaides R., Murillo G., Morena E., Munoz-Munoz R., Molina L (2017) : Morphological and chemical characteristics of soot emitted during flaming combustion of native wood species used for cooking process in western Mexico *Journal of Aerosol Science* 95 1-14.
- Goma R.M., Gonzales-Ronquillo M., Arredondo-Ramos J., Molina L.T., Castelan-Oretega O. Gorma et. al., (2017) Tanniferous plants and methane production. *Ecosist Recur Agropec.*, 4 (11):371-380.
- Solis J.R., Vazquez A.T., Castillo J.I., Gamboa J.A., Burgos A. J., Perez C.F., Sanchez F.J., Ortega O.A., Lopez J.L., Owen P.O., Ku Vera J.C., (2017). Design and construction of low cost respiration chambers for ruminal methane measurements in ruminants. *Rev Mex Clenc. Pecu* 8(2):185-191.
- Medina P., Edwards R.D., Masera O. (2017) Comparative performance of five Mexican planca-type cookstoves using water boiling tests. *Development Engineering*. 2: 20-28.
- Noyola A., Paredes M.G., Guereca L. P., Molina L.T., Zavala M. Methane correction factors for estimating emissions from aerobic wastewater treatment faculties based on field data in Mexico and on literature review. (2018) *Science of the Total Environment*. 639: 84-91.
- Ortinez-Alvarez A., Peralta O, Alvarez-Ospina H., Martinez-Arroyo A., Castro T., Paramo V. H., Ruiz-Suarez L.G., Garza J., Saavedra I., Espinosa M., Vizcaya-Ruiz A., Gavilan A., Basaldud R., Munguia-Guillen J.R. (2017) Concentration profile of elemental and organic carbon and personal exposure to to other pollutants from brick kilns in Durango Mexico. *Air Quality, Atmosphere and Health*. doi. org 10.1007/S11869-017-0539-z.
- Paredes M.G. , Guereca L.P., Molina L.T., Noyola A., (2015) Methane emissions from stabilization ponds for municipal wastewater treatment in Mexico. *Journal of Integrative Environmental Sciences*. 12 (S1): 139-153.
- Santiago-de la Rosa N, Gonzalez-Cardosa G., De Jesus-Figueroa-Lara, Gutierrez-Arazaluz M., Octaviano-Villasana C., Ramirez-Hernandez I.F., Mugica-Alvarado V. (n.d.) Emission factors of atmospheric and climatic pollutants from crop residues burning. No journal name: noted as accepted for publication.

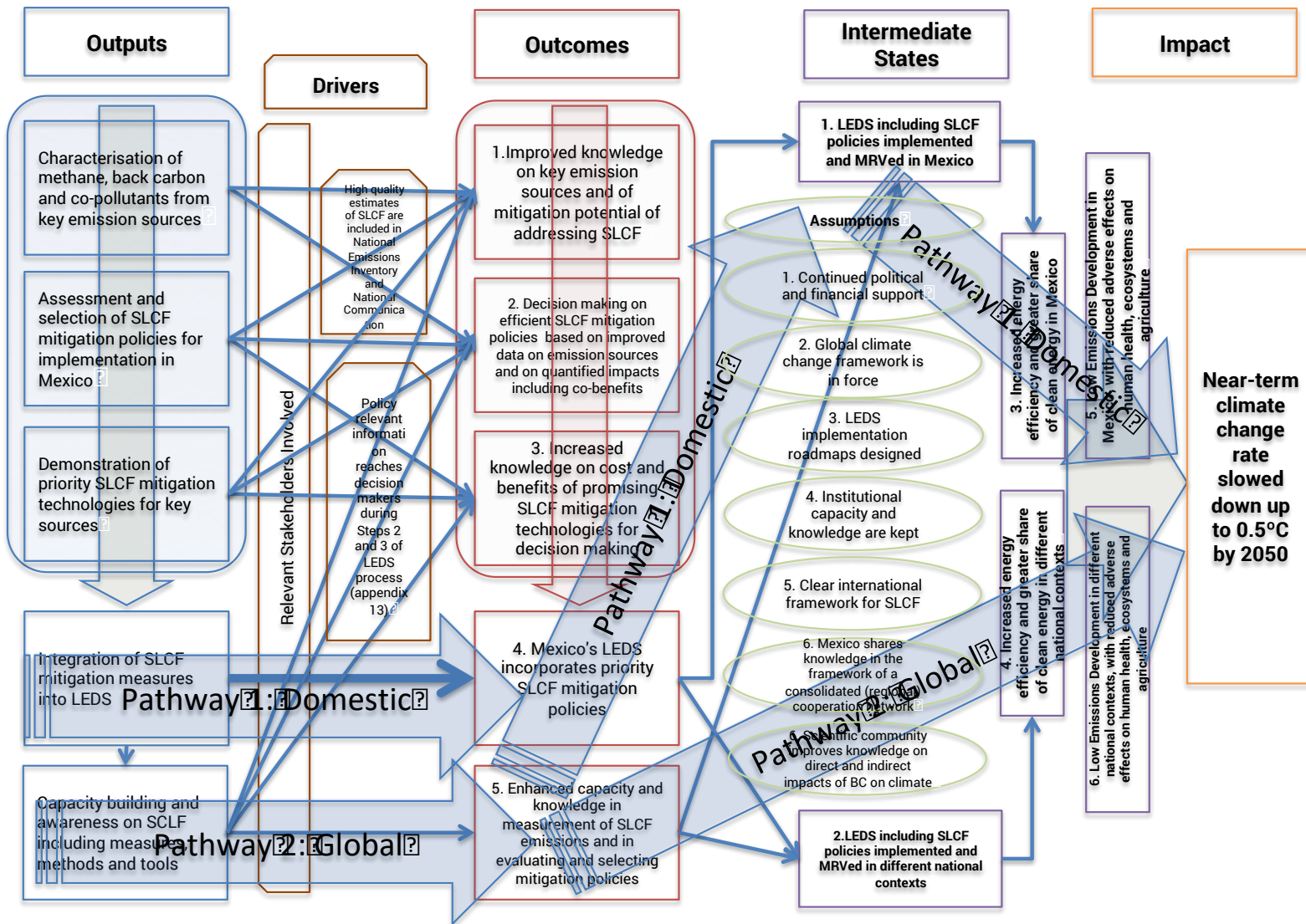
Zavala M., Huertas J.I., Prato D., Jazcilevich A., Aguilar A., Balam M., Misra C., Molina L.T.,
Real world emissions of in use off road vehicles in Mexico. *Journal of the Air and Waste
Management Association*. 67 (9): 958-972 .

Zavala M. et al. (2017) Emission factors of black carbon and co-pollutants from diesel
vehicles in Mexico City. *Supplement of Atmos. Chem. Phy.* 17, 15293-15305.

Appendix E: Theory of Change at Inception



Theory of Change at Inception with Pathways



Appendix F. Quality Assurance

Quality Assessment of the Evaluation Report

Evaluation Title:

GEF Project: Integrated Responses to Short-Lived Climate Forcers Promoting Clean Energy and Energy Efficiency in Mexico

All UN Environment evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is dependent on more than just the consultant's efforts and skills. Nevertheless, the quality assessment is used as a tool for providing structured feedback to evaluation consultants, especially at draft report stage. This guidance is provided to support consistency in assessment across different Evaluation Managers and to make the assessment process as transparent as possible.

	UN Environment Evaluation Office Comments	Final Report Rating
Substantive Report Quality Criteria		
<p><i>Quality of the Executive Summary:</i></p> <p>The Summary should be able to stand alone as an accurate summary of the main evaluation product. It should include a concise overview of the evaluation object; clear summary of the evaluation objectives and scope; overall evaluation rating of the project and key features of performance (strengths and weaknesses) against exceptional criteria (plus reference to where the evaluation ratings table can be found within the report); summary of the main findings of the exercise, including a synthesis of main conclusions (which include a summary response to key strategic evaluation questions), lessons learned and recommendations.</p>	<p>Final report: compared to the zero draft, the team has clarified the financial information, moved details to relevant sections and cleaned up the formatting in this section</p>	6
<p><i>I. Introduction</i></p> <p>A brief introduction should be given identifying, where possible and relevant, the following: institutional context of the project (sub-programme, Division, regions/countries where implemented) and coverage of the evaluation; date of PRC approval and project document signature); results frameworks to which it contributes (e.g. Expected Accomplishment in POW); project duration and start/end dates; number of project phases (where appropriate); implementing partners; total secured budget and whether the project has</p>	<p>Final report: Significantly re-organized compared to the zero draft which was overly detailed and a bit repetitive</p>	6

<p>been evaluated in the past (e.g. mid-term, part of a synthesis evaluation, evaluated by another agency etc.)</p> <p>Consider the extent to which the introduction includes a concise statement of the purpose of the evaluation and the key intended audience for the findings?</p>		
<p>II. Evaluation Methods</p> <p>This section should include a description of how the <i>TOC at Evaluation</i>²⁴ was designed (who was involved etc.) and applied to the context of the project?</p> <p>A data collection section should include: a description of evaluation methods and information sources used, including the number and type of respondents; justification for methods used (e.g. qualitative/ quantitative; electronic/face-to-face); any selection criteria used to identify respondents, case studies or sites/countries visited; strategies used to increase stakeholder engagement and consultation; details of how data were verified (e.g. triangulation, review by stakeholders etc.).</p> <p>The methods used to analyse data (e.g. scoring; coding; thematic analysis etc.) should be described.</p> <p>It should also address evaluation limitations such as: low or imbalanced response rates across different groups; gaps in documentation; extent to which findings can be either generalised to wider evaluation questions or constraints on aggregation/disaggregation; any potential or apparent biases; language barriers and ways they were overcome.</p> <p>Ethics and human rights issues should be highlighted including: how anonymity and confidentiality were protected and strategies used to include the views of marginalised or potentially disadvantaged groups and/or divergent views.</p>	<p>Final report: Zero draft required restructuring of methods and table of reports reviewed All now addressed in draft</p>	<p>6</p>
<p>III. The Project</p> <p>This section should include:</p> <ul style="list-style-type: none"> • <i>Context</i>: Overview of the main issue that the project is trying to address, its root causes and consequences on the environment and human well-being (i.e. synopsis of the problem and situational analyses). • <i>Objectives and components</i>: Summary of the project's results hierarchy as stated in the ProDoc (or as officially revised) • <i>Stakeholders</i>: Description of groups of targeted stakeholders organised according to relevant common characteristics • <i>Project implementation structure and partners</i>: A description of the implementation structure with diagram and a list of key project partners • <i>Changes in design during implementation</i>: Any key events that affected the project's scope or parameters should be described in brief in chronological order 	<p>Final report: The draft report now contains all the necessary sections whereas in the zero draft financials were not explicit and content had to be restructured to meet standards</p>	<p>6</p>

²⁴ During the Inception Phase of the evaluation process a *TOC at Design* is created based on the information contained in the approved project documents (these may include either logical framework or a TOC or narrative descriptions). During the evaluation process this TOC is revised based on changes made during project intervention and becomes the *TOC at Evaluation*.

<ul style="list-style-type: none"> • <i>Project financing</i>: Completed tables of: (a) budget at design and expenditure by components (b) planned and actual sources of funding/co-financing 		
<p>IV. Theory of Change</p> <p>The TOC at Evaluation should be presented clearly in both diagrammatic and narrative forms. Clear articulation of each major causal pathway is expected, (starting from outputs to long term impact), including explanations of all drivers and assumptions as well as the expected roles of key actors.</p> <p>Where the project results as stated in the project design documents (or formal revisions of the project design) are not an accurate reflection of the project's intentions or do not follow OECD/DAC definitions of different results levels, project results may need to be re-phrased or reformulated. In such cases, a summary of the project's results hierarchy should be presented for: a) the results as stated in the approved/revised Prodoc logframe/TOC and b) as formulated in the TOC at Evaluation. <i>The two results hierarchies should be presented as a two column table to show clearly that, although wording and placement may have changed, the results 'goal posts' have not been 'moved'.</i></p>	<p>Final report: Zero draft needed a table of changes made to move from the original log frame to the theory of change at review.</p>	<p>6</p>
<p>V. Key Findings</p> <p>A. Strategic relevance:</p> <p>This section should include an assessment of the project's relevance in relation to UN Environment's mandate and its alignment with UN Environment's policies and strategies at the time of project approval. An assessment of the complementarity of the project with other interventions addressing the needs of the same target groups should be included. Consider the extent to which all four elements have been addressed:</p> <ol style="list-style-type: none"> 1. Alignment to the UN Environment Medium Term Strategy (MTS) and Programme of Work (POW) 2. Alignment to UN Environment/ Donor/GEF Strategic Priorities 3. Relevance to Regional, Sub-regional and National Environmental Priorities 4. Complementarity with Existing Interventions 	<p>Final report: Zero draft contained very detailed sections that needed to be summarized alongwith some re-organization</p>	<p>6</p>
<p>B. Quality of Project Design</p> <p>To what extent are the strength and weaknesses of the project design effectively <u>summarized</u>?</p>	<p>Final report: Final report removes repetition and takes up the communication with private sector comment aspect in the lessons learned and recommendations</p>	<p>6</p>
<p>C. Nature of the External Context</p> <p>For projects where this is appropriate, key <u>external</u> features of the project's implementing context that limited the project's performance (e.g. conflict, natural disaster, political upheaval), and how they affected performance, should be described.</p>	<p>Final report: Reorganized and integrates EOU feedback</p>	<p>6</p>

<p>D. Effectiveness</p> <p>(i) Outputs and Direct Outcomes: How well does the report present a well-reasoned, complete and evidence-based assessment of the a) delivery of outputs, and b) achievement of direct outcomes? How convincing is the discussion of attribution and contribution, as well as the constraints to attributing effects to the intervention.</p>	<p>Final report: Significantly improved over the zero draft which was overly detailed</p>	6
<p>(ii) Likelihood of Impact: How well does the report present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to likelihood of impact?</p> <p>How well are change processes explained and the roles of key actors, as well as drivers and assumptions, explicitly discussed?</p>	<p>Final report: The final report now articulates the change processes, drivers and assumptions much better than zero draft</p>	6
<p>E. Financial Management</p> <p>This section should contain an integrated analysis of all dimensions evaluated under financial management and include a completed 'financial management' table.</p> <p>Consider how well the report addresses the following:</p> <ul style="list-style-type: none"> • <i>completeness</i> of financial information, including the actual project costs (total and per activity) and actual co-financing used • <i>communication</i> between financial and project management staff 	<p>Final report: Compared to the zero draft, the information has been re-organized, numbers verified and financial management comments sections contain more detail to substantiate the ratings.</p> <p>(if this section is rated poorly as a result of limited financial information from the project, this is not a reflection on the consultant per se, but will affect the quality of the evaluation report)</p>	6

<p>F. Efficiency</p> <p>To what extent, and how well, does the report present a well-reasoned, complete and evidence-based assessment of efficiency under the primary categories of cost-effectiveness and timeliness including:</p> <ul style="list-style-type: none"> • Implications of delays and no cost extensions • Time-saving measures put in place to maximise results within the secured budget and agreed project timeframe • Discussion of making use of/building on pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. • The extent to which the management of the project minimised UN Environment’s environmental footprint. 	<p>Final report: Removed repetition between financial management and efficiency sections</p>	<p>6</p>
<p>G. Monitoring and Reporting</p> <p>How well does the report assess:</p> <ul style="list-style-type: none"> • Monitoring design and budgeting (<i>including SMART indicators, resources for MTE/R etc.</i>) • Monitoring of project implementation (<i>including use of monitoring data for adaptive management</i>) • Project reporting (<i>e.g. PIMS and donor report</i>) 	<p>Final report: The consultants have clarified and reorganized information as requested</p>	<p>6</p>
<p>H. Sustainability</p> <p>How well does the evaluation identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct outcomes including:</p> <ul style="list-style-type: none"> • Socio-political Sustainability • Financial Sustainability • Institutional Sustainability 	<p>Final report: Final report relies well on the criteria and tables identified.</p>	<p>6</p>
<p>I. Factors Affecting Performance</p> <p>These factors are <u>not</u> discussed in stand-alone sections but are integrated in criteria A-H as appropriate. To what extent, and how well, does the evaluation report cover the following cross-cutting themes:</p> <ul style="list-style-type: none"> • Preparation and readiness • Quality of project management and supervision²⁵ • Stakeholder participation and co-operation • Responsiveness to human rights and gender equity • Country ownership and driven-ness • Communication and public awareness 	<p>The information in the zero draft has now been re-organized and integrated into the various criteria it affected- along with relevant examples</p>	<p>6</p>
<p>VI. Conclusions and Recommendations</p> <p>i. Quality of the conclusions: The key strategic questions should be clearly and succinctly addressed within the conclusions section.</p> <p>It is expected that the conclusions will highlight the main strengths and</p>	<p>Final report: The final report contains a compelling and reflective conclusion section with lessons learned and</p>	<p>6</p>

²⁵ In some cases ‘project management and supervision’ will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UN Environment.

