

EVALUATION OF GEF ENGAGEMENT WITH MICRO, SMALL AND MEDIUM ENTERPRISES (MSMEs)

Approach Paper, July 2020

Since its inception, the Global Environment Facility (GEF) has recognized the private sector as a key stakeholder in fulfilling its mandate. Strategies that have evolved with every replenishment period from 1996 to the present show how the GEF has sought to engage private sector funds and technological innovation through various mechanisms ranging from funding platforms to non-grant instruments to competitions.

As the GEF has shifted into more integrated approaches, it has also increasingly engaged the private sector not only as a source of sustainable financing or innovative technologies, but more important as a critical partner in scaling up the generation of global environmental benefits (GEBs). Programming in the last two GEF replenishment phases – particularly through the Integrated Approach Pilots (IAPs) and Impact Programs (IPs) – directly addresses environmental drivers in part through working with private sector stakeholders, using value chains as an organizing framework for delivering interventions.

The “private sector” is defined by the Organisation for Economic Co-operation and Development’s Development Assistance Committee (OECD DAC) as *“Organisations that engage in profit-seeking activities and have a majority private ownership (i.e. not owned or operated by a government). This term includes financial institutions and intermediaries, multinational companies, micro, small and medium-sized enterprises (MSMEs), co-operatives, individual entrepreneurs, and farmers who operate in the formal and informal sectors. It excludes actors with a non-profit focus, such as private foundations and civil society organisations.”* (OECD DAC 2016).

Different GEF Independent Evaluation Office (IEO) evaluations have found that the GEF works with a wide range of private sector stakeholders, from multinational corporations to MSMEs and individual entrepreneurs. As early as 1995, the GEF invested close to \$30 million over three phases in a Small and Medium Scale Enterprise Program implemented by the World Bank Group’s International Finance Corporation (IFC). The program primarily aimed to make long-term, low-interest funding accessible to MSMEs for high-risk, innovative projects. The [World Bank](#) estimates that formal MSMEs contribute up to 40% of the Gross Domestic Product (GDP) and create 7 out of 10 jobs in emerging economies. Other similar initiatives such as the Earth Fund have since been launched to support innovative financial instruments to encourage MSME participation in GEB-generating commercial activities, especially in the climate change and biodiversity focal areas.

The most recent Evaluation of GEF Engagement with the Private Sector (GEF IEO 2017) found that the GEF’s comparative advantage has been in “upstream” interventions, such as strengthening institutions and transforming policy and regulatory environments that promote an environment for private sector participation in generating GEBs. The Evaluation of the GEF-UNIDO Global Cleantech Innovation Programme (GEF IEO 2020) specifically looked at how the GEF has recently supported MSMEs in the climate change space. The evaluation found that while entrepreneurs supported by the program were able to access much needed financing and capacity-building support to make their start-ups viable, the necessary policy and regulatory environment for cleantech innovation was not put into place; benefits and higher-level outcomes such as job creation were not systematically tracked within the program.

Alongside the GEF's targeted engagement of formal MSMEs is its equally long history of working with informal MSMEs – farmers, fishers, artisanal miners, traders, smallholders, tour operators and other small business owners in local communities who are not formally organized or registered with the government. These informal entities constitute a large part of the private sector in developing countries (Wunsch-Vincent & Kraemer 2016); they are also typically the direct users of the natural resources that multilateral environmental agreements seek to preserve or restore. Thus, rather than as co-financers or technological innovators, these MSMEs are often engaged by GEF-supported projects in their capacity as *de facto* managers of these natural resources, given that their behaviors in aggregate directly impact the fate of these resources. This engagement often takes on the form of environmental awareness and education, support for alternative livelihoods, payment for environmental services, and formalization of natural resource access and use rights, among other interventions that promote protection and/or more sustainable use of natural resources.

The GEF's latest draft Private Sector Engagement Strategy, reflecting the GEF's shift to a more integrated value-chain approach, for the first time specifically mentions smallholders as well as artisans and "primary producers" to be included in the GEF's private sector initiatives, such as through multistakeholder platforms and capacity-building.

Previous evaluations of the GEF IEO have found that in many cases, 1) GEF-supported projects do produce synergistic or compensatory economic benefits for these community-level entities while generating GEBs (GEF IEO 2018), and that 2) a project's economic benefits can serve as an incentive for these entities to adopt and even sustain environment-friendly technologies or practices that then allows GEBs to be scaled up (GEF IEO 2019a). Thus MSMEs, whether formal or informal, are both partners and beneficiaries in the GEF's fulfillment of its mandate to generate GEBs. Indeed, many projects include the creation and tracking of economic and social benefits to these entities by design; however, these benefits are not systematically tracked across the GEF portfolio due to their not being core to the GEF's mandate.

This evaluation will for the first time assess how different types of GEF-supported interventions – many of which are delivered at higher levels of governance – engage MSMEs as a key partner in the generation of GEBs. It aims to quantify how these interventions, in the process of creating positive environmental impacts, also contribute to generating economic and social impacts for these stakeholders that constitute the larger part of the private sector in the countries that the GEF works in.

Purpose and Key Questions

The purpose of this evaluation is to assess the extent to which the GEF engages MSMEs, and the extent to which this engagement creates economic and social benefits in the process of generating GEBs.

The key evaluation questions are:

- 1) What types of GEF-supported interventions engage MSMEs?
- 2) What are the intended and unintended economic and social outcomes reported from GEF-supported interventions where positive environmental outcomes were reported?
- 3) Which factors and processes have contributed to or hindered the generation of these economic and social outcomes?

- 4) To what extent has GEF engagement with MSMEs contributed to these outcomes, including through the development of enabling conditions?
- 5) What are the most effective approaches for the GEF to engage MSMEs as a means to generating global environmental benefits?

To address GEF Council concerns, the evaluation will pay particular attention to how GEF-supported interventions have mitigated negative impacts on and advanced human and labor rights, especially for women, indigenous peoples, and persons with disability; and transparency in different scales of governance within the relevant sectors. The evaluation will also look at the extent to which the types of interventions supported and outcomes generated facilitate a green recovery from the economic and social effects of the COVID-19 pandemic, and enhance resilience to similar future shocks. Annex 1 lists the indicators to be assessed for each evaluation question.

The primary audience for the evaluation's findings is the GEF Council. The GEF Secretariat, GEF Agencies, and evaluation offices of the GEF Agencies are also anticipated to be primary users of the evaluation's conclusions and recommendations, particularly findings on the influencing factors, as well as on the feasibility of monitoring and assessment methods of economic and social outcomes.

Methodology

The evaluation will use a mixed methods approach to answer the key questions at both the portfolio level and case study level. A separate assessment will be done at a global level on how the GEF can better engage with the private sector more broadly, as a follow-up to the GEF IEO's 2017 evaluation on private sector engagement and as input to the latest draft of the GEF's Private Sector Engagement Strategy.

Portfolio component

The evaluation will assess the GEF's contributions to environmental, social and economic benefits for MSMEs at the portfolio level using two approaches: 1) *ex post*, through an examination of results reported at project completion, and 2) *ex ante*, through a review of the design of newly implemented programs and their respective child projects.

The *ex post* portfolio will consist of all GEF-supported projects that have accessible terminal evaluations, as of June 2020. These projects will be systematically scanned with text analytics software using relevant keywords to identify projects that specifically worked with the private sector to implement interventions. The *ex ante* portfolio will consist of child projects CEO-endorsed as part of the GEF-6 IAPs and GEF-7 IPs, and/or their corresponding program framework documents (PFDs). Further analyses will be applied on the two subsets of projects that explicitly engaged the private sector as part of their activities, to assess the extent to which specific interventions generated or are intended to generate benefits for MSMEs.

Case study component

The evaluation will use in-depth cases covering different focal areas, e.g. chemicals and waste, climate change, and land degradation¹. The total number of cases will depend on access to and availability of

¹ As quasi-experimental analysis has been used by the GEF IEO mainly in biodiversity-related interventions thus far, the biodiversity focal area is not planned to be a focus of this evaluation.

information, given the constraints placed by the current COVID-19 pandemic, among others. The focal areas and case study countries will be selected based on opportunities for synergies in field data collection with other IEO evaluations being undertaken in parallel.²

To assess and quantify the extent of economic and social outcomes, the case study component will use quasi-experimental analysis to the extent possible. This entails the comparison of similar populations that have received and not received GEF support (“with” and “without” populations, respectively), both before and after an intervention has been implemented (Figure 1). Tracking the same indicators in a comparison group over time serves as a proxy for the counterfactual, or what would have happened without GEF support. Comparing the GEF-supported population with the counterfactual allows the estimation of “net impact”, or results that were achieved only where a GEF-supported intervention was implemented.