<p>weaknesses of the project, and connect them in a compelling story line. Conclusions, as well as lessons and recommendations, should be consistent with the evidence presented in the main body of the report.</p>	<p>recommendations. The consultants addressed EOU comments in this section</p>	
<p>ii) Quality and utility of the lessons: Both positive and negative lessons are expected and duplication with recommendations should be avoided. Based on explicit evaluation findings, lessons should be rooted in real project experiences or derived from problems encountered and mistakes made that should be avoided in the future. Lessons must have the potential for wider application and use and should briefly describe the context from which they are derived and those contexts in which they may be useful.</p>	<p>Final report: The lessons learned were discussed with EOU and the project team. They have been synthesized and are pragmatic</p>	6
<p>iii) Quality and utility of the recommendations: To what extent are the recommendations proposals for specific action to be taken by identified people/position-holders to resolve concrete problems affecting the project or the sustainability of its results? They should be feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when. Recommendations should represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations.</p>	<p>Final report: lessons and recommendations were clarified compared to the zero draft</p>	6
<p>VII. Report Structure and Presentation Quality</p>		
<p>i) Structure and completeness of the report: To what extent does the report follow the Evaluation Office guidelines? Are all requested Annexes included and complete?</p>	<p>Final report: The final report demonstrates that the consultants have keenly followed guidelines and completed all annexes</p>	6
<p>ii) Quality of writing and formatting: Consider whether the report is well written (clear English language and grammar) with language that is adequate in quality and tone for an official document? Do visual aids, such as maps and graphs convey key information? Does the report follow Evaluation Office formatting guidelines?</p>	<p>Final report: Compared to the zero draft, the draft report now summarize information and goes to the detail a bit better. The formatting guidelines have been followed. (As different team</p>	6

	members contributed to the report, there were places in the earlier drafts where the writing style was inconsistent) It now reads with a consistent style	
OVERALL REPORT QUALITY RATING		6

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1. The overall quality of the evaluation report is calculated by taking the mean score of all rated quality criteria.

At the end of the evaluation, compliance of the evaluation process against the agreed standard procedures is assessed, based on the table below. *All questions with negative compliance must be explained further in the table below.*

Evaluation Process Quality Criteria	Compliance	
	Yes	No
Independence:		
1. Were the Terms of Reference drafted and finalised by the Evaluation Office?	y	
2. Were possible conflicts of interest of proposed Evaluation Consultant(s) appraised and addressed in the final selection?		n
3. Was the final selection of the Evaluation Consultant(s) made by the Evaluation Office?	y	
4. Was the evaluator contracted directly by the Evaluation Office?	y	
5. Was the Evaluation Consultant given direct access to identified external stakeholders in order to adequately present and discuss the findings, as appropriate?	y	
6. Did the Evaluation Consultant raise any concerns about being unable to work freely and without interference or undue pressure from project staff or the Evaluation Office?		n
7. If Yes to Q6: Were these concerns resolved to the mutual satisfaction of both the Evaluation Consultant and the Evaluation Manager?		
Financial Management:		
8. Was the evaluation budget approved at project design available for the evaluation?	y	
9. Was the final evaluation budget agreed and approved by the Evaluation Office?	y	
10. Were the agreed evaluation funds readily available to support the payment of the evaluation contract throughout the payment process?	y	
Timeliness:		
11. If a Terminal Evaluation: Was the evaluation initiated within the period of six months before or after project operational completion? Or, if a Mid Term Evaluation: Was the evaluation initiated within a six month period prior to the project's mid-point?	y	
12. Were all deadlines set in the Terms of Reference respected, as far as unforeseen circumstances allowed?	y	
13. Was the inception report delivered and reviewed/approved prior to commencing any travel?	y	
Project's engagement and support:		
14. Did the project team, Sub-Programme Coordinator and identified project stakeholders provide comments on the evaluation Terms of Reference?	y	
15. Did the project make available all required/requested documents?	y	
16. Did the project make all financial information (and audit reports if applicable) available in a timely manner and to an acceptable level of completeness?	y	
17. Was adequate support provided by the project to the evaluator(s) in planning and conducting evaluation missions?	y	
18. Was close communication between the Evaluation Consultant, Evaluation Office and project team maintained throughout the evaluation?	y	
19. Were evaluation findings, lessons and recommendations adequately discussed with the project team for ownership to be established?		
20. Did the project team, Sub-Programme Coordinator and any identified project stakeholders provide comments on the draft evaluation report?		

Quality assurance:			
21. Were the evaluation Terms of Reference, including the key evaluation questions, peer-reviewed?		y	
22. Was the TOC in the inception report peer-reviewed?		y	
23. Was the quality of the draft/cleared report checked by the Evaluation Manager and Peer Reviewer prior to dissemination to stakeholders for comments?		y	
24. Did the Evaluation Office complete an assessment of the quality of both the draft and final reports?		y	
Transparency:			
25. Was the draft evaluation report sent directly by the Evaluation Consultant to the Evaluation Office?		y	
26. Did the Evaluation Manager disseminate (or authorize dissemination) of the cleared draft report to the project team, Sub-Programme Coordinator and other key internal personnel (including the Reference Group where appropriate) to solicit formal comments?		y	
27. Did the Evaluation Manager disseminate (or authorize dissemination) appropriate drafts of the report to identified external stakeholders, including key partners and funders, to solicit formal comments?		y	
28. Were all stakeholder comments to the draft evaluation report sent directly to the Evaluation Office		y	
29. Did the Evaluation Consultant(s) respond to all factual corrections and comments?		y	
30. Did the Evaluation Office share all comments and Evaluation Consultant responses with all those who were invited to comment?		y	

Provide comments / explanations / mitigating circumstances below for any non-compliant process issues.

<u>Process Criterion Number</u>	<u>Evaluation Office Comments</u>

Appendix G. Terms of Reference

Terminal Evaluation of the UN Environment/Global Environment Facility project “Integrated responses to short-lived climate forcers promoting clean energy and energy efficiency”

Section 1: PROJECT BACKGROUND AND OVERVIEW

Project General Information

Table 1. Project summary

GEF Project ID:	4999		
Implementing Agency:	Climate and Clean Air Coalition (CCAC) Secretariat, Un Environment	Executing Agency:	Molina Center for Strategic Studies in Energy and the Environment in coordination with INE
Sub-programme:		Expected Accomplishment(s):	
UN Environment approval date:	September 24, 2012	Programme of Work Output(s):	
GEF approval date:	July 18, 2012	Project type:	
GEF Operational Programme #:		Focal Area(s):	Climate Change
		GEF Strategic Priority:	CCM1: Promote the demonstration, deployment, and transfer of innovative low-carbon technologies
<i>Expected</i> start date:		Actual start date:	September 24, 2012
<i>Planned</i> completion date:	July 31, 2016	Actual completion date:	July 31, 2016

<i>Planned</i> project budget at approval:	\$23,403,213	Actual total expenditures reported as of [date]:	
GEF grant allocation:	\$ 909,090	GEF grant expenditures reported as of [date]:	
Project Preparation Grant - GEF financing:		Project Preparation Grant - co-financing:	
<i>Expected</i> Medium-Size Project/Full-Size Project co-financing:	MSP	Secured Medium-Size Project/Full-Size Project co-financing:	MSP: \$.22,494,123
First disbursement:	October 18, 2012	Date of financial closure:	
No. of revisions:	1	Date of last revision:	November 15, 2013
No. of Steering Committee meetings:		Date of last/next Steering Committee meeting:	Last: Next:
Mid-term Review/ Evaluation (<i>planned date</i>):		Mid-term Review/ Evaluation (actual date):	
Terminal Evaluation (<i>planned date</i>):		Terminal Evaluation (actual date):	
Coverage - Country(ies):	Mexico	Coverage - Region(s):	Mexico
Dates of previous project phases:		Status of future project phases:	

Project rationale²⁶

2011 UN ENVIRONMENT/WMO assessment indicating that implementing control strategies to reduce emissions of methane and black carbon with existing technologies can immediately protect the climate in the short term and provide important benefits for energy efficiency, human health, crop production and ecosystem, together with CO2 emission reduction efforts

Science and Policy Workshop 9-10 Sept, 2011 hosted by INE, WMO, MCE2, concluded on the importance of conducting national projects and regional collaboration for more information on SLCF control measures and field data

²⁶ Legend: Grey =Info to be added

Ministerial Meeting, 12 Sept, 2011 organized by Mexico's ministry of environment and attended by high-level representatives from 23 countries, indicated the urgency of addressing global warming and the role and potential of SLCFs in protecting the climate change and co-benefits of improved air quality for human health and ecosystems.

Government of Mexico (through its ministries of planning and environment) confirmed in February 2012 to use part of its GEF allocation for a pilot project on short lived climate pollutants

Project Component	Expected Outcomes	Expected Outputs	GEF Grant Amount	Confirmed Co-financing
Component 1. Characterization of methane, black carbon (BC) and co-pollutants from key emissions sources	1.1.Improved knowledge on key emission sources and of mitigation potential of addressing SLCF	1.1 Activity data and emission factors for methane and BC to define targeted mitigation measures 1.2 Characterization of methane and BC from main sources 1.3 Comprehensive emission inventories for SLCF	\$399,365	\$611,191
Component 2. Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico	2.1 Decision making on efficient SLCF mitigation policies based on improved data on emission sources and on quantified impacts including co-benefits	2.1 Technical report including selection, evaluation and ranking of SLCF mitigation policies in terms of climate benefits, energy efficiency, health, agricultural production and ecosystem protection from sector specific data.	\$213,850	\$1,045,922
Component 3. Demonstration of SLCF mitigation technologies for key sources	3. Increased knowledge on cost and benefits of promising SLCF mitigation technologies for decision making	3.1 Demonstration of priority SLCF mitigation technologies as basis for learning and replication	218,965	446,365
Component 4: Integration of SLCF mitigation measures into LEDS	4.1 Mexico's LEDS incorporate priority SLCF mitigation policie	4.1 Results from components 1-3 compiled, integrated in LEDS, regularly updated and monitored	21,800	19,690,000
Component 5: Capacity building, awareness raising,	5.1 Enhanced capacity and knowledge in measurement of SLCF emissions and in evaluating and	5.1 National SLCF action plan 5.2 Guidance document developed	\$35,110	\$205,565

monitoring and evaluation	selecting mitigation policies	5.3 Staff trained on SLCP related inventories and measures 5.4. Peer reviewed articles 5.5. Monitoring and evaluation reports		
SUB TOTAL			\$889,090	\$21,999,043
Project Management Costs			\$20,000	\$495,080
TOTAL			\$909,090	22,494,123

Project objectives and components

First GEF project supporting an integrated response to reducing SLCP

The project contributes to promoting low carbon technologies by characterizing black carbon and CH₄ plus corollary CO and VOCs emissions from important Mexican high carbon technologies such as on-road and off-road vehicles, domestic cooking and heating appliances, brick kilns, livestock, landfills, wastewater treatment plants and natural gas and petroleum production facilities. In each case the project will measure emissions from currently deployed technologies, and where possible compare with low carbon alternatives. Integrated assessments of the key emission sources of SLCFs and subsequently assessment and analysis of SLCFs mitigation options will help the Government of Mexico (GoM) to prioritize efficient mitigation policies for their low-carbon development strategies.

The overall goal of the project was to contribute to the development and implementation of a comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico by promoting clean energy and energy efficiency through an integrated assessment of short-lived climate forcers (SLCFs), and the development and demonstration of targeted SLCFs mitigation policies.

These objectives were accomplished through following tasks:

Characterization of methane, black carbon and co-pollutants from key emissions sources

Selection of mitigation policies for implementation in Mexico

Demonstration of emissions reduction technologies

Integration of SLCP mitigation measures into LEDS

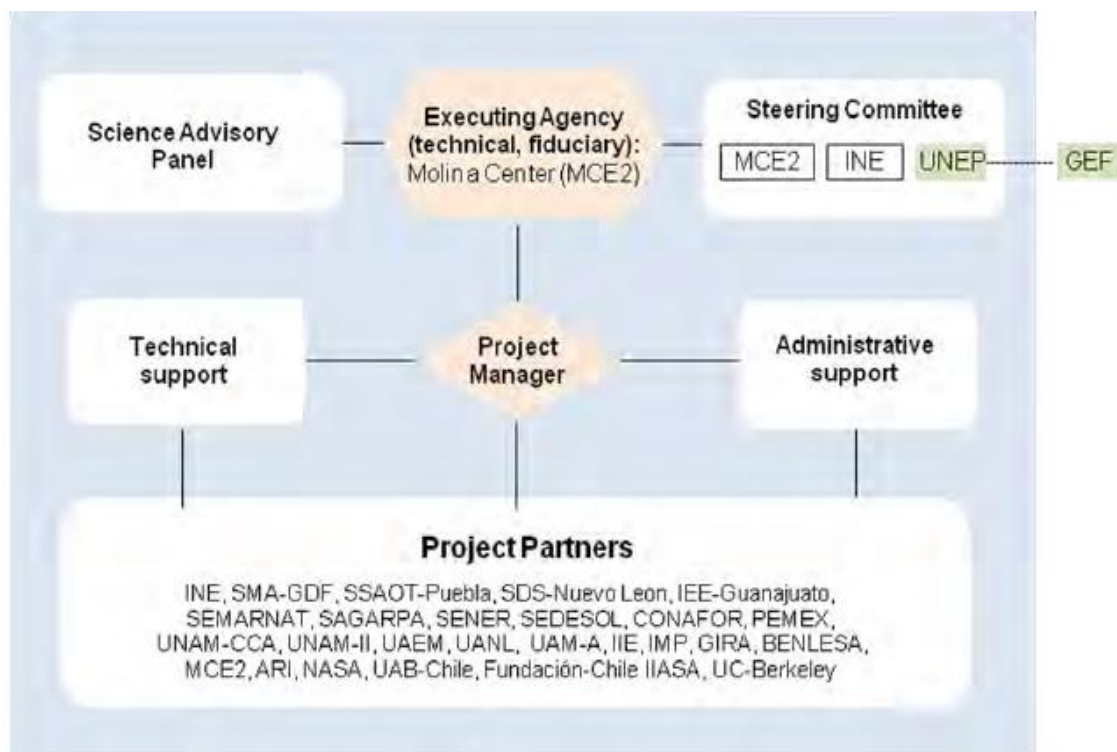
Capacity building and awareness raising

Project Objective: Contribute to the development and implementation of a more comprehensive and sustainable Low Emissions Development Strategy (LEDS) for Mexico through an integrated assessment of short-lived climate forcers (SLCF), and the development and demonstration of targeted SLCF mitigation policies

Executing Arrangements

Executing agencies: Molina Center for Energy and Environment, INE

Implementing agency: United Nations Environment Programme (UN ENVIRONMENT)



Project Partners: SEMARNAT, UN ENVIRONMENT, ARI, UNAM-II, UNAM-CCA, UAEM, GIRA, GAMATEK, UAM-I, UANL, UADY, IMP, DRI, PEMEX, BENLESA, NASA, SAGARPA, UNAM-Veracruz, UNAM-Morelia, Gob-Distrito Federal, Gob-Querétaro, Gob-Nuevo Leon, IEE-Guanajuato

Intensive field measurement (Feb - Mar 2013)	MCE2, ARI and the following collaborating partners
Transport	GDF- Secretaria de Medio Ambiente, RTP, Metrobus, Coca-Cola/FEMSA, UNAM, ADO con Turibus, DINA
Brick Kilns	GAMATEK, UNAM-CCA, UAM-I, INECC, Estado de Guanajuato, Municipio de León y Abasolo
Cookstoves	GIRA, UNAM-CCA, EcoZoom, Eco-Estufa, Helps International
Wastewater treatment	UNAM-II, GDF, SADM, CEA-Querétaro, JAPAMI
Agriculture (Livestock)	UAEM, UADY, UNAM-Veracruz, SAGARPA
Oil/gas	IMP, PEMEX
Landfill	SEISA-BENLESA, GDF-Secretaria de Obras Publicas