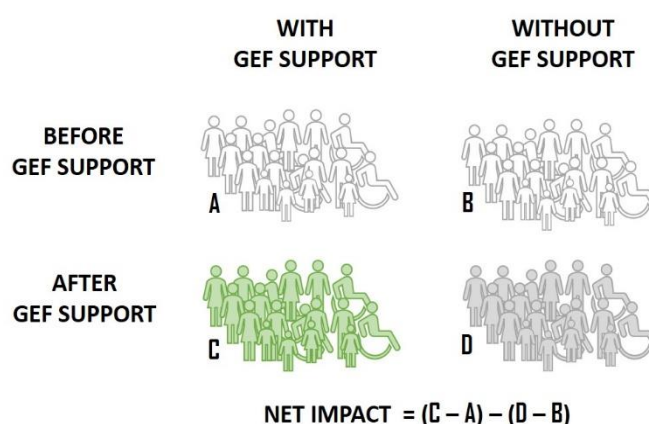


Figure 1. An experimental or quasi-experimental design entails comparing two similar populations, one that receives GEF support and one that does not, both before and after the period of GEF support.

To be evaluable through a quasi-experimental design, the cases have to meet the following conditions:

- 1) Does the project support at least one concrete activity or set of activities that directly engage MSME stakeholders, implemented within clearly defined spatial and temporal boundaries, and expected to directly result in a target outcome?
- 2) Has the project been reported to have achieved some environmental outcome?
- 3) Does the project identify at least one specific, measurable economic or social indicator as an outcome in its results framework?
- 4) Has the activity or set of activities been previously demonstrated to directly generate the economic or social indicators in this or other contexts?
- 5) Are baseline data available for the economic or social indicators for populations engaged in the activity's implementation ("with" populations)?
 - ☐ Collected by project
 - ☐ Collected through external research studies
- 6) Are endline or current data available for the economic or social indicators for populations engaged in the activity's implementation ("with" populations)?
 - ☐ Collected by project
 - ☐ Collected through external research studies
 - ☐ Feasible to be collected by this evaluation

² These are the evaluation of the planetGOLD Program, the IP/IAP review, the knowledge product on fisheries, and the post-completion and formative evaluations of a sample of the GEF portfolio that will feed into OPS7, as well as any knowledge dissemination and stakeholder engagement activities.

- 7) Do similar populations exist that did NOT implement the activity (“without” populations)?
- 8) Do data for the economic or social indicators exist for populations NOT engaged in the activity’s implementation (“without” populations)?
 - ☐ Baseline and endline or at least current data for similar population collected by project or other research study
 - ☐ Baseline and endline, or at least mid- to long-term trends for larger-scale unit in which the population belongs e.g. municipality, province, country, accessible through government or other databases, satellite imagery, etc.
 - ☐ Results for scenario without the intervention that can be estimated by experts and/or stakeholders

Annex 2 shows the extent to which each case selected through parallel evaluations meet these conditions.

Given the limitations of finding comparable populations in the complex systems in which the GEF works, the quasi-experimental design will be embedded in the theory-based “creative counterfactuals” approach developed by the GEF IEO in previous evaluations (see Annex 3 for more details on the IEO’s impact evaluation methods). This involves selecting multiple comparison units to serve as benchmarks for the various expected intermediate outcomes along the targeted impact’s causal chain (Figure 2). Apart from estimating the extent of difference in outcomes between “with” and “without” units of analysis, this approach aims to verify the pathways and mechanisms by which GEF support contributed wholly or in part to generating any reported outcomes. It also serves to either rule out or account for any other variables that may explain the effects for both GEF-supported and non-supported units. Annex 2 illustrates the specific application of the approach to each of the selected case studies, including the potential comparison units at different stages of the causal chain.

Key economic and social indicators to be assessed in the cases will be selected according to the results that a specific intervention is expected to produce within a realistic time frame. Examples of key indicators would be income level, number of sources of livelihood, health conditions, distribution of social benefits among marginalized groups (e.g. women, indigenous people), and participation in governance processes. Annex 2 provides a list of potential indicators to be used at each stage of the causal chain linked to each case’s set of interventions. Data will also be collected on other intended and unintended outcomes that may emerge as significant during the course of the evaluation, such as those related to special GEF Council concerns, as mentioned above.

One of the biggest different differences between the “creative counterfactuals” approach and the more conventional quasi-experimental design typically used as a stand-alone method is that the “creative counterfactuals” approach allows for the use of any available and emerging data in a data-limited setting, with a strong emphasis on accounting for differences in outcomes through a systematic examination and elimination of possible explanations for these differences. The conventional quasi-experimental design requires a specific set of data to be available at the outset to allow the rigorous application of statistical analysis, and thus is dependent on data-rich and homogeneous environments; in addition, due to its assumption of homogeneity between “with” and “without” populations, it also assumes that the differences in outcomes are explained only by the presence or absence of the intervention being evaluated.

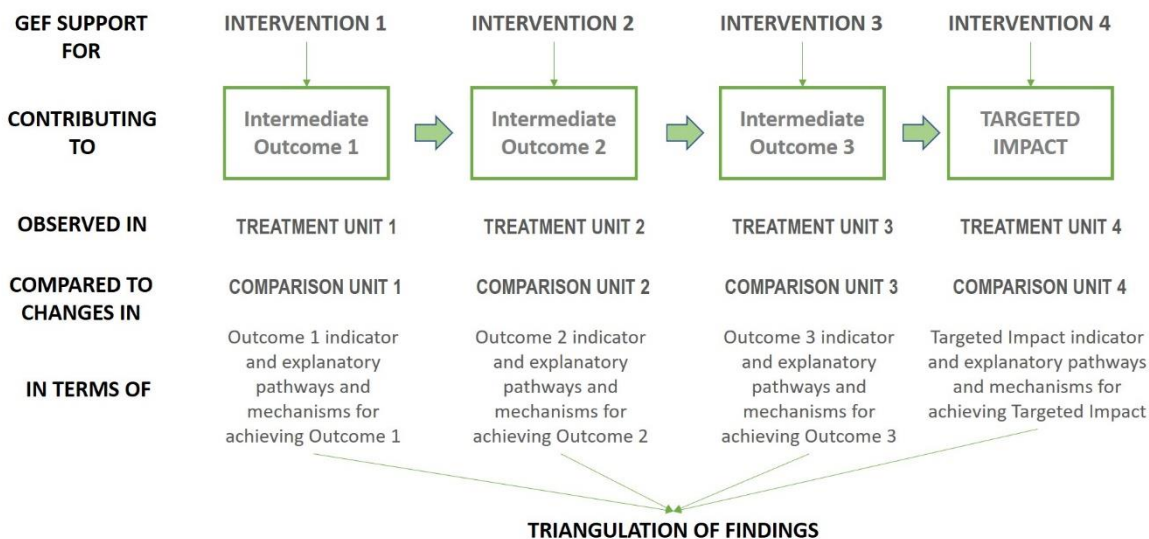


Figure 2. Illustration of the "creative counterfactuals" approach of selecting multiple comparison units to compare with the various expected intermediate outcomes of GEF-supported interventions along a targeted impact's causal chain

Global assessment component

Building on the previous GEF IEO evaluation on private sector engagement, the evaluation will also look at the GEF's constraints to private sector engagement more broadly, as an input to the latest draft of the GEF's Private Sector Engagement Strategy. This will be done through consultations with the GEF's Private Sector Advisory Group, complemented by a survey of a sample of MSMEs that GEF Agencies already work with.

Data Collection and Analysis

Two types of indicators will be identified at both the portfolio and case study levels: those that can be objectively and quantitatively measured, and those that can only be assessed through stakeholder perceptions and qualitative evidence. Below is a summary of data collection methods to be used in this evaluation. The evaluation matrix in Annex 1 provides more details on indicators, data sources and data analysis methods to be used.