Project Cost and Financing

GEF Grant \$ 909,090 and co-financing from the Molina Center, INE and USAID

Co-financing Tables below (Source- CEO Endorsement)

	Co- financing by Project Component/ Activity						Co-financing by Type			
	1	2	3	4	5	6	TOTAL	CASH	IN-KIND	TOTAL
Co-financing Source	US \$	US \$	US \$	US \$	US \$	US \$	US \$	US \$	US \$	US \$
USAID				19,690,000		310,000	20,000,000	20,000,000		20,000,000
UNEP		500,000					500,000		500,000.00	500,000.00
INE	296,475	245,000	258,525		120,000	80,000	1,000,000	250,000	750,000	1,000,000
MCE2	166,276	234,557	77,970		85,565	105,080	669,448	152,853	516,595	669,448
UNAM-CCA	95,190	38,615	75,870				209,675		209,675	209,675
UNAM-II	23,750	23,750					47,500		47500	47500
UAEM	4,500.00	4,000.00	4,000.00				12,500		12500	12500
ARI	25,000.00		25,000.00				50,000		50,000.00	50,000.00
GIRA			5000				5,000		5000	5000
Total	611,191.00	1,045,922.00	446,365.00	19,690,000	205,565	495,080	22,169,448	20,402,853	2,091,270	22,494,123

Cash Statement illustrating spend rate:

Period	OBMO	Amount
Oct - Dec 2012	85457	64,480.00
Jan - Mar 2013	85459	142,509.00
Apr - Jun 2013	85459	171,885.00
Jul - Sept 2013	91730	169,166.00
Oct - Dec 2013	93517	122,560.00
Jan - Mar 2014	95275	53,308.00
Apr - Jun 2014	96842	64,029.00
Jul - Sept 2014		24,193.00

Audit Adjustment		(14,545.00)
Oct - Dec 2014		5,406.00
Jul - Sep 15		2,800.00
Final Expenditure		93,284.00
Total		899,075.00
		992,359.00

Implementation Issues

Change in government – took long to re-engage with INECC

Section 2. OBJECTIVE AND SCOPE OF THE EVALUATION

Key Evaluation principles

Evaluation findings and judgements should be based on sound evidence and analysis, clearly documented in the evaluation report. Information will be triangulated (i.e. verified from different sources) as far as possible, and when verification is not possible, the single source will be mentioned (whilst anonymity is still protected). Analysis leading to evaluative judgements should always be clearly spelled out.

The “Why?” Question. As this is a terminal evaluation and a follow-up project is likely [or similar interventions are envisaged for the future], particular attention should be given to learning from the experience. Therefore, the “Why?” question should be at the front of the consultants’ minds all through the evaluation exercise and is supported by the use of a theory of change approach. This means that the consultants need to go beyond the assessment of “what” the project performance was, and make a serious effort to provide a deeper understanding of “why” the performance was as it was. This should provide the basis for the lessons that can be drawn from the project.

Baselines and counterfactuals. In attempting to attribute any outcomes and impacts to the project intervention, the evaluators should consider the difference between *what has happened with, and what would have happened without, the project*. This implies that there should be consideration of the baseline conditions, trends and counterfactuals in relation to the intended project outcomes and impacts. It also means that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project. Sometimes, adequate information on baseline conditions, trends or counterfactuals is lacking. In such cases this should be clearly

highlighted by the evaluators, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

Communicating evaluation results. A key aim of the evaluation is to encourage reflection and learning by UN Environment staff and key project stakeholders. The consultant should consider how reflection and learning can be promoted, both through the evaluation process and in the communication of evaluation findings and key lessons. Clear and concise writing is required on all evaluation deliverables. Draft and final versions of the main evaluation report will be shared with key stakeholders by the Evaluation Manager. There may, however, be several intended audiences, each with different interests and needs regarding the report. The Evaluation Manager will plan with the consultant(s) which audiences to target and the easiest and clearest way to communicate the key evaluation findings and lessons to them. This may include some or all of the following; a webinar, conference calls with relevant stakeholders, the preparation of an evaluation brief or interactive presentation.

Objective of the Evaluation

In line with the UN Environment Evaluation Policy²⁷ and the UN Environment Programme Manual²⁸, the Terminal Evaluation (TE) is undertaken at completion of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UN Environment and Molina Center and INECC. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation.

Key Strategic Questions

In addition to the evaluation criteria outlined in Section 10 below, the evaluation will address the strategic questions listed below. These are questions of interest to UN Environment and to which the project is believed to be able to make a substantive contribution:

To what extent have the interventions have been appropriate to bridge the gap between science and policy/ action/ implementation of the national strategy including SLCF/ air quality and climate stabilization? clean

²⁷ <http://www.UNEnvironment.org/eou/StandardsPolicyandPractices/UNENVIRONMENTEvaluationPolicy/tabid/3050/language/en-US/Default.aspx>

²⁸ http://www.UNEnvironment.org/QAS/Documents/UNENVIRONMENT_Programme_Manual_May_2013.pdf . *This manual is under revision.*

Energy and energy efficiency through SLCP mitigation strategies. benefits for health, crop production, ecosystem?

-? To what extent has the project built capacity in the sectoral ministries and civil society to implement SLCP mitigation strategies? E.g. the national institution mandated to monitor temp change (meteorological association) and how does this input into disaster preparedness planning for the agricultural sector?

How unique is this project vis a vis other prior and existing national, regional and global projects related to SLCP in Mexico- how does this build on prior projects and link to follow on projects?

To what extent were gender aspects considered in the design and implementation of this project- especially in engaging relevant sector level stakeholders in the emanating strategy implementation process at the sector level? e.g. residential, agriculture, etc.

Evaluation Criteria

All evaluation criteria will be rated on a six-point scale. Sections A-I below, outline the scope of the criteria and a link to a table for recording the ratings is provided in Annex 1). A weightings table will be provided in excel format (link provided in Annex 1) to support the determination of an overall project rating. The set of evaluation criteria are grouped in nine categories: (A) Strategic Relevance; (B) Quality of Project Design; (C) Nature of External Context; (D) Effectiveness, which comprises assessments of the delivery of outputs, achievement of outcomes and likelihood of impact; (E) Financial Management; (F) Efficiency; (G) Monitoring and Reporting; (H) Sustainability; and (I) Factors Affecting Project Performance. The evaluation consultants can propose other evaluation criteria as deemed appropriate.

Strategic Relevance

The evaluation will assess, in line with the OECD/DAC definition of relevance, *'the extent to which the activity is suited to the priorities and policies of the target group, recipient and donor'*. The evaluation will include an assessment of the project's relevance in relation to UN Environment's mandate and its alignment with UN Environment's policies and strategies at the time of project approval. Under strategic relevance an assessment of the complementarity of the project with other interventions addressing the needs of the same target groups will be made. This criterion comprises four elements:

Alignment to the UN Environment Medium Term Strategy²⁹ (MTS) and Programme of Work (POW)

²⁹ UN Environment's Medium Term Strategy (MTS) is a document that guides UN Environment's programme planning over a four-year period. It identifies UN Environment's thematic priorities, known as Sub-programmes (SP), and sets out the desired outcomes, known as Expected Accomplishments (EAs), of the Sub-programmes.

The evaluation should assess the project's alignment with the MTS and POW under which the project was approved and include, in its narrative, reflections on the scale and scope of any contributions made to the planned results reflected in the relevant MTS and POW.

Alignment to UN Environment / Donor/GEF Strategic Priorities

Donor, including GEF, strategic priorities will vary across interventions. UN Environment strategic priorities include the Bali Strategic Plan for Technology Support and Capacity Building³⁰ (BSP) and South-South Cooperation (S-SC). The BSP relates to the capacity of governments to: comply with international agreements and obligations at the national level; promote, facilitate and finance environmentally sound technologies and to strengthen frameworks for developing coherent international environmental policies. S-SC is regarded as the exchange of resources, technology and knowledge between developing countries. GEF priorities are specified in published programming priorities and focal area strategies.

Relevance to Regional, Sub-regional and National Environmental Priorities

The evaluation will assess the extent to which the intervention is suited, or responding to, the stated environmental concerns and needs of the countries, sub-regions or regions where it is being implemented. Examples may include: national or sub-national development plans, poverty reduction strategies or Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements etc.

Complementarity with Existing Interventions

An assessment will be made of how well the project, either at design stage or during the project mobilization, took account of ongoing and planned initiatives (under the same sub-programme, other UN Environment sub-programmes, or being implemented by other agencies) that address similar needs of the same target groups. The evaluation will consider if the project team, in collaboration with Regional Offices and Sub-Programme Coordinators, made efforts to ensure their own intervention was complementary to other interventions, optimized any synergies and avoided duplication of effort. Examples may include UN Development Assistance Frameworks or One UN programming. Linkages with other interventions should be described and instances where UN Environment's comparative advantage has been particularly well applied should be highlighted.

Factors affecting this criterion may include:

Stakeholders' participation and cooperation

Responsiveness to human rights and gender equity

Country ownership and driven-ness

³⁰ <http://www.UNEnvironment.org/GC/GC23/documents/GC23-6-add-1.pdf>

Quality of Project Design

The quality of project design is assessed using an agreed template during the evaluation inception phase, ratings are attributed to identified criteria and an overall Project Design Quality rating is established (www.UN Environment.org/evaluation). This overall Project Design Quality rating is entered in the final evaluation ratings table as item B. In the Main Evaluation Report a summary of the project's strengths and weaknesses at design stage is included, while the complete Project Design Quality template is annexed in the Inception Report.

Factors affecting this criterion may include (at the design stage):

Stakeholders participation and cooperation

Responsiveness to human rights and gender equity

C. Nature of External Context

At evaluation inception stage a rating is established for the project's external operating context (considering the prevalence of conflict, natural disasters and political upheaval). This rating is entered in the final evaluation ratings table as item C. Where a project has been rated as facing either an Unfavourable or Highly Unfavourable external operating context, and/or a negative external event has occurred during project implementation, the ratings for Effectiveness, Efficiency and/or Sustainability may be increased at the discretion of the Evaluation Consultant and Evaluation Manager together. A justification for such an increase must be given.

D. Effectiveness

Delivery of Outputs

The evaluation will assess the project's success in producing the programmed outputs (*products, capital goods and services resulting from the intervention*) and achieving milestones as per the project design document (ProDoc). Any *formal* modifications/revisions made during project implementation will be considered part of the project design. Where the project outputs are inappropriately or inaccurately stated in the ProDoc, reformulations may be necessary in the reconstruction of the TOC. In such cases a table should be provided showing the original and the reformulation of the outputs for transparency. The delivery of outputs will be assessed in terms of both quantity and quality, and the assessment will consider their ownership by, and usefulness to, intended beneficiaries and the timeliness of their delivery. The evaluation will briefly explain the reasons behind the success or shortcomings of the project in delivering its programmed outputs and meeting expected quality standards.

Factors affecting this criterion may include:

Preparation and readiness

Quality of project management and supervision³¹

Achievement of Direct Outcomes

The achievement of direct outcomes (short and medium-term effects of the intervention's outputs; a change of behaviour resulting from the use/application of outputs, which is not under the direct control of the intervention's direct actors) is assessed as performance against the direct outcomes as defined in the reconstructed³² Theory of Change. These are the first-level outcomes expected to be achieved as an immediate result of project outputs. As in 1, above, a table can be used where substantive amendments to the formulation of direct outcomes is necessary. The evaluation should report evidence of attribution between UN Environment's intervention and the direct outcomes. In cases of normative work or where several actors are collaborating to achieve common outcomes, evidence of the nature and magnitude of UN Environment's 'substantive contribution' should be included and/or 'credible association' established between project efforts and the direct outcomes realised.

Factors affecting this criterion may include:

Quality of project management and supervision

Stakeholders' participation and cooperation

Responsiveness to human rights and gender equity

Communication and public awareness

Likelihood of Impact

Based on the articulation of longer term effects in the reconstructed TOC (*i.e. from direct outcomes, via intermediate states, to impact*), the evaluation will assess the likelihood of the intended, positive impacts becoming a reality. Project objectives or goals should be incorporated in the TOC, possibly as intermediate states or long term impacts. The Evaluation

³¹ In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UN Environment.

³² UN Environment staff are currently required to submit a Theory of Change with all submitted project designs. The level of 'reconstruction' needed during an evaluation will depend on the quality of this initial TOC, the time that has lapsed between project design and implementation (which may be related to securing and disbursing funds) and the level of any changes made to the project design. In the case of projects pre-dating 2013 the intervention logic is often represented in a logical framework and a TOC will need to be constructed in the inception stage of the evaluation.

Office's approach to the use of TOC in project evaluations is outlined in a guidance note available on the Evaluation Office website, <https://www.unenvironment.org/about-un-environment/evaluation> and is supported by an excel-based flow chart, 'Likelihood of Impact Assessment Decision Tree'. Essentially the approach follows a 'likelihood tree' from direct outcomes to impacts, taking account of whether the assumptions and drivers identified in the reconstructed TOC held. Any unintended positive effects should also be identified and their causal linkages to the intended impact described.

The evaluation will also consider the likelihood that the intervention may lead, or contribute to, unintended negative effects. Some of these potential negative effects may have been identified in the project design as risks or as part of the analysis of Environmental, Social and Economic Safeguards.³³

The evaluation will consider the extent to which the project has played a catalytic role or has promoted scaling up and/or replication³⁴ as part of its Theory of Change and as factors that are likely to contribute to longer term impact.

Ultimately UN Environment and all its partners aim to bring about benefits to the environment and human well-being. Few projects are likely to have impact statements that reflect such long-term or broad-based changes. However, the evaluation will assess the likelihood of the project to make a substantive contribution to the high-level changes represented by UN Environment's Expected Accomplishments, the Sustainable Development Goals³⁵ and/or the high level results prioritised by the funding partner.

Factors affecting this criterion may include:

Quality of Project Management and Supervision (including adaptive management)

Stakeholders participation and cooperation

Responsiveness to human rights and gender equity

Country ownership and driven-ness

Communication and public awareness

³³ Further information on Environmental, Social and Economic Safeguards (ESES) can be found at <http://www.UNEnvironment.org/about/eses>

³⁴ *Scaling up* refers to approaches being adopted on a much larger scale, but in a very similar context. Scaling up is often the longer term objective of pilot initiatives. *Replication* refers to approaches being repeated or lessons being explicitly applied in new/different contexts e.g. other geographic areas, different target group etc. Effective replication typically requires some form of revision or adaptation to the new context. It is possible to replicate at either the same or a different scale.

³⁵ A list of relevant SDGs is available on the EO website www.UNEnvironment.org/evaluation

E. Financial Management

Financial management will be assessed under two themes: *completeness* of financial information and *communication* between financial and project management staff. The evaluation will establish the actual spend across the life of the project of funds secured from all donors. This expenditure will be reported, where possible, at output level and will be compared with the approved budget. The evaluation will assess the level of communication between the Project/Task Manager and the Fund Management Officer as it relates to the effective delivery of the planned project and the needs of a responsive, adaptive management approach. The evaluation will verify the application of proper financial management standards and adherence to UN Environment's financial management policies. Any financial management issues that have affected the timely delivery of the project or the quality of its performance will be highlighted.

Factors affecting this criterion may include:

Preparation and readiness

Quality of project management and supervision

F. Efficiency

In keeping with the OECD/DAC definition of efficiency the evaluation will assess the extent to which the project delivered maximum results from the given resources. This will include an assessment of the cost-effectiveness and timeliness of project execution. Focussing on the translation of inputs into outputs, cost-effectiveness is the extent to which an intervention has achieved, or is expected to achieve, its results at the lowest possible cost. Timeliness refers to whether planned activities were delivered according to expected timeframes as well as whether events were sequenced efficiently. The evaluation will also assess to what extent any project extension could have been avoided through stronger project management and identify any negative impacts caused by project delays or extensions. The evaluation will describe any cost or time-saving measures put in place to maximise results within the secured budget and agreed project timeframe and consider whether the project was implemented in the most efficient way compared to alternative interventions or approaches.

The evaluation will give special attention to efforts by the project teams to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency. The evaluation will also consider the extent to which the management of the project minimised UN Environment's environmental footprint.

The factors underpinning the need for any project extensions will also be explored and discussed. As management or project support costs cannot be increased in cases of 'no cost extensions', such extensions represent an increase in unstated costs to implementing parties.

Factors affecting this criterion may include:

Preparation and readiness (e.g. timeliness)

Quality of project management and supervision

Stakeholders participation and cooperation

G. Monitoring and Reporting

The evaluation will assess monitoring and reporting across three sub-categories: monitoring design and budgeting, monitoring implementation and project reporting.

Monitoring Design and Budgeting

Each project should be supported by a sound monitoring plan that is designed to track progress against SMART³⁶ indicators towards the delivery of the projects outputs and achievement of direct outcomes, including at a level disaggregated by gender, vulnerability or marginalisation. The evaluation will assess the quality of the design of the monitoring plan as well as the funds allocated for its implementation. The adequacy of resources for mid-term and terminal evaluation/review should be discussed if applicable.

Monitoring of Project Implementation

The evaluation will assess whether the monitoring system was operational and facilitated the timely tracking of results and progress towards projects objectives throughout the project implementation period. This should include monitoring the representation and participation of disaggregated groups (including gendered, vulnerable and marginalised groups) in project activities. It will also consider how information generated by the monitoring system during project implementation was used to adapt and improve project execution, achievement of outcomes and ensure sustainability. The evaluation should confirm that funds allocated for monitoring were used to support this activity.

Project Reporting

UN Environment has a centralised Project Information Management System (PIMS) in which project managers upload six-monthly status reports against agreed project milestones. This information will be provided to the Evaluation Consultant(s) by the Evaluation Manager. Some

³⁶ SMART refers to indicators that are specific, measurable, assignable, realistic and time-specific.

projects have additional requirements to report regularly to funding partners, which will be supplied by the project team (e.g. the Project Implementation Reviews and Tracking Tool for GEF-funded projects). The evaluation will assess the extent to which both UN Environment and donor reporting commitments have been fulfilled. Consideration will be given as to whether reporting has been carried out with respect to the effects of the initiative on disaggregated groups.

Factors affecting this criterion may include:

Quality of project management and supervision

Responsiveness to human rights and gender equity (e.g. disaggregated indicators and data)

H. Sustainability

Sustainability is understood as the probability of direct outcomes being maintained and developed after the close of the intervention. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct outcomes (ie. 'assumptions' and 'drivers'). Some factors of sustainability may be embedded in the project design and implementation approaches while others may be contextual circumstances or conditions that evolve over the life of the intervention. Where applicable an assessment of bio-physical factors that may affect the sustainability of direct outcomes may also be included.

Socio-political Sustainability

The evaluation will assess the extent to which social or political factors support the continuation and further development of project direct outcomes. It will consider the level of ownership, interest and commitment among government and other stakeholders to take the project achievements forwards. In particular the evaluation will consider whether individual capacity development efforts are likely to be sustained.

Financial Sustainability

Some direct outcomes, once achieved, do not require further financial inputs, e.g. the adoption of a revised policy. However, in order to derive a benefit from this outcome further management action may still be needed e.g. to undertake actions to enforce the policy. Other direct outcomes may be dependent on a continuous flow of action that needs to be resourced for them to be maintained, e.g. continuation of a new resource management approach. The evaluation will assess the extent to which project outcomes are dependent on future funding for the benefits they bring to be sustained. Secured future funding is only relevant to financial sustainability where the direct outcomes of a project have been extended into a future project phase. Even

where future funding has been secured, the question still remains as to whether the project outcomes are financially sustainable.

Institutional Sustainability

The evaluation will assess the extent to which the sustainability of project outcomes (especially those relating to policies and laws) is dependent on issues relating to institutional frameworks and governance. It will consider whether institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. are robust enough to continue delivering the benefits associated with the project outcomes after project closure. In particular, the evaluation will consider whether institutional capacity development efforts are likely to be sustained.

Factors affecting this criterion may include:

Stakeholders participation and cooperation

Responsiveness to human rights and gender equity (e.g. where interventions are not inclusive, their sustainability may be undermined)

Communication and public awareness

Country ownership and driven-ness

Factors and Processes Affecting Project Performance

(These factors are rated in the ratings table, but are discussed within the Main Evaluation Report as cross-cutting themes as appropriate under the other evaluation criteria, above)

Preparation and Readiness

This criterion focuses on the inception or mobilisation stage of the project (ie. the time between project approval and first disbursement). The evaluation will assess whether appropriate measures were taken to either address weaknesses in the project design or respond to changes that took place between project approval, the securing of funds and project mobilisation. In particular the evaluation will consider the nature and quality of engagement with stakeholder groups by the project team, the confirmation of partner capacity and development of partnership agreements as well as initial staffing and financing arrangements. *(Project preparation is included in the template for the assessment of Project Design Quality).*

Quality of Project Management and Supervision

In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in

others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping and supervision provided by UN Environment.

The evaluation will assess the effectiveness of project management with regard to: providing leadership towards achieving the planned outcomes; managing team structures; maintaining productive partner relationships (including Steering Groups etc.); communication and collaboration with UN Environment colleagues; risk management; use of problem-solving; project adaptation and overall project execution. Evidence of adaptive management should be highlighted.

Stakeholder Participation and Cooperation

Here the term 'stakeholder' should be considered in a broad sense, encompassing all project partners, duty bearers with a role in delivering project outputs and target users of project outputs and any other collaborating agents external to UN Environment. The assessment will consider the quality and effectiveness of all forms of communication and consultation with stakeholders throughout the project life and the support given to maximise collaboration and coherence between various stakeholders, including sharing plans, pooling resources and exchanging learning and expertise. The inclusion and participation of all differentiated groups, including gender groups should be considered.

Responsiveness to Human Rights and Gender Equity

The evaluation will ascertain to what extent the project has applied the UN Common Understanding on the human rights based approach (HRBA) and the UN Declaration on the Rights of Indigenous People. Within this human rights context the evaluation will assess to what extent the intervention adheres to UN Environment's Policy and Strategy for Gender Equality and the Environment.

In particular the evaluation will consider to what extent project design, implementation and monitoring have taken into consideration: (i) possible gender inequalities in access to, and the control over, natural resources; (ii) specific vulnerabilities of women and children to environmental degradation or disasters; and (iii) the role of women in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation.

Country Ownership and Driven-ness

The evaluation will assess the quality and degree of engagement of government / public sector agencies in the project. While there is some overlap between Country Ownership and Institutional Sustainability, this criterion focuses primarily on the forward momentum of the intended projects results, ie. either a) moving forwards from outputs to direct outcomes or b) moving forward from direct outcomes towards intermediate states. The evaluation will consider the involvement not only of those directly involved in project execution and those participating

in technical or leadership groups, but also those official representatives whose cooperation is needed for change to be embedded in their respective institutions and offices. This factor is concerned with the level of ownership generated by the project over outputs and outcomes and that is necessary for long term impact to be realised. This ownership should adequately represent the needs of interest of all gendered and marginalised groups.

Communication and Public Awareness

The evaluation will assess the effectiveness of: a) communication of learning and experience sharing between project partners and interested groups arising from the project during its life and b) public awareness activities that were undertaken during the implementation of the project to influence attitudes or shape behaviour among wider communities and civil society at large. The evaluation should consider whether existing communication channels and networks were used effectively, including meeting the differentiated needs of gendered or marginalised groups, and whether any feedback channels were established. Where knowledge sharing platforms have been established under a project the evaluation will comment on the sustainability of the communication channel under either socio-political, institutional or financial sustainability, as appropriate.

Section 3. EVALUATION APPROACH, METHODS AND DELIVERABLES

The Terminal Evaluation will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used as appropriate to determine project achievements against the expected outputs, outcomes and impacts. It is highly recommended that the consultant(s) maintains close communication with the project team and promotes information exchange throughout the evaluation implementation phase in order to increase their (and other stakeholder) ownership of the evaluation findings. Where applicable, the consultant(s) should provide a geo-referenced map that demarcates the area covered by the project and, where possible, provide geo-reference photographs of key intervention sites (e.g. sites of habitat rehabilitation and protection, pollution treatment infrastructure, etc.)

The findings of the evaluation will be based on the following:

A desk review of:

Relevant background documentation, inter alia – drop box of documents including final report
Project design documents (including minutes of the project design review meeting at approval);
Annual Work Plans and Budgets or equivalent, revisions to the project (Project Document Supplement), the logical framework and its budget;

Project reports such as six-monthly progress and financial reports, progress reports from collaborating partners, meeting minutes, relevant correspondence and including the Project Implementation Reviews and Tracking Tool etc.;

Project outputs: (see drop box)

Interviews (individual or in group) with:

UN Environment Task Manager (TM);

Project management team;

UN Environment Fund Management Officer (FMO);

Sub-Programme Coordinator;

Project partners, including See Stakeholder List- in drop box

Relevant resource persons- See Stakeholder List- in drop box

Field visits: Mexico City

The evaluation team will prepare:

Inception Report: (see Annex 1 for links to all templates, tables and guidance notes) containing an assessment of project design quality, a draft reconstructed Theory of Change of the project, project stakeholder analysis, evaluation framework and a tentative evaluation schedule.

Preliminary Findings Note: Typically, in the form of a PowerPoint presentation, the sharing of preliminary findings is intended to support the participation of the project team, act as a means to ensure all information sources have been accessed and provide an opportunity to verify emerging findings. In the case of highly strategic project/portfolio evaluations or evaluations with an Evaluation Reference Group, the preliminary findings may be presented as a word document for review and comment.

Draft and Final Evaluation Report: (see links in Annex 1) containing an executive summary that can act as a standalone document; detailed analysis of the evaluation findings organised by evaluation criteria and supported with evidence; lessons learned and recommendations and an annotated ratings table.

Evaluation Bulletin: a 2-page summary of key evaluation findings for wider dissemination through the EOU website.

Review of the draft evaluation report. The evaluation team will submit a draft report to the Evaluation Manager and revise the draft in response to their comments and suggestions. Once a draft of adequate quality has been peer-reviewed and accepted, the Evaluation Manager will share the cleared draft report with the Project Manager, who will alert the Evaluation Manager in case the report contains any blatant factual errors. The Evaluation Manager will then forward revised draft report (corrected by the evaluation team where necessary) to other project stakeholders, for their review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions as well as providing feedback on the proposed recommendations and lessons. Any comments or responses to draft reports will be sent to the Evaluation Manager for consolidation. The Evaluation Manager will provide all comments to the evaluation team for consideration in preparing the final report, along with guidance on areas of contradiction or issues requiring an institutional response.

Based on a careful review of the evidence collated by the evaluation consultants and the internal consistency of the report, the Evaluation Manager will provide an assessment of the ratings in the final evaluation report. Where there are differences of opinion between the evaluator and the Evaluation Manager on project ratings, both viewpoints will be clearly presented in the final report. The Evaluation Office ratings will be considered the final ratings for the project.

The Evaluation Manager will prepare a quality assessment of the first and final drafts of the main evaluation report, which acts as a tool for providing structured feedback to the evaluation consultants. The quality of the report will be assessed and rated against the criteria specified in template listed in Annex 1 and this assessment will be appended to the Final Evaluation Report.

At the end of the evaluation process, the Evaluation Office will prepare a Recommendations Implementation Plan in the format of a table, to be completed and updated at regular intervals by the Task Manager. The Evaluation Office will track compliance against this plan on a six monthly basis.

The Evaluation Team

For this evaluation, the evaluation team will consist of a Team Leader and two Supporting Consultants who will work under the overall responsibility of the Evaluation Office, represented by an Evaluation Manager, Zahra Hassanali and an Evaluation Assistant, Mercy Mwangi, in consultation with the UN Environment Task Manager Seraphine Haeussling, Fund Management Officer, Martin Okun, and the Sub-programme Coordinator of Ecosystem Management, Niklas Hagelberg. The consultants will liaise with the Evaluation Manager on any procedural and methodological matters related to the evaluation. It is, however, the consultants' individual responsibility to arrange for their visas and immunizations as well as to plan meetings with stakeholders, organize online surveys, obtain documentary evidence and any other logistical

matters related to the assignment. The UN Environment Task Manager and project team will, where possible, provide logistical support (introductions, meetings etc.) allowing the consultants to conduct the evaluation as efficiently and independently as possible.

The three consultants will be hired for 6 months spread over the period July/ August 2018 to January 2019. and should have: an advanced university degree in environmental sciences, international development or other relevant political or social sciences area; a minimum of 10 years of technical / evaluation experience, including of evaluating large, regional or global programmes and using a Theory of Change approach; a broad understanding of air quality/climate policy development (in Mexico / Latin America) , technical/ measurement of short-lived climate forcers(SLCF) emissions, development of emission factors and activity data and development of emissions inventories across sectors all related to SLCFs. Proficiency in Spanish is required, along with excellent writing skills in English; team leadership experience and, where possible, knowledge of the UN system, specifically of the work of UN Environment.

Specific Responsibilities for Team Leader:

The Team Leader will be responsible, in close consultation with the Evaluation Manager, for overall management of the evaluation and timely delivery of its outputs, described above in Section 11 Evaluation Deliverables. The Lead is the primary liaison with UN Environment Evaluation manager and deliver top quality final documents which include the inception report, draft report, final report and two page bulletin. The two supporting consultants will provide their inputs into the specific deliverables of each report. (See detailed breakdown of responsibilities in the table below.

Specific Responsibilities for the Supporting Consultants:

The Supporting Consultants will make substantive and high quality contributions to the evaluation process and outputs. Both consultants will ensure together that all evaluation criteria and questions are adequately covered.

Support Consultant 1: Support 1 has an extensive background in evaluating the impact of climate change policy into impact as well as Spanish language skills. S/he will be conducting the interviews in person and on the phone as well as supporting the team in the desk review providing a technical perspective on the reports produced, designing the theory of change, interview guides, contributing to and managing the timeline for all reports.

Support Consultant 2: Support 2 is a Spanish-speaking consultant based in Mexico with a background in Short-lived climate forcers and air quality policy. S/he will be assisting Support

1 with technical report reviews, parts of the inception report (stakeholder analysis, theory of change and project design assessment), planning meetings and data collection, transcription and summaries of interviews as well as translations of the executive summary, conclusion, power point of preliminary findings and any other parts as necessary.

Division of Labor: Lead: Pam, Support 1: Goncalo, and Support 2: Ramiro	Who
Overall – Lead=Primary liaison with UN evaluation manager and deliver top quality final documents	Lead
Inception Phase	
- conduct a preliminary desk review and introductory interviews with project staff;	ALL
- draft the reconstructed Theory of Change of the project;	Support 1 with inputs from Lead and Support 2
- project design review;	Support 2: with inputs from rest of team
- stakeholder analysis review;	Support 2: - with inputs from rest of team
- prepare the evaluation framework;	All
- develop the desk review and interview protocols;	Lead: - with inputs from Support 1 & 2
- plan the evaluation schedule;	Support 1: with input from Support 2 & Lead (skype)
- prepare the inception report, including comments received from the Evaluation Office	Lead to write – others to input
- submit draft and final inception report;	Lead with inputs from all Supports
Data collection and analysis phase of the evaluation	
- in-depth interviews with key stakeholders of the project and observe project activities	Mexico: Support 1& 2 Skype/ tel con: all
- data analysis;	Support 1: - with inputs from Support 2: (esp on reports) and Lead:

- present preliminary findings to solicit first comments from the Project team	Support 2: prepares ppt with inputs from rest of team
Reporting phase	
- prepare zero draft report and share with the Evaluation Office for comments	Lead: to integrate pieces into cohesive whole report ALL – Support 1 &2 to critique project reports,
- liaise with the Evaluation Office on comments received on the draft report and ensure that comments are taken into account during finalization of the main report; and	Lead with inputs from both supports
- prepare a Response to Comments annex for the main report, listing those comments not accepted by the consultant and indicating the reason for their rejection.	Support 1: with inputs from rest of team
Translate evaluation 2 pager, exec summary and conclusions into Spanish for stakeholders	Support 2
Managing relations of the evaluation team	ALL
Maintain a positive relationship with evaluation stakeholders, ensuring that the evaluation process is as participatory as possible but at the same time maintains its independence;	ALL
- communicate in a timely manner with the Evaluation Office on any issues requiring its attention and intervention.	ALL

Schedule of the evaluation

The table below presents the tentative schedule for the evaluation.