- **Project document review.** Identify the key interventions that engage MSMEs, and the extent to which quantitative and qualitative environmental, social and economic benefits have been generated in completed projects or are planned to be generated in newer projects. At the case study level, identify the key quantitative environmental, economic and social outcomes to focus on in each case; develop theories of change for each case based on project activities to serve as bases for assessing the extent of GEF's contribution to these outcomes.
- **Interviews / online survey at global level.** Identify the barriers to GEF engagement with the private sector and especially MSMEs, and the extent to which the GEF is addressing them in its current strategy and programming.
- **Preparatory interviews and focus group discussions at case study level.** Verify with stakeholders the key quantitative and qualitative outcomes to focus on, as well as the locations and number of the populations to be included in the quasi-experimental design. Availability of access to target populations and relevant databases will also be confirmed during these field visits.

- **Focus group discussions (FGDs) / surveys at case study level.** Depending on the size of the population and the key indicators to be assessed, either FGDs or surveys or both may be used to assess the magnitude and distribution of economic and social effects as well as the relative importance of previously identified influencing factors. These will also be used to triangulate findings on other indicators.
- **Objective and quantitative measures.** Indicators will be selected according to specific case characteristics, and will measure key environmental, economic and social outcomes. These will be used to triangulate stakeholder perceptions. Annex 2 presents the available and potential indicators and data sources for each selected case.

At the case study level, statistical analyses will be used to determine quantitative impacts to the extent possible. Working with the same populations that are part of the quantitative analyses, interviews, focus group discussions and surveys will be used to identify and assess other effects that are not quantifiable. Qualitative data gathered from these methods will also be analyzed to identify factors that have influenced the observed outcomes, including the extent to which GEF support has contributed to the generation of these outcomes in relation to other contributing factors and processes. Qualitative analysis software such as NVivo will be used to identify patterns and trends in qualitative indicators and influencing factors. Geospatial and other statistical analyses may be used depending on the indicators to be used and on the relevant local, national and global datasets available.

Limitations

At the portfolio level, the main limitation will be in systematically identifying projects that involve the private sector and more specifically MSMEs, due their not being explicitly labeled in the GEF's Project Management Information System.³ The use of text analytics to do this task is still in its pilot stages in the GEF IEO; the accuracy and reliability of results may be difficult to verify, given the high number of documents to be processed.

At the case study level, one of the biggest challenges will be identifying “without” populations and obtaining data on them. GEF-funded projects typically do not collect baseline or endline data for populations that are not beneficiaries of the project. To collect data directly from “without” populations (i.e., not supported by GEF-funded projects), the evaluation team will need to identify and work with appropriate organizations or government agencies that have established long-term relationships with these populations. These organizations and agencies will be necessary to facilitate access to and help gain the trust of such populations in providing social and economic information. The extent to which there is “spillover” of the intervention to “without” populations (e.g. through knowledge exchange or migration) also needs to be determined, as this is often difficult to control in real-world settings, and will affect the interpretation of findings. Even more important will be identifying the extent to which the selected “with” and “without” populations are different on key variables, and how these differences contribute to any differences in outcomes. The “creative counterfactuals” approach allows the analyses to be adapted to whatever data becomes available and accessible, while also assessing the GEF's contributions (rather than attribution) in these complex systems.

³ This limitation was also identified in previous GEF IEO evaluations, and is planned to be addressed through the GEF Private Sector Engagement Strategy Implementation Plan to be approved by the GEF Council.

Obtaining quantitative economic and social data to cover pre- and post-project periods may also be a challenge, as project reporting on such data tends to be qualitative. We will need to map the presence of relevant research institutions and government agencies in each country to have a list of possible data sources. For projects that have been completed, there may be a greater challenge in identifying contacts who can assist in gaining access to the populations of interest. Cases will be selected in part based on the availability of contacts that can provide information about GEF-supported interventions and access to relevant populations for data collection. The cases will therefore be biased towards data-rich environments by design rather than being representative of the GEF portfolio; the cases however are valuable for providing in-depth information on factors and mechanisms by which outcomes take place.

Given the travel limitations and safety concerns arising from the COVID-19 pandemic, fieldwork will be conducted by local consultants according to guidelines and regulations applicable to the respective case study countries and specific project sites. In the event that field visits cannot be completed, data will be collected remotely by phone, online surveys, or other appropriate means; existing local and national datasets will also be used to the extent possible to supplement primary data collection. Any limitations associated with the inability to travel will be presented in the final evaluation report.

The above logistical and other concerns constrain this evaluation's scope to a small number of cases that are selected based mainly on availability and accessibility of data. Therefore it does not aim to generalize the findings of the case studies to the larger GEF portfolio, but rather to present the results of a few typical GEF-supported interventions within the context of specific industries, sites and focal areas, and the corresponding explanatory variables and mechanisms in depth. The portfolio component will provide a more representative assessment of the types and extent of outcomes reported from GEF-supported interventions.

Quality Assurance

At least two private sector and evaluation experts, particularly specializing in MSMEs, will be selected as external peer reviewers. The peer reviewers will provide feedback at various stages of the evaluation, beginning at design until the formulation of conclusions and recommendations. Apart from these, the evaluation will also be reviewed internally by GEF IEO staff at design stage and prior to circulation to stakeholders.

Stakeholder Engagement and Knowledge Management

This approach paper and the draft report will be circulated to GEFSEC and Agencies. A Reference Group of private sector specialists from the GEF Secretariat and GEF Agencies will be formed to provide support for and verification of case study selection, field missions, and any preliminary evaluation products. Beneficiaries in the countries will be engaged through participatory exercises so they may provide inputs on the key indicators to be measured, whether positive or negative, intended or unintended. Findings from each case will be shared with all stakeholders involved for verification and feedback prior to presentation to Council.

Four-page briefs will also be published, with the GEF Replenishment Group as the main audience. Apart from the final report, the findings and methodology will be disseminated in shorter formats more easily accessible and absorbed by a wider audience of project designers, managers and evaluators, such as through conference presentations, webinars, videos and infographics.

Resources

The evaluation will be led by Jeneen R. Garcia, Evaluation Officer with overall guidance from Geeta Batra, Chief Evaluation Officer of the IEO, and support from teams of the individual evaluations which the case studies are associated with. Consultants will conduct the bulk of the data collection and analysis, especially in the case study countries. The required competencies include skills in mixed-methods impact evaluation, including qualitative data collection and analysis methods, as well as in-depth knowledge of the specific industries in the case study countries of which the selected MSMEs are part.

Timeline

The evaluation is intended to be completed in a phased approach between June 2020 and June 2021. The case studies will be conducted and presented to the GEF Council as they are completed, in line with the timelines of their associated individual evaluations.

Table 1. Timeline of evaluation

	2020							2021					
TASKS	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Start-up of Evaluation													
Approach Paper circulated and approved													
Recruitment of peer reviewers and Reference Group													
Hiring of consultants													
Portfolio Component													
Definition of portfolios for review													
Design of project document review tools (TE and child projects)													
Project document reviews													
Analysis of portfolio data													
Design of interviews/ online survey of MSMEs													
Administration of interviews/ online survey													
Analysis of interviews/ survey results													
Write-up of results													
Case Study Component													
Review of project documents and other literature													
Preparatory interviews & FGDs – CC & CW cases (including post-completion and formative evaluations for CW case)													
Design of data collection framework and tools													
Data collection for CC & CW cases													
Analysis and write-up of CC and CW cases													
Presentation to Council of CC and CW cases													
Preparatory interviews & FGDs – LD case (TBD) (including post-completion and formative evaluations)													
Data collection for LD case (TBD)													

Analysis and write-up of LD case													
Synthesis of Evaluation Components													
Four-pagers of portfolio and case study results for Replenishment Group													
Write-up of draft report													
Circulation of draft report to stakeholders													
Revision of report													
Presentation to Council of Final Report													