Table 3. Tentative schedule for the evaluation

Milestone	Deadline
Inception Report	30 August 2018
Telephone and in-person interviews, etc.:	Aug 2018 onwards
Evaluation Mission: (Mexico City) working days: Mexico City(most stakeholders are there)	17 Sep- 27 Sept 2018

Powerpoint/presentation on preliminary findings and recommendations	15 Oct 2018
Draft report to Evaluation Manager (and Peer Reviewer)	10 Nov 2018
Draft Report shared with UN Environment Project Manager and team (after integrating feedback)	20 Nov 2018
Draft Report shared with wider group of stakeholders	1 Dec 2018
Final Report	2 weeks after feedback 15 Dec 2018
Final Report shared with all respondents	1-2 weeks after receiving final draft with summary of recommendations 30 Dec 2018

Contractual Arrangements

Evaluation Consultants will be selected and recruited by the Evaluation Office of UN Environment under an individual Special Service Agreement (SSA) on a “fees only” basis (see below). By signing the service contract with UN Environment/UNON, the consultant(s) certify that they have not been associated with the design and implementation of the project in any way which may jeopardize their independence and impartiality towards project achievements and project partner performance. In addition, they will not have any future interests (within six months after completion of the contract) with the project’s executing or implementing units. All consultants are required to sign the Code of Conduct Agreement Form.

Fees will be paid on an instalment basis, paid on acceptance by the Evaluation Manager of expected key deliverables. The schedule of payment is as follows:

Schedule of Payment for the [Consultant/Team Leader]:

Deliverable	Percentage Payment
Approved Inception Report (<i>as per annex document 7</i>)	30%
Approved Draft Main Evaluation Report (<i>as per annex document 13</i>)	30%
Approved Final Main Evaluation Report	40%

Schedule of Payment for the Support Consultants:

Deliverable	Percentage Payment
Approved Inception Report (<i>as per annex document 7</i>)	30%
Approved Draft Main Evaluation Report (<i>as per annex document 13</i>)	30%

Approved Final Main Evaluation Report	40%
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Fees only contracts: Air tickets will be purchased by UN Environment and 75% of the Daily Subsistence Allowance for each authorised travel mission will be paid up front. Local in-country travel will only be reimbursed where agreed in advance with the Evaluation Manager and on the production of acceptable receipts. Terminal expenses and residual DSA entitlements (25%) will be paid after mission completion.

The consultants may be provided with access to UN Environment’s Programme Information Management System (PIMS) and if such access is granted, the consultants agree not to disclose information from that system to third parties beyond information required for, and included in, the evaluation report.

In case the consultants are not able to provide the deliverables in accordance with these guidelines, and in line with the expected quality standards by the UN Environment Evaluation Office, payment may be withheld at the discretion of the Director of the Evaluation Office until the consultants have improved the deliverables to meet UN Environment’s quality standards.

If the consultant(s) fail to submit a **Satisfactory** final product to UN Environment in a timely manner, i.e. before the end date of their contract, the Evaluation Office reserves the right to employ additional human resources to finalize the report, and to reduce the consultants’ fees by an amount equal to the additional costs borne by the Evaluation Office to bring the report up to standard.

Annex 1: Tools, Templates and Guidance Notes for use in the Evaluation

The tools, templates and guidance notes listed in the table below, and available on the Evaluation Office website (www.UNEnvironment.org/evaluation), are intended to help Evaluation Managers and Evaluation Consultants to produce evaluation products that are consistent with each other and which can be compiled into a biennial Evaluation Synthesis Report. The biennial summary is used to provide an overview of progress to UN Environment and the UN Environmental Assembly. This suite of documents is also intended to make the evaluation process as transparent as possible so that all those involved in the process can participate on an informed basis. It is recognised that the evaluation needs of projects and portfolio vary and adjustments may be necessary so that the purpose of the evaluation process (broadly, accountability and lesson learning), can be met. Such adjustments should be decided between the Evaluation Manager and the Evaluation Consultant in order to produce evaluation reports that are both useful to project implementers and that produce credible findings.

Document	Name	URL link
1	Evaluation Process Guidelines for Consultants	Link
2	Evaluation Consultants Team Roles (<i>Team Leader and Supporting Consultant</i>)	Link
3	Evaluation Ratings Table	Link
4	Weighting of Ratings (excel)	Link
5	Evaluation Criteria (<i>summary of descriptions, as in these terms of reference</i>)	Link
6	Matrix Describing Ratings by Criteria	<i>(under development – search 'Working With Us' on website)</i>
7	Structure and Contents of the Inception Report	Link
8	Template for the Assessment of the Quality of Project Design	Link
9	Guidance on Stakeholder Analysis	Link
10	Use of Theory of Change in Project Evaluations	Link
11	Assessment of the Likelihood of Impact Decision Tree (Excel)	Link
12	Possible Evaluation Questions	Link
13	Structure and Contents of the Main Evaluation Report	Link
14	Cover Page, Prelims and Style Sheet for Main Evaluation Report	<i>(under development – search 'Working With Us' on website)</i>
15	Financial Tables	Link
16	Template for the Assessment of the Quality of the Evaluation Report	Link

Appendix H. Stakeholder Analysis: Project Design and Implementation

Stakeholder Analysis					Listed in CEO Endorsement Approval document Page 17	Listed in CEO Endorsement Appendix 5 Page 46 & 47	Final Report *Color coding is 4 project meeting presence
Who	Why (SCLF project/policy role): Ratings Inception						
	Interest	Influence	Expertise	Affected			
Project coordination and management							
UN Environment (UN Environment Programme at the time of the project)	A	A	A	A-	N	Y	Y (participant)
Molina Center for Energy and the Environment – (MCE2)	A	A**	A	B+**	Y	Y	Y (Participant)
INE (now National Institute of Ecology and Climate Change - INECC)	A	A	A	A-	Y	Y	Y (participant)
Mexican academic and research institutions							
National Autonomous University of Mexico. Center of Atmospheric Sciences (UNAM – CCA)	A	A**	A	B+**	Y	Y	Y (Participant)
Center for Research in Ecosystems - UNAM (CIECO)					N	N	Y (participant)
Gamatek					N	N	Y (participant)
Engineering Institute (UNAM – II)	A	A**	A	B+**	Y	Y	Y (participant)
Electricity Research Institute (UNAM – IIE)	B+**	A**	A-	B+**	N	Y	N but org above listed
Geography Institute (UNAM-IG)					Y	N	N

Stakeholder Analysis					Listed in CEO Endorsement Approval document Page 17	Listed in CEO Endorsement Appendix 5 Page 46 & 47	Final Report *Color coding is 4 project meeting presence
Who	Why (SCLF project/policy role): Ratings Inception						
	Interest	Influence	Expertise	Affected			
Autonomous University of Mexico State (UAEM)	A	B+**	B	B**	Y	Y	Y (participant)
Autonomous University of Nuevo León State (UANL)	A-	B+**	A-	B**	Y	Y	Y (CI)
Autonomous Metropolitan University – Azcapotzalco (UAM-A)	A	A**	A (crops)	B+**	N	Y	N
Faculty of Veterinary Medicine and Zootechnics - UNAM					N	N	Y
Mexican Institute of Petroleum (IMP)	A	B+	A	B+	Y	Y	Y (participant)
Autonomous University of Yucatan; Faculty of Medicine, Veterinary and Zootechnics (UAdy)					N	N	Y(participant)
Michoacan University of San Nicolas de Hidalgo – Faculty of Veterinary Medicine and Zootechnics					N	N	Y (participant)
Desert Research Institute (DRI)					N	N	Y (CS not institution)
Technical Institute of Higher Studies of Monterrey (ITESM)					N	N	Y (CS not institution)
South Border College					N	N	Y (CS not institution)
Benemerita Universidad Autonoma de Puebla					N	N	Y (participant)

Stakeholder Analysis					Listed in CEO Endorsement Approval document Page 17	Listed in CEO Endorsement Appendix 5 Page 46 & 47	Final Report *Color coding is 4 project meeting presence
Who	Why (SCLF project/policy role): Ratings Inception						
	Interest	Influence	Expertise	Affected			
Mexican Federal Government							
SEMARNAT, General Directorate for Air Quality (DGGCARETC)	A	A	B+	A	N	Y	Y (CI)
National Water Commission (CONAGUA)	B+	A-	B+	A-	Y	Y	N
National Forest Commission (CONAFOR)	A-	A	B+	A-	Y	Y	N
Secretariat for Energy (SENER)	A-	A	A-	A	N	Y	N
Secretariat for Social Development (SEDESOL)	B+	B+	B	A-	N	Y	N
Secretariat for Agriculture, Livestock, Fisheries and Food, (SAGARPA)					Y	N	N
State and City Governments							
Secretariat of the Environment of the Federal District (SEDEMA; same as SMA-GDF)	A	A	A-	A-	Y	Y	Y (CI)
Secretariat of Works and Services of the Federal District (SOBSE)					N	N	Y (CI)
Government of Puebla, Secretariat of Environmental Sustainability and Territorial Planning (SSAOT- Puebla)	A	A-	B+ or B	A-	Y	Y	N
State Institute of Ecology- Guanajuato (IEEG)	A	A	A-	A-	Y	Y	Y (CI)
Aguascalientes					Y	N	N

Stakeholder Analysis					Listed in CEO Endorsement Approval document Page 17	Listed in CEO Endorsement Appendix 5 Page 46 & 47	Final Report *Color coding is 4 project meeting presence
Who	Why (SCLF project/policy role): Ratings Inception						
	Interest	Influence	Expertise	Affected			
Nuevo Leon Secretariat of Sustainable Development (SDS)	A-	A-	B-	A-	Y	Y	N
Metrobus					N	N	Y (CI)
Municipal Presidency of Abasolo Guanajuato					N	N	Y (CI)
Passenger Transport Network (RTP)					N	N	Y (CI)
Municipal Presidency of Leon Guanajuato					N	N	Y (CI)
Mexican non-governmental institutions							
Interdisciplinary Group of Appropriate Rural Technology (GIRA)	A	B+	A-	B+	Y	Y	Y (Participant)
ProNatura					Y	N	N
Public and private companies in Mexico							
Mexican Petroleum (PEMEX)	B+	A	A-	A	Y	Y	Y (CI)
Bioenergía de Nuevo León, S.A. de C.V. (BENLESA)	A-	A-	A-	A-	N	Y	Y (CI)
Coca Cola Femsa					N	N	Y (CI)
Geo-Construction					N	N	Y (CI)
Brick Producers at El Refugio Guanajuato							Y (CI)
Asphalt Plant of the Federal District					N	N	Y (CI)
Consultancy in Project Engineering (CINPRO)							Y (CI)
Project partners and sub-contractors, outside Mexico							

Stakeholder Analysis					Listed in CEO Endorsement Approval document Page 17	Listed in CEO Endorsement Appendix 5 Page 46 & 47	Final Report *Color coding is 4 project meeting presence
Who	Why (SCLF project/policy role): Ratings Inception						
	Interest	Influence	Expertise	Affected			
Aerodyne Research Inc. (ARI)	A	A**	A	B+**	Y	Y	Y (participant)
University of California – Berkeley (UCB)	A**	A**	A**	B**	Y	Y	N
U Iowa					Y	N	N
Andres Bello University, Chile (UAB)	A	B+**	B+	B+**	Y	Y	N
Stockholm Environmental Institute (SEI)					N	N	Y(CI)
Fundacion Chile					Y	N	N
National Aeronautics and Space Administration (NASA)	A	A**	A	B+**	Y	Y	Y (participant)
International Institute for Applied Systems Analysis, Austria (IIASA) (ILASA, IILASA)	A	A**	A	B**	Y	Y	N
Help international					Y	N	N
Montana State University					N	N	Y (Participant)
California Air Resources Board (CARB)					N	N	Y (CI)
Maiz System					N	N	Y (CI)

CS Not Institution: Collaborators not Institution

CI; Collaborating Institution

Wastewater Treatment Plants: 20 wastewater treatment plants also listed

+ Color coding of the last column indicates meeting presence: black is attendance at all four project mtgs, dark orange 3, light orange 2 and white meant not present

Appendix I. Delivery of outputs

Table J.1. Results from the review of delivery of Output 1

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
Output 1.				
Characterization of methane, black carbon and co-pollutants from key emission sources.				
<p>Activity 1.1 Development of preliminary national BC emission inventory based on PM_{2.5} and national energy balance. HS.</p>	<ul style="list-style-type: none"> Emission inventory for BC developed and integrated in national emission inventory. Strengthened robustness, transparency and comparability of SLCF emission inventories (CEO Approval). Methane inventory developed applying higher tier level and integrated into GHG emission inventory (CEO Approval). Strengthened robustness, transparency and comparability of SLCF emission inventories. 	<ul style="list-style-type: none"> National Inventory of GHG (INEGEI) 1990-2013 includes BC. Mexico's National Emissions Inventory (INEM) includes black carbon estimates. Data from the project was used to evaluate and constrain the EI for modelling. <p>The Mexican INDC has included commitment to reduce SLCPs, including methane. The project has contributed data obtained from the field.</p>	<ul style="list-style-type: none"> Project's Final Report, Chapter 2, section 2.1 Estimation of black carbon emissions inventory using two different methodologies, Chapter 3 Section 3.4 Regional contributions. Mexico's Fifth National Communication to the UNFCCC, Chapter IV National Inventory of GHG gases (INEGEI) 1990-2013, Annex IV.12., National Emissions Inventory of Black Carbon, 1990-2010. Mexico's National Emissions Inventory, 2008 (INEM) (In Spanish, draft version from June 2013). 	<ul style="list-style-type: none"> Final Report affirms BC 2010 emissions and 1990-2010 baseline were prepared/ included in Fifth National Communication presented to the UNFCCC. This is the first time that BC was included in a report submitted to UNFCCC. Final report states project team collaborated with SEMARNAT and developed BC inventory for the 2008 INEM – first time that BC was included in the INEM. (However, BC inventory is estimated as part of INEM just as a reference and not publicly released, since the official estimation is the one done for the INEGEI). INEM was further processed to be used for the air quality, health and crops impacts and benefits modelling. Interviews affirm inventory is not fully updated regarding methane emissions as of the time of the field interviews in 2018, because of the

³⁷ Expected Outputs and activities included in the table are based in the latest report covering July 1st, 2015 to December 31st, 2015. The file name is Annex 8_Half yearly progress report (July-December-2015 Molina Center).pdf.

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
			<ul style="list-style-type: none"> • Progress reports 2016. • Field interviews. 	<p>need to peer review project findings and results before changes are incorporated into the INEGEI. At the moment of interviews, the latest version of INEGEI 1990-2015 was prepared and ready to be submitted as part of the Sixth National Communication to the UNFCCC. Then peer-reviewed emission factors for methane and BC will be included in the next updating cycle to prepare the 1990-2017 INEGEI.</p>
<p>Activity 1.2. Collect and process meteorological and emissions activity data at the national and regional levels. HS.</p>	<ul style="list-style-type: none"> • There is no clear indicator available for this output in the CEO Endorsement Approval document. • The reason may be that this is part of the modelling process and as such, it was implicit to the Project team. 	<ul style="list-style-type: none"> • Meteorological and emissions activity data that was used to project emissions in the future, to estimate emissions reductions from mitigation measures, and to assess the benefits of emission reductions related to potential methane and black carbon mitigation measures in 2030, as result of the measures proposed by the Project and/or as result of the Nationally Determined Contributions (NDCs) to the Paris Agreement. • The sectors considered for the analysis included agriculture, transport, solid waste, wastewater, fuel 	<ul style="list-style-type: none"> • Project's Final Report Chapter 3, section 3.3. Benefits of Implementing the Emissions Reduction Measures and 3.4 Regional Contribution. • Appendix H. Supplemental Material: Black Carbon and Methane Mitigation Scenarios. 	<ul style="list-style-type: none"> • This activity is not explicit in the CEO Endorsement Approval document, maybe because it was implicit to the Project team as part of the output 2.1 Technical report including selection, evaluation and ranking of SLCF mitigation policies in terms of climate benefits, energy efficiency, health, agricultural production and ecosystem protection from sector specific data • Different models were used to estimate the benefits of emissions reductions.

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
		extraction and distribution, residential, power generation, industry and wildfires.		
<p>Activity 1.3. Execution of mobile laboratory measurements of methane emissions from waste water treatment plants, landfills and oil and gas operations and development of emission factors. S.</p>	<ul style="list-style-type: none"> • There is no clear indicator available for this output in the CEO Endorsement Approval document. Proposed indicators follow: • Measurement of methane emissions performed and emission factors developed for three sources types: a) waste water treatment plants (WWTP), b) landfills and c) oil and gas operations. 	<ul style="list-style-type: none"> • 2013 field measurement campaign, reports and datasets. • Emission rates and emission indices for oil and gas operations. 	<ul style="list-style-type: none"> • Progress reports • Project's Final Report, sections: 2.2.5 Municipal Wastewater Treatment; 2.2.6 Landfills; 2.2.7 Oil and gas operations; 2.2.9. Agriculture: Crop Residue Burning. • Project's Final Report, Appendixes: E. Methane Emissions from Municipal Wastewater Treatment in Mexico; I. Aerodyne Mobile Laboratory SLCF Emissions Characterization; • Field interviews. • Meeting presentations 	<ul style="list-style-type: none"> • Methane emissions measured using a Portable Biogas Analyser at fifteen WWTP in three regions (north, central and south) in Mexico for three different technologies: stabilization ponds, activated sludge, and Up-flow Anaerobic Sludge Blanket (UASB) reactor. • Methane and other pollutants emissions measured with the Aerodyne Mobile Lab (AML) at three WWTP in three cities. • There was an important central role of one PhD student whose thesis was based on information gathered and analysis produced as part of this Project. • Methane emission rates were determined at two landfills using the AML with the tracer flux ratio methodology. • Methane emission measurements at three facilities of oil and gas activities (that include separation, dehydration and sweetening, storage of crude oil, compression and flaring) with the AML using the tracer release method to capture emissions from the flaring of natural gas and overall facilities. • The Final Report includes section 2.2.9 Agriculture: Crop Residue

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
				<p>Burning. It became clear that the measurements of sugar-cane burning and crop residues burning were not originally part of this Project, but presented in the final Project Meeting and mentioned in the Final Report as it is complementary to this Project and it is of interest to INECC.</p>
<p>Activity 1.4. Execution of mobile laboratory measurements of black carbon and co-pollutants emissions from brick kilns, oil and gas operations, cook stoves, on road diesel vehicle emissions and development of emission factors. HS.</p>	<ul style="list-style-type: none"> • There is no clear indicator available for this output in the CEO Endorsement Approval document. • Proposed indicators follow: • Measurement of black carbon (BC) emissions performed and emission factors developed for four categories of emitting sources: a) brick kilns, b) oil and gas operations, c) cook stoves, and d) on-road diesel vehicles. • Additionally, measurement of emissions and development of emission factor for off-road diesel vehicles 	<ul style="list-style-type: none"> • 2013 field measurement campaign reports/datasets. • On Road Vehicles: Aerodyne mobile lab measured BC, (OC), (PM), (CO), SO₂), ethane, acetylene, benzene, toluene, C2-benzenes under real-world driving of 20 diesel-powered vehicles in Mexico City; 2nd measure-- cross-road remote sensing for emission factors of (NO), CO, hydrocarbons, PM. • Comparison of emissions measurements vs those included in the model MOVES 2014 adapted to Mexico. 	<ul style="list-style-type: none"> • Progress reports • Project's Final Report, sections: 2.2.4 Brick production; 2.2.7 Oil and gas operations; 2.2.1. On-Road Mobile Sources and 2.2.2. Off-Road Diesel Vehicles. • Project's Final Report, Appendixes: C. Characterization of SLCFs and Co-Pollutant Emissions from Brick Production; I. Aerodyne Mobile Laboratory SLCF Emissions Characterization; Appendix B. Characterization of SLCFs and Co-Pollutants from the Transport Sector, sections B1. On-Road Mobile Sources and B2. Off-Road Mobile Sources. 	<ul style="list-style-type: none"> • The fuel-, energy-, and brick-based emissions factors and time-based emission ratios of BC, OC, inorganic PM components, CO, SO₂, CH₄, NO_x, and selected VOCs from two traditional artisanal kilns and one MK2 kiln were measured using the tracer ratio sampling technique with the Aerodyne mobile laboratory. Simultaneous measurements of PM components, CO and CO₂ were also obtained using a filter-based sampling probe technique. • For the cook stoves, the measurements were obtained using the water boiling test (WBT), which is a simplified simulation of the cooking process and is intended to measure how efficiently a stove uses fuel to heat water in a cooking pot and the emissions produced while doing this. Measurements were obtained using high-time resolution measurements with the AML by directly connecting the gas effluent of the eight models of cook

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
	(construction and farming).		<ul style="list-style-type: none"> • Publications in journals. • Meeting presentations 	<p>stoves to the gaseous and particulate matter sampling lines of the AML. The species measured during the sampling of the cook stoves by the AML included small hydrocarbons (CH₄, C₂H₆, and C₂H₂), BC particles, ozone precursors (NO, NO_x, NO₂, and selected VOCs), and other pollutants (organic/ nitrate/ sulphate particles, CO₂, CO, SO₂, N₂O).</p> <ul style="list-style-type: none"> • For the on-road diesel vehicles, emissions were measured from a group of 20 diesel-powered vehicles in both controlled experiments and real-world on-road driving conditions, using the AML. Additional measurements included the use of a cross-road remote sensing unit for the co-sampling of all tested vehicles, and the installation and operation of a Portable Emissions Measurements System (PEMS) to measure emissions in one of the vehicles. • According to the Project's Final Report this is the first pilot study of emissions from off-road vehicles (construction and farming) in Mexico. It was not clear why off-road vehicles are not listed among the other categories in the outputs of Activity 1.4 but informed that this was not listed because it was not in the original proposal. • The project team measured particulate matter and gaseous

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
				emissions of eleven diesel-powered off-road mobile sources under real-world operating conditions, using on-board portable emissions measurements systems (PEMS), with and without emissions control devices.
<p>Activity 1.5. Complementary measurements through UNAM, CENICA, GIRA and other institutions.</p> <p>Activity 1.5.1. Characterization of black carbon and co-pollutants emissions from brick kilns, cook stoves, and development of emission factors.</p> <p>Activity 1.5.2. Characterization of diesel emissions.</p> <p>Activity 1.5.3. Methane emissions from enteric fermentation (cattle).</p>	<ul style="list-style-type: none"> • There is no clear indicator available for this output in the CEO Endorsement Approval document. • All emissions measurement activities are already included in the Activities 1.3 and 1.4 above. • Processing of emissions data is included in Activity 1.2 above. 	<p>Already included in Activities 1.2, 1.3 and 1.4.</p>	<p>Already included in Activities 1.2, 1.3 and 1.4.</p>	<ul style="list-style-type: none"> • All emissions measurement activities are already included in the Activities 1.3 and 1.4 above. Processing of emissions data is included in Activity 1.2 above.

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
Activity 1. 6: Methane emissions from waste water sector in Mexico.	<ul style="list-style-type: none"> All emissions measurement activities in waste water treatment plants are already included in the Activity 1.3. 	Already included in Activity 1.3.	Already included in Activity 1.3.	<ul style="list-style-type: none"> All emissions measurement activities in waste water treatment plants are already included in the Activity 1.3.
Activity 1.7. Methane emissions from enteric fermentation (cattle). HS.	<ul style="list-style-type: none"> Field experiments to measure methane emissions from dual purpose Cebu and Holstein cows with two different feeding strategies (one as an emissions mitigation strategy), in two climate regions, with two different measurement techniques. <p>Linked to indicator:</p> <ul style="list-style-type: none"> Methane inventory developed applying higher tier level and integrated into GHG emission inventory. 	Data 2013 field measurement campaign datasets on livestock	<ul style="list-style-type: none"> Progress reports 2013,16; Project's Final Report, section 2.2.8. Agriculture: Livestock Enteric Fermentation. Project's Final Report, Appendix F. Estimating Enteric Methane Emissions from Cattle Production Systems in the Temperate and Tropical Climate Regions of Mexico. Publications in journals. Meeting presentations 	<ul style="list-style-type: none"> Enteric methane emission by livestock were measured using two different methods (High time resolution in-vivo measurements of methane fluxes and the Respiration Chambers Technique) in two different climate regions (the temperate climate zone of central Mexico and the tropical region of southern Mexico). Methane emissions were measured in dual purpose Cebu and Holstein cows with two different feeding strategies. The Project's Final Report states that the information generated demonstrated the significant contribution of cattle to methane emissions and the possibilities of reducing such emissions by means of the manipulation of rumen fermentation in both cattle and sheep and points to the needed of further research to find the adequate levels of inclusion of these substances to avoid or minimize negative influence over the cattle performance in terms of milk yield or weight gain.

Expected Activities ³⁷	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
				<ul style="list-style-type: none"> The results also suggest that methane emission factors for tropical cattle in Mexico are lower than previously reported in literature for cattle in similar regions of the planet feed with similar grasses.
<p>Activity 1. 8: Development of model-ready emissions data. HS.</p>	<p>Black carbon emission inventory developed such that it can be used for impact modeling.</p>	<ul style="list-style-type: none"> Model-ready methane and BC emission inventory for base year (2008) and future year (2030) developed by the project. 	<ul style="list-style-type: none"> Project's Final Report, Chapter 3, Sections: 3.3. Benefits of Implementing the Emissions Reduction Measures; 3.4. Regional Contribution; Project's Final Report, Appendix A 	<ul style="list-style-type: none"> The Project's Final Report states that LEAP-IBC (Long-range Energy Alternatives Planning System-Integrated Benefits Calculator) was used to assess the mitigation benefits for health and crops associated with PM and ozone. LEAP-IBC is a widely-used software tool for energy policy analysis and climate change mitigation assessment. Additionally, projection of future emissions inventories were produced to be feed into the Weather Research and Forecasting model coupled to Chemistry (WRF-Chem) which is the model used by the Project's team to assess the regional impacts of different emission sources of ozone precursors, BC, and PM_{2.5} on air quality, comparing the situation in 2008 and that in 2030 under diverse emissions reduction scenarios.

Note: List of outputs based on the Reconstructed Theory of Change; indicators based on those included in the Project Results Framework in the CEO Endorsement Approval Document.

Table J.2. Results from the review of delivery of Output 2

Expected Output ³⁸	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
Output 2: Assessment and selection of technically feasible and economically viable SLCF mitigation policies for implementation in Mexico.				
Activity 2.1. Preliminary selection of SLCF mitigation measures and evaluation of mitigation potential. HS.	SLCF mitigation measures evaluated in terms of mitigation potential (At least one measure for each of the emitting sectors).	SLCF mitigation technologies demonstrated and emissions evaluated for the following sectors: <ul style="list-style-type: none"> • On-road diesel urban buses, trucks and metrobuses, with different vehicle technologies; • Off-road vehicles (with DPFs); • Cook stoves (improved wood burning and LPG stoves); • Livestock enteric fermentation (different anti-methanogenic plants and compounds); • WWTPs (activated sludge with anaerobic digesters, up-flow anaerobic sludge blanket, and stabilization ponds); 	<ul style="list-style-type: none"> • Progress reports • Project’s Final Report, Chapter 3 Mitigation options for black carbon and methane for implementation in Mexico, section 3.1. Selection of Mitigation Measures in Mexico. 	<ul style="list-style-type: none"> • Simultaneous to this project, MCE2 was coordinating the CCAC-SNAP Project, that resulted in the publication of the technical report, “Supporting National Planning for Short-lived Climate Pollutants Initiative (SNAP) in Mexico” (first part), which describes how the analysis from the joint effort has resulted in the identification of potential mitigation measures that could be introduced in Mexico to reduce black carbon and methane emissions, and the relevant pathways for implementation. • Following the publication of the SNAP-1 document, the project team continued evaluating selected mitigation measures, using improved emission factors and activity data available to estimate potential emissions reductions for methane and black carbon, with the support and collaboration of INECC personnel. This process led to the development of the mitigation scenarios and the estimation of health and crop benefits presented

³⁸ Expected Outputs and activities included in the table are based in the latest report covering July 1st, 2015 to December 31st, 2015. The file name is Annex 8_Half yearly progress report (July-December-2015 Molina Center).pdf.

Expected Output ³⁸	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
		<ul style="list-style-type: none"> • Brick kilns (improved MK2); • Landfills (biogas capture). 		<p>in Section 3.2 of the Project's Final Report. The project team also estimated the health benefits for the projected emissions reductions for the year 2030 resulting from the implementation of the NDCs submitted by Mexico.</p> <ul style="list-style-type: none"> • In the Project's Final Report, Table 3.2 presents the list of mitigation measures considered for each sector, as well as a potential emission reduction. From those, the one with the biggest mitigation potential was selected and subject to further analysis.
<p>Activity 2.2. Integrated evaluation of selected mitigation measures based on improved emission data and data from mitigation assessments with the help of the WRF Chem model and development of SLCF mitigation scenarios and implications for climate, health and agriculture. HS.</p>	<p>Impact of selected SLCF mitigation measures on health, agriculture and climate assessed, cost and benefit of mitigation measures assessed and mitigation measures prioritized.</p>	<ul style="list-style-type: none"> • Benefits of emission reductions related to potential methane and black carbon mitigation measures in 2030, as result of the measures proposed by the Project and/or as result of the Nationally Determined Contributions (NDCs) to the Paris Agreement. • The impacts of these measures to key emission sectors were estimated only for human health and crops in terms of avoided premature deaths and crop yield losses respectively. 	<ul style="list-style-type: none"> • Project's Final Report Chapter 3, section 3.3. Benefits of Implementing the Emissions Reduction Measures and 3.4 Regional Contribution. • Appendix H. Supplemental Material: Black Carbon and Methane Mitigation Scenarios. 	<ul style="list-style-type: none"> • Different models were used to estimate the benefits of emissions reductions. • The Project's Final Report states that LEAP-IBC (Long-range Energy Alternatives Planning System) was used to assess the mitigation benefits for health and crops associated with PM and ozone. • LEAP links emissions to the GEOS-Chem adjoin global chemical transport model to estimate the concentrations of PM and ozone, subsequently calculate the benefits of SLCF mitigation for health and crops. • The Weather Research and Forecasting model coupled to Chemistry (WRF-Chem) is the model used by the Project's team to assess the regional impacts of different

Expected Output ³⁸	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
		<ul style="list-style-type: none"> The sectors considered for the analysis included agriculture, transport, solid waste, wastewater, fuel extraction and distribution, residential, power generation, industry and wildfires. Also, assessment of contribution to improved air quality and climate change mitigation (on the levels of ozone, BC and PM_{2.5} in 2030), from emission reductions at key sectors, based on a sensitivity analysis at four different regional scales (National, Central, Corona (Crown) Region and the MCMA). 		<p>emission sources of ozone precursors, BC, and PM_{2.5} on air quality in Mexico.</p>
<p>Activity 2.3. Cost and benefit analysis of selected mitigation measures and prioritization of evaluated mitigation measures. HS.</p>	<p>Impact of selected SLCF mitigation measures on health, agriculture and climate assessed, cost and benefit of mitigation measures assessed and mitigation measures prioritized</p>	<p>The cost to benefit ratio for implementation of the identified measures for three sectors: 1) cook stoves, b) brick kilns, and c) transport.</p>	<ul style="list-style-type: none"> Project's Final Report Chapter 3, section 3.3. Benefits of Implementing the Emissions Reduction Measures; subsections 3.3.1. Human Health Benefits; 3.3.2 Crop Yield Benefits; 3.3.3. Economic Benefits. Appendixes to the Final Report: Appendix G SLCF Mitigation 	<ul style="list-style-type: none"> The project team estimated the cost to benefit ratio for implementation of the identified measures for three sectors: 1) cook stoves, b) brick kilns and c) transport. The team received technical support from the USAID supported MLEDS project on cost analysis. USAID-MLEDS did cost curves using Climate Works methodology. The project also did "what if?" analysis, for example, what if there were no cook stoves replacement

Expected Output ³⁸	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
			Strategies for the Heavy-Duty Diesel Sector in Mexico; Appendix H Supplemental Material: Black Carbon and Methane Mitigation Scenarios.	programs? This analysis was performed by team members from the Center for Atmospheric Sciences (CCA) at UNAM.

Note: List of outputs based on the Reconstructed Theory of Change; indicators based on those included in the Project Results Framework in the CEO Endorsement Approval Document.

Table J.3. Results from the review of delivery of Output 3

Expected Output ³⁹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
Output 3: Demonstration of SLCF mitigation technologies for key sources				
Activity 3.1. Demonstration of selected SLCF mitigation technologies and evaluation of mitigation potential (diesel, cook stoves, brick kilns, livestock enteric fermentation). HS.	Selected SLCF mitigation measures demonstrated and barriers and opportunities for application and replication identified.	<ul style="list-style-type: none"> • Reports and compares emission reductions achieved when mitigations strategies were applied to emissions sources: • In the case of diesel engines, the mitigation strategy was the use of diesel particle filters in selected models. • The use of improved cook stoves and a brick kiln. • The use of a modified diet to feed the cattle to reduce the enteric formation of methane. 	<ul style="list-style-type: none"> • Project’s Final Report, Chapter 2, sections 2.2.1 On-road Mobile Sources; 2.2.2 Off-road Diesel Vehicles; 2.2.3 Residential Cooking (Cook stoves); 2.2.4 Brick Production (kilns); 2.2.8 Agriculture: Livestock Enteric Fermentation. 	<ul style="list-style-type: none"> • The project demonstrated several mitigation strategies, including: <ul style="list-style-type: none"> a) The use of diesel particle filters to remove black carbon emissions from off-road vehicles and the use of different model years and technologies for on-road vehicles; b) The use of improved wood-burning cook stoves and brick kilns in reducing black carbon and co-pollutants emissions; c) The effect of different anti-methanogenic fodder plants and treatment compounds for reducing methane emissions in two species of cows in two different regions. • Although this Activity does not mention the emission reductions in WWT, the Final Report includes the demonstration of mitigation strategies of different technologies (activated sludge with anaerobic digesters, up flow anaerobic sludge blanket, and stabilization ponds) for reducing methane emissions from WWTP.

³⁹ Expected Outputs and activities included in the table are based in the latest report covering July 1st, 2015 to December 31st, 2015. The file name is Annex 8_Half yearly progress report (July-December-2015 Molina Center).pdf.

Expected Output ³⁹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
<p>Activity 3.2. Documentation of cost and benefits of demonstrated technologies including barriers to application and assessment of environmental, social and economic impacts. S.</p>	<p>Selected SLCF mitigation measures demonstrated and barriers and opportunities for application and replication identified.</p>	<ul style="list-style-type: none"> • Cost and benefit analysis for three sectors (transport [on-road diesel vehicles], cook stoves, and brick production). • Benefits from demonstrated technologies, mainly in terms of emission reductions from each technology or strategy, as well as an overall estimation of emission reductions that could be achieved under two scenarios (one created by this project and one from Mexico's NDCs). • Barriers to application analysed and discussed in detail in Appendix G SLCF Mitigation Strategies for the Heavy-Duty Diesel Sector in Mexico. • Assessment of impacts in terms of human health benefits, crop yield benefits and economic benefits. 	<ul style="list-style-type: none"> • Final Report Chapter 3 Mitigation options for black carbon and methane for implementation in Mexico; section Benefits of Implementing the Emissions Reduction Measures. Subsections 3.3.1 Human health benefits, 3.3.2 Crop yield benefits and 3.3.3. Economic benefits. • Appendixes G and H. 	<ul style="list-style-type: none"> • Cost and benefits analysis for three sectors (transport, cook stoves, and brick production) were estimated. The results show that upgrading cook stoves has the largest benefit/cost ratio, followed by the cleaner diesel vehicle technology scenario. • Mitigation options for BC and CH4 and analysis are provided in Chapter 3 and Appendices G and H. • Appendix G SLCF Mitigation Strategies for the Heavy-Duty Diesel Sector in Mexico presents the results of a detailed analysis of the mitigation alternatives and scenarios for the diesel vehicles sector. It includes a series of SLCF Mitigation Policy Recommendations based on the analysis of the on-road diesel fleet in Mexico and the barriers identified to implement the mitigation alternatives.

Note: List of outputs based on the Reconstructed Theory of Change; indicators based on those included in the Project Results Framework in the CEO Endorsement Approval Document.

Table J.4. Results from the review of delivery of Output 4

Expected Output ⁴⁰	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
Output 4: Integration of SLCF mitigation measures into LEDS.				
Activity 4.1. Embedding of priority mitigation policies in the context of Mexico's LEDS. S.	<ul style="list-style-type: none"> Prioritized mitigation measures integrated into LEDS. 	<ul style="list-style-type: none"> There are continuous interactions and communication between the national authorities in Mexico and the Project's Manager along the implementation of the Project. It could be said that most of the outputs delivered presented information relevant to be included into mitigation policies. Some examples: <ul style="list-style-type: none"> Project's Final Report. BC emissions inventory included into the Fifth National communication to the UNFCCC. A number of 15 articles published in journals reviewed which were related to this project and were made available for review. Cost and benefit analysis for three 	<ul style="list-style-type: none"> Project's Final Report. Fifth National Communication to the UNFCCC. Mexico's National Strategy on Climate Change (June 2013). Special Climate Change Program (PECC 2013-2014). Mexico's Nationally Determined Contribution (NDCs). 	<ul style="list-style-type: none"> This project has been part of an intense series of activities related to climate change mitigation in Mexico. The contributions from this project made synergies with the results from other initiatives and helps to shape the policies for climate policies and for co-benefits.

⁴⁰ Expected Outputs and activities included in the table are based in the latest report covering July 1st, 2015 to December 31st, 2015. The file name is Annex 8_Half yearly progress report (July-December-2015 Molina Center).pdf.

Expected Output ⁴⁰	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
		sectors (transport [on-road diesel vehicles], cook stoves, and brick production). <ul style="list-style-type: none"> Benefits from demonstrated technologies, mainly in terms of emission reductions from each technology or strategy, as well as an overall estimation of emission reductions that could be achieved under two scenarios (one created by this project and one from Mexico's NDCs). 		

Note: List of outputs based on the Reconstructed Theory of Change; indicators based on those included in the Project Results Framework in the CEO Endorsement Approval Document.

Table J.5. Results from the review of delivery of Output 5

Expected Output ⁴¹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
Output 5: Capacity building and awareness raising.				
Activity 5.1 Organization of training on applied	<ul style="list-style-type: none"> Number of people trained in developing SLCF inventory and 	<ul style="list-style-type: none"> Training activities took place along the implementation of the 	<ul style="list-style-type: none"> Progress reports Final Report 	<ul style="list-style-type: none"> The training activities on applied measurement methodologies and

⁴¹ Expected Outputs and activities included in the table are based in the latest report covering July 1st, 2015 to December 31st, 2015. The file name is Annex 8_Half yearly progress report (July-December-2015 Molina Center).pdf.

Expected Output ⁴¹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
<p>measurement methodologies and modelling tools. HS.</p>	<p>in assessing mitigation measures.</p>	<p>project on measurement methodologies and modelling tools.</p> <ul style="list-style-type: none"> • At least three training sessions were organized. • Staff trained on SCLF inventories/ measurement methods/ mitigation measures. 	<ul style="list-style-type: none"> • Appendix J. Project Meetings and Publications. 	<p>modelling tools occurred along the implementation of the project.</p> <ul style="list-style-type: none"> • The Final Report mentions that several postdoctoral associates, graduate students and undergraduates from Mexican institutions, as well as technical personnel from government agencies and researchers from INECC and participant academic institutions were involved in the field measurements and in the development of modelling scenarios and analysis of results. They participated in various aspects of the project, worked with experts in atmospheric sciences and Mexican officials involved in air quality management and climate action planning, participated in international conferences, presented key results derived from this project and prepared manuscripts for peer-reviewed journals. • The MCE2 hosted a Ph.D. student and an undergraduate student who spent several months at the Center analysing the field data and conducted literature survey with support from the MCE2 staff.
<p>Activity 5.2. Development and dissemination of education and outreach material on</p>	<ul style="list-style-type: none"> • Procedures and requirements for developing SLCF inventory identified, 	<ul style="list-style-type: none"> • Guidance Document for Addressing SLCF Emissions and Impacts developed; included as 	<ul style="list-style-type: none"> • Progress reports • Project's final Report • Appendix J Project Meetings and Publications; Appendix 	<ul style="list-style-type: none"> • A Guidance Document for Addressing SLCF Emissions and Impacts was developed as part of the Project's results. It is included as Appendix K to the Final Report.

Expected Output ⁴¹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
<p>requirements for developing SLCF emission inventories and on selecting and evaluating targeted SLCF mitigation measures. HS.</p>	<p>documented and communicated.</p> <ul style="list-style-type: none"> Project results documented in peer reviewed journals 	<p>Appendix K to the Final Report.</p> <ul style="list-style-type: none"> Project researchers' and students' presentations at international conferences. Several manuscripts prepared/ submitted to different journals. 	<p>K Guidance Document for Addressing SLCF Emissions and Impacts</p>	<ul style="list-style-type: none"> In addition to the presentations shown in the Project's technical meetings, there were also presentations at international conferences delivered by Project researchers and students that participated in the field campaign or the following analysis of results. As result, several manuscripts have been prepared or submitted or published by different journals. There have been Project's results presentations at the plenary of the CCAC; also presentations at the American Geophysical Union, the largest meeting was organized a session on SLCFs. Student work on wastewater treatment plants results in two published papers on improvements of the IPCC emissions estimation methodologies.
<p>Activity 5.3. Organization of technical workshops and outreach meetings. HS.</p>	<ul style="list-style-type: none"> Technical project meetings. 	<ul style="list-style-type: none"> Four technical project meetings. 	<ul style="list-style-type: none"> Progress reports Final Report, Chapter 4, section 4.2 Raising Awareness, Building Capacity, and Networking. Appendix J Project Meetings and Publications includes the meetings' agenda and lists of participants. Project interviews 	<ul style="list-style-type: none"> The Project coordination together with INECC, organized four technical project meetings devoted to presentation, discussion and evaluation of generated data and mitigation strategies. These meetings were attended by project participants, collaborators from government agencies, private companies and representatives from the UN ENVIRONMENT, the implementing agent. The four meetings included excellent content and were well organized and design

Expected Output ⁴¹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
				<p>(although occasional presentations were duplicative between meetings), and held the following dates:</p> <ul style="list-style-type: none"> ○ First Project Meeting (April 24th, 2013). ○ Second Project Meeting (October 17th, 2013). ○ Third Project Meeting (July 1st, 2014). ○ Fourth Project Meeting (November 18th, 2015). <ul style="list-style-type: none"> • Analysis of general and gender based participation may be found in the stakeholder part of this report. • Not clear that participant satisfaction surveys were distributed.
<p>Activity 5.4. Presentation of project results in scientific meetings and publications in peer reviewed journals. HS.</p>	<ul style="list-style-type: none"> • Experience and knowledge shared and wider implementation of successful mitigation strategies promoted. • Countries expressing interest in developing integrated SLCF inventory and strategy. 	<ul style="list-style-type: none"> • Up to October 2018, a number of 15 articles published in journals reviewed which were related to this project and were made available for review. • Also 10 presentations at the special session "Emissions and Impacts of Short-lived Climate Forcers at the 2013 American Geophysical Union (AGU) Meeting held December 9 to 13, 2013 in San Francisco, California, US conference 	<ul style="list-style-type: none"> • Progress reports • Project's final Report Appendix J Project Meetings and Publications; • Review of publications: • A number of 15 articles published in journals reviewed which were related to this project and were made available for review. • A number of 10 presentations at the special session "Emissions and Impacts of Short-lived Climate Forcers at the American Geophysical 	<ul style="list-style-type: none"> • Project researchers and students presented key results at project meetings, workshops and international conferences. • Several substantive, high quality manuscripts have been submitted and published, and some are under preparation. • In addition to the various publications which take longer time for production and peer review, the Appendix J listed 3 Ph.D. and one M.Sc. dissertations developed as a result of the project.

Expected Output ⁴¹	Indicators	Outputs Delivered by the Project	Evidence Reviewed	Comments
			Union (AGU) Meeting held December 9 to 13, 2013 in San Francisco, California, US.	
Activity 5.5. Monitoring and evaluation. HS.	<ul style="list-style-type: none"> There is not a specific indicator for this output in the CEO Endorsement Approval document, but rather requirements like include a Project Results Framework and the submissions of Annual Project Implementation Review (PIR), among other tasks. 	<ul style="list-style-type: none"> Annual Project Implementation Review (PIR) to to monitor and report the progress achieved by the Project. 	<ul style="list-style-type: none"> CEO Endorsement Approval document, under Part I, Section H Budgeted Monitoring and Evaluation Plan. UN ENVIRONMENT GEF PIR Fiscal Year 16 (1 July 2015 to 30 June 2016). 	<ul style="list-style-type: none"> The CEO Endorsement Approval document includes Annex A: Project Results Framework; this framework was relevant along the Projects implementation to monitor and report the progress achieved by the Project. The Project manager submitted annually the Project Implementation Review (PIR). As part of the PIR there is a Section 4 Rating Monitoring and Evaluation. From the original design, the project included a budget for the Terminal evaluation to be performed at the end of the implementation period.

Note: List of outputs based on the Reconstructed Theory of Change; indicators based on those included in the Project Results Framework in the CEO Endorsement Approval Document.

Appendix J. Project Progress

Table K.1 Project Progress with Completion of activities/sub activities

Project Year	# Expected actions/sub-actions completed for the year (PIR)	Revised workplan	Mid 2014 No actions completed	Mid 2015 Not completed	Mid 2016 Not completed
2012	1 (3.3% total activities)	3 (8.6)	1 (100% of expected activities to be completed)	1 (100%)	1 (100%)
2013	10 (33.3%)	10 (27.7%)	9 (90%)	10 (100%)	10 (100%)
2014	15 (50%)	1 (2.7%)	3 (20%) of 15 -includes 2 of 6 due by end of June. -Post June 8 activities with 1 complete	-5 (33.3%) of 15. -10 activities delayed with completion dates changed.	5(100%)
2015	5 (16.6%)	18 (50.0%)	1 (20%) complete of the 5 for the year, however only 1 due by June	16 activities rather than the original 5 now slated for completion due dates in 2015 --only 1 shows 100% completion. -- other 15 have post June completion dates --5 have "ongoing" dates (publications, monitoring, mat dissemination)	16 total of which 14 (100%) 2 reported as "ongoing-- publications and monitoring and reporting)
2016	0	4 (11.1)	0	0	0 for PIR but the two other activities above such as the final report and publications were completed in later years and are counted in totals below
Total	30	36	14	17	32

Appendix K. Response to comments received from stakeholders

Table L.1 Response to comments received from stakeholders

Comments	Location	Accepted (Y/N)	Observations
Use INE instead of INECC	Throughout	Y	
<p>I would suggest to change the first sentence because the USAID \$20 M (MLED) was NOT a co-finance to this project; it was a bilateral agreement between USAID and Mexican government.</p> <p>Although this was clarified in #15 and #51, and further in Section7 (page 77), however, by stating it here in the Executive Summary could lead to some confusion and the perception that the project had a huge grant, and spent only a small fraction (this was mentioned in the Summary Table 2, item E). This was also mentioned by the Evaluation team (Lesson #3 – page 100)</p> <p>Therefore, if possible, I would suggest to state that the original budget was \$909,090 from GEF and co-finance of \$2,249,157 for a total of \$3,158,247, as reported to UNEP. This could be followed by mentioning the \$20M bilateral funding between Mexican gov't and USAID, which was not allocated specifically to this project.</p>	Executive Summary	Y	
The figure should be US\$969,558	Executive Summary	Y	Changed text

Comments	Location	Accepted (Y/N)	Observations
<p>It seems (08) and (15) are the same in the Figure - "Project Revision and 2nd Meeting"</p> <p>2nd Project Meeting was held on Oct 17, 2013</p> <p>3rd Project Meeting on July 1, 2014</p>	Introduction	Y	
<p>Please note we have updated the list in October 2018, after receiving further comments from our colleagues:</p> <p>1) Changed the UNEP and SEMARNAT logos in the cover page.</p> <p>2) TEC and DRI were listed as Participants (instead of "collaborators").</p> <p>Under "participants" - there are 18 organizations and 93 individuals (30 are students) – I did not specify them except for UNAM, because there are many participants.</p> <p>3) Collaborators</p> <p>5 individuals</p> <p>20 institutions/companies</p> <p>4) 16 municipal wastewater facilities</p> <p>The updated version was uploaded to our shared Dropbox and I also sent an e-mail to inform the evaluators and UN.</p>	Chapter 3	Y	
<p>UAEM (Octavio Castelan and his students) were present in all 4 meetings.</p> <p>Some did not attend all 4 meetings because of the travel, but UADY (Juan Ku Vera) was at 3 meetings (flying from Yucatan) and was very active with our project on the enteric methane from cattle.</p>	Chapter 3	Y	Changed Appendix I color code from medium to dark orange and added

Comments	Location	Accepted (Y/N)	Observations
			sentence to note UADY role
<p>I would suggest changing “lower levels” to “state and city” governments.</p> <p>They include</p> <ul style="list-style-type: none"> - SEDEMA (the Secretariat of Environment for Mexico City), They attended all 4 meetings (first meeting was listed as GDF-SMA; the name became SEDEMA later). <p>They were very involved in the project, they collaborated with us in the diesel vehicles samplings (Metrobus, Coca-Cola, RTP) – Dr. Victor Hugo Paramo was responsible for supporting us during 2012-2013 when he was the Gen. Director for AQ management at SMA (or SEDEMA) before moving to INECC.</p> <p>Mexico City government also helped us obtained permission to Bordo Poniente Landfill.</p> <p>The Ecology Institute of the State of Guanajuato was responsible for helping us secured the collaboration of the brick producers to do the measurements for brick kilns.</p> <p>The Secretary of Environment for the State of Mexico, and CAME (Environmental Commission of the Megalopolis) and other states and municipalities also participated in the meetings.</p>	Chapter 3	Y	
<p>Thank you very much for making this excellent figure!</p> <p>Suggest to make the following changes and addition in the Figure.</p> <p>1) Under MCE2, please add “Mitigation strategies”</p>	Chapter 3	Y	

Comments	Location	Accepted (Y/N)	Observations
<p>2) suggest to place Aerodyne and UAEM/UADY in the Third Row – same level as UNAM-CCA and UNAM II – since they are key subcontractors. (i.e., switch them with GIRA/UNAM CIECO and IMP). Please note GIRA should be all CAPS.</p> <p>3) under SEDEMA: add “Support diesel vehicle sampling”</p> <p>4) Under “SEMARNAT” – add “Collaborator, emissions inventory and logistical support”</p> <p>5) Under RTP, please add “Metrobus” (buses for emission sampling)</p> <p>6) Under “Ecology Institute of State of Guanajuato”, please add “Municipal Presidency of Abasolo, Municipal Presidency of León” – they all support the brick kiln measurements.</p> <p>7) Please add a box for “BENLESA and Bordo Poniente - provide access to landfill for emission measurement”</p> <p>8) add a box “Brick Producers at El Refugio, Guanajuato – provide brick kilns for emissions sampling”</p> <p>9) Under “GAMA EK” please add “UAM-I”</p> <p>10) Under UNAM-CCA, there is a typo “scenairos diesel” should be “scenarios diesel”</p> <p>11) Since we cannot list all of them, I suggest to add a sentence in the Figure Caption: “Figure 3 shows some more of the detail about the specific roles of various key stakeholders associated with the project. A complete list of project participants and collaborators is provided at the beginning of the report.</p>			

Comments	Location	Accepted (Y/N)	Observations
Analysis and tracking of involvement as the project unfolded was challenging because of the large number of identified entities."			
Suggest to use "scientific journals" (instead of "science magazines")	Chapter 4	Y	
Missing words?	Chapter 4	Y	It was not "for a" but "fora"
Just to clarify: Climate and Clean Air Coalition was created in 2012 and UNEP was one of the founders and also host the CCAC Secretariat, as such, SLCF has been an important UN Agenda since 2012. Also, as mentioned below (#106-107), Mexico was selected as one of the pilot countries for CCAC SNAP initiative (2013). The Molina Center coordinated both SNAP 1 and this GEF-sponsored project. The Molina Center has continued as one of the lead partners of SNAP initiative.	Chapter 5	Y	Added clarifying language--don't think the discussion of the SNAP initiative goes in this section
GIRA is one of our sub-contractors responsible for coordinating the cookstove activity.	Chapter 5	Y	
Although the Health Ministry was not able to attend our project meeting, COFEPRIS had invited me to present the impacts of SLCFs at their conference. I have included a list of Mexican and international conferences that I was invited to talk about the GEF-project in the shared Dropbox with the Evaluation Team.	Chapter 5	Y	Added clarifying statements and hanged color of SEDESOL to reflect attendance one meeting in Appendix I
Some of the stakeholders were invited but they were unable to attend. One of the important stakeholders, SAGARPA, attended two of the Project meetings.	Chapter 5	Y	Changed color code to reflect this in chart appendix I and added

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SEDESOL attended the “Stakeholder meeting” on April 26, 2013, following the First Project Meeting on April 24, 2013. This Stakeholder meeting focused on cookstoves and transportation sectors.			reference to SEDESOL and SARGAPA as noted
<p>It is worth noting that this was a pilot project addressing SLCFs, thus we focused mainly on the key sectors responsible for the emissions and impacts of SLCFs (transportation, cookstoves, agriculture, brick kilns, wastewater, etc.) In spite of the “pilot” nature of this project, we have a large list of participants and collaborators, including government agencies, academia (young researchers and students), NGOs, private sectors, among others, which made it possible for us to accomplish the project objectives.</p> <p>As a follow-on study and with additional resources, indeed it would be important to address other issues suggested here.</p>	Chapter 7	Partially	<p>Did not change significantly but added phrases which clarified focus on those with specific needs for information, and added text about the plan “which may be absent due to the pilot nature of the project and limited funding” and words “given the focus on key sectors here”. Also adjusted the narrative on the \$20 million grant for MLEDS to indicate it was not available for the project.</p>
As suggested by the UNEP implementer, the main document (consisting of 4 chapters) should be concise. Thus the detailed descriptions (measurement methodology, data analysis, results, mitigation) for each sector were provided	Chapter 7	N	This section refers to the design docs e.g.

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<p>in the appendices (there were total of 11 appendices and 25 pages of references).</p> <p>e.g., Appendix F on ‘Enteric fermentation’ described in details the two methods for measuring methane emissions, mitigation strategies, and discussion of the results and comparison with IPCC. In addition, we have provided references to the publications.</p> <p>We have shared the documents with INECC and other interested parties. We plan to post them on our website, once the evaluation is completed.</p>			CEO Endorsement not the final report
<p>I would add brick kilns; the experience of working with the brick producers was a highlight for me personally.</p> <p>Many of the brick producers and their family – including children - live in the polluted brickyard.</p> <p>Improving the living and working conditions of the brick producers and their family is an environmental justice issue.</p>	Chapter 6	Y	
<p>As mentioned in the report (and Appendix A), the project team collaborated with SEMARNAT and developed black carbon emissions inventory for the 2008 INEM. This is the first time that BC was included in the INEM using the BC/PM2.5 ratio methodology (bottom-up approach).</p> <p>This is different from the “top-down approach” using the energy balance prepared for the Fifth National Communication.</p> <p>Despite the wide emission ranges, these estimates provided a first insight on the BC emissions in Mexico.</p> <p>As more information becomes available, it is expected that the uncertainty will be further reduced.</p>	Chapter 6	Y	

Comments	Location	Accepted (Y/N)	Observations
<p>I think there is a confusion here. Actually the Aerodyne measurement went well in spite of some logistical issues (it was difficult to obtain access to the oil/gas facilities, however, we were able to visit 3 sites and performed the measurements).</p> <p>As described on page 77 of the final report:</p> <p>The Aerodyne Mobile Laboratory sampled the flares at the PEMEX facility in Punta de Piedra using the tracer release method and obtained the BC emission factor (0.479 g/kg of fuel). This is the only BC emission factor for gas flaring reported from field study in Mexico.</p> <p>There is another measurement conducted by Johnson and Devillers (2012) in the same facility using sky-LOAS method. However, to obtain an emission factor using their method, the flare gas stack exit velocity would have to be known, but unfortunately they did not measure this parameter. Therefore, they did not report the emission factor.</p> <ol style="list-style-type: none"> 1. For methane fugitive emissions, ideally, the AML would like to capture the methane emissions from the entire facility, but the facilities sampled were large and road access was limited. Nevertheless, methane emissions at the three facilities were quantified using individual plume measurements. 2. A manuscript has been prepared and will be submitted for journal publication soon. 	Chapter 6	Y	
<p>Please see the comment above that clarified the measurements from AML (versus a different method from another study).</p>	Chapter 6	Y	

Comments	Location	Accepted (Y/N)	Observations
<p>Although funding for the Crop Residue Burning was not from GEF (because of limited resources available), it was indeed considered complementary to the GEF project (with funding provided by INECC and CONACYT).</p> <p>The investigator (Violeta Mugica from UAM-A) was listed as a project collaborator and presented the results at the project meetings.</p>	Chapter 6	Y	
<p>The “off-road” vehicle characterization was not included in the original proposal; hence it was not listed in Activity 1.4.</p> <p>This was considered additional complementary activity.</p>	Chapter 6	Y	
<p>I would suggest changing “LEAP” to “LEAP-IBC” (Long Range Energy Alternatives Planning system–Integrated Benefits Calculator).</p> <p>This is a tool that can be used to calculate human health, vegetation and climate benefits for a target country resulting from addressing short-lived climate pollutants.</p>	Chapter 6	Y	
<p>Please see comments on page 60 regarding “LEAP-IBC” (Long Range Energy Alternatives Planning system–Integrated Benefits Calculator) developed also by SEI.</p>	Chapter 6	Y	
<p>The emissions characterization and mitigation measures for both wastewater treatment and livestock enteric fermentation were described in the document and further in Appendices E and F.</p>	Chapter 6	Y	<p>Agree with the comment from Luisa and erased the phrase saying the opposite. Alternatives are</p>

Comments	Location	Accepted (Y/N)	Observations
			discussed as part of text in Annex E and F. Also changed the rating to highly satisfactory since emission factors from oil and gas were produced and this demonstrations were done and described in the text.
It should be American Geophysical Union (AGU). Please delete the word "Asian".	Chapter 6	Y	
As mentioned in Appendix J, some of the publications were listed because they are complementary to the project, even though they were supported by other sources	Chapter 6	Y	Added last new sentence to reflect comment
The reason is because some of the results presented were preliminary (and we want to avoid being quoted by readers before completing the final analysis). However, we will post all the journal publications. In addition, once the evaluation is completed, we are planning to post the final report (English and Spanish) on the MCE2 and INECC websites.	Chapter 6	Y	

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PCA was used because the amount was more than US\$200,000. SSFA is used between UN Environment and a Partner if the amount is US\$200,000 or less. ICA is used when the agreement is signed between 2 Divisions of UN Environment. I will attach additional information in my e-mail.	Chapter 7	Y	Changed text
No equipment was bought for the project. I will attach final expenditure and UN Environment budget codes	Chapter 7	Y	Removed comment about equipment clarification
It is not clear to me about the statement here. The co-finance reports (by Budget Line) were submitted to Leena Darlington (Fund Financial Management at that time) on November 11, 2016, along with the final Expenditure Report and Audit report. Additional information was provided on November 29, 2019. She issued the final clearance on November 30, 2016.	Chapter 7	Y	changed sentence here to reflect point made
As noted in my e-mail to the Evaluation Team (dated Nov 9, 2018): No equipment was purchased from the GEF funds.	Chapter 7	Y	Removed statement about equipment being unclear
The largest GEF expenditure was in 2013 because of the field measurement campaign (including payment to Aerodyne for ~ \$259 K).	Chapter 7	Y	Added sentence
There is an error in calculating the co-finance for MCE2: Total Planned = 152,858+516,595= 669,448 Total Actual = 825,870+429,723= 1,255,593 Percent change = 87.6% (NOT 3.50%)	Chapter 7	Y	

Comments	Location	Accepted (Y/N)	Observations
The Molina Center submitted Annex 7B (Cash Advance Statement) for each cash request to UN Fund Financial Manager, with copy to UN Implementer. There were total of 8 requests between 2012 and 2016.	Chapter 7	Y	Added clarification
According to our record, Quarterly Expenditure reports were submitted to UNEP for all project periods except Oct to Dec 2015 (there was no expenditure charged to UNEP during this period). The Report for the period (April-June 2014) was delivered on July 18, 2014.	Chapter 7	Y	Added additional clarification lines as per note
This should be July 2016	Chapter 7	Y	
The Quarterly reports are the same as the Expenditure reports; they were sent by project manager to FMO directly and copied to UN implementer. The technical reports are half-yearly reports and delivered to UN implementer. The final technical report was also delivered to FMO, as requested.	Chapter 7	Y	Added clarification
It is very important to note that INECC has contributed significantly to this project. Although not specifically listed, INECC has provided invaluable in-kind support to this project, as well as funding to complementary activities that were not included in the original project proposal. The collaboration from INECC was instrumental to the success of this project.	Chapter 7	Y	Added language
Because PIR covers fiscal year from July to June of the following year. However, as noted in the last sentence, the report actually covered from Oct 2012 to June 2014	Chapter 9	Y	Note comment and removed the list of dates--meaning

Comments	Location	Accepted (Y/N)	Observations
			remains the same in paragraph
<p>As alluded in the following sentences, we have two organization meetings in November 2012, and several site visits between August 29, 2012 and January 25, 2013.</p> <p>The First Project Meeting was held on April 24, 2013, the Second on October 2013, the Third on July 1, 2014, and the Fourth (Final) on Nov 18, 2015.</p> <p>As mentioned here, two organization meetings were held in November 2012 between the Molina Center, INECC and project participants, in order to coordinate the design of the project and to discuss and develop the project activities. These should be considered as the Inception Meetings.</p> <p>The minutes of the meetings were provided to the Evaluation Team.</p> <p>In addition, there were several site visits and meetings with relevant stakeholders between August 29, 2012 and January 25, 2013.</p> <p>These were all part of the planning/inception activities.</p>	Chapter 9	Y	Added last sentence to further clarify
Co-Finance Summary up to July 2016	Chapter 9	Y	
<p>The following is the list of progress reports (Annex 8 – Half yearly Progress Report) and PIR delivered to UN, covering the periods.</p> <p>As discussed with UN implementer, since the PIR–2015 covered the period of Jan–Jun 2015, we did not prepare a separate half-yearly report for this period. The same for Jan-Jun 2016 (it was covered in PIR-2016).</p> <p>Annex 8: July-Dec 2013</p>	Chapter 9	Y	Added clarification language

Comments	Location	Accepted (Y/N)	Observations
<p>Annex 8: Jan-Jun 2014</p> <p>PIR-2014 (July 2013 – June 2014)</p> <p>Annex 8: Jul-Dec 2014</p> <p>PIR-2015 (July 2014-June 2015)</p> <p>Annex 8: Jul-Dec 2015</p> <p>PIR-2016 (July 2015-July 2016)</p> <p>The Final Report was delivered in July 2018, at the completion of the Project. It was updated in June 2018, after receiving comments from UN and project participants.</p>			
Please see my comment (page 58) clarifying the statement on the emission factors for gas flaring.	Chapter 11	Y	Text reviewed and rate adjusted to HS
Appendix J of the document provides a complete list of publications.	Appendix D	Y	Changed language to say ""Reviewed"
Attended all 4 meetings	Appendix I	Y	Changed to black to reflect note
Because it was not listed in the original proposal.	Appendix J	Y	New text added for clarification
<p>For on-road vehicles: use vehicle with different model years and technologies</p> <p>For off-road vehicles: use diesel particle filters</p>	Appendix J	Y	New text added for clarification

Comments	Location	Accepted (Y/N)	Observations
The mitigation measures were described in Appendices E and F. Additional analysis are being prepared for publication”	Appendix J	Y	Last bullet erased accordingly
There are now 3 manuscripts published and more are under preparation.	Appendix J	N	Information valid at the time of evaluation
Currently there are 20 articles.	Appendix J	N	Information valid at the time of evaluation
Appendix J of the document listed 3 Ph.D. and 1 Master dissertations.	Appendix J	Y	Corrected
I send my comments to the report, all of them in control of changes to facilitate their identification. I appreciate the opportunity they gave us to review it before its publication. (Original in Spanish).	Throughout.	Y	Typographical mistakes corrected.
I only found minor typographical errors. The section on consulted documents need to be organized. My main comment is that there are no observations on the findings in Appendix G regarding fuel quality, effect on emissions factors using NTDE (New Technology for Diesel Emissions), natural gas, etc., which are current topics widely discussed in Mexico.	Throughout. Chapter 6.	Y	Typographical mistakes corrected. Clarification text added to paragraph 153 to acknowledge that Appendix G presented relevant recommendations for policy makers.