ANNEX 1: Evaluation Matrix

Table 2. Evaluation matrix

EVALUATION QUESTION	INDICATORS	DATA COLLECTION METHODS	POTENTIAL DATA ANALYSIS METHODS
1) What types of GEF-supported interventions engage MSMEs?	• Project components and types of project activities • Results for each project activity • Types of interventions and outcomes that mitigate negative effects on and advance human and labor rights (especially on marginalized groups), transparency in governance at multiple scales, green recovery from COVID-19, and resilience to future shocks • Sources of cofinancing	• Programming and strategy document review • Project document review • Interviews with project managers and national and local stakeholders	• Portfolio analysis • Mapping of project activities and results to theory of change in relevant value chain • Statistical and content analysis of survey results
2) What are the intended and unintended economic and social outcomes reported from GEF-supported interventions where positive environmental outcomes were reported?	• Environmental, economic and social outcomes, both quantitative and qualitative (as identified per case, see Annex 2), including reports of sustainability and scaling • Any outcomes related to human and labor rights (especially on marginalized groups), transparency in governance at multiple scales, green recovery from COVID-19, and resilience to future shocks, depending on relevance to particular sector in case study	• Project document review • Global, national and local databases • Interviews with project managers and national and local stakeholders • FGDs • Surveys	• Difference-in-difference • Geospatial analysis • Word frequencies and networks • Content analysis
3) Which factors and processes have contributed to or hindered the generation of these economic and social outcomes?	• Contributing factors • Hindering factors • Lessons learned and recommendations for engaging MSMEs and achieving outcomes	• Project document review • Review of other literature • Global, national and local databases • Interviews with project managers and national and local stakeholders	• Word frequencies and networks • Content analysis/ Grounded theory analysis

	- Contextual conditions, e.g. economic, social, legal, political at local, national and regional levels particularly affecting the specific industry that may explain outcomes - Timeline of events leading to generation of results	- FGDs - Surveys	Contribution analysis / Process tracing/ Comparative analysis as appropriate - Statistical analysis of trends where quantitative data is available
4) To what extent has GEF support contributed to these outcomes, including through the development of enabling conditions?	- Enabling conditions supported by the GEF (e.g. legal frameworks, service providers, equipment, financing) - Project implementation process and conditions - Contextual conditions, e.g. economic, social, legal, political at local, national and regional levels particularly affecting the specific industry that may explain outcomes - Timeline of events leading to generation of results	- Project document review - Review of other literature - Global, national and local databases - Interviews with project managers and national and local stakeholders - FGDs - Surveys	Word frequencies and networks Content analysis/ Grounded theory analysis Contribution analysis / Process tracing/ Comparative analysis as appropriate - Statistical analysis of trends where quantitative data is available
5) What are the most effective approaches for the GEF to engage MSMEs as a means to generating global environmental benefits?	- Lessons learned and recommendations for engaging MSMEs and achieving outcomes - Constraints to GEF engagement with private sector, especially MSMEs	- Project document review - Interviews with GEF Private Sector Advisory Group members - Online survey of MSMEs	Word frequencies and networks Content analysis/ Grounded theory analysis

ANNEX 2: Profile of Cases

The case profiles provide project information for each case, particularly on the interventions and outcomes most relevant for this evaluation. Known and potential “with” and “without” populations are identified, as well as known and potential data sources. Theories of change for key outcomes are presented as a framework for assessment; these include proposed outcomes and corresponding indicators to be assessed. However, the details of these theories of change will be verified and are expected to be iteratively revised as more information is obtained through this evaluation.

Case #1: Climate Change Mitigation: Energy Efficient and Renewable Energy Technology in Energy-intensive MSMEs

The aim of the project is to develop and promote a market environment for introducing energy efficiencies (EE) and enhanced use of renewable energy (RE) technologies in process applications in 12 selected energy-intensive MSME clusters in India, with expansion to more clusters later, in order to improve the productivity and competitiveness of units as well as to reduce overall carbon emissions and improve the local environment.

The project has supported information dissemination and training initiatives for both providers of EE and RE technologies (“local service providers” or LSPs) and MSMEs that are expected to adopt these technologies and best operating practices. At the cluster level, it has created energy management cells (EMCs) staffed with certified engineers that provide energy audit services as well as other technical advisory support to MSMEs. The project has also financed both the demonstration of larger-scale EE and RE investments (“pilot projects”) in a few MSMEs, and the development of direct project reports (DPRs) that function as feasibility studies to be used to apply for loans for EE and RE technologies at financial institutions. It is also working at the national level to make policies more favorable to adopting EE and RE technologies.

Table 3. Profile and Conditions of CCM Case

GEF ID	3553
Project Title	Promoting Energy Efficiency and Renewable Energy in Selected Micro, Small and Medium Enterprises (MSME) Clusters in India
Country/ Countries	India
GEF Agency/ Agencies	UNIDO
GEF grant amount (at CEO endorsement)	USD 7,172,097
Co-financing total (at CEO endorsement)	USD 26,200,000
Implementation Start Date (actual)	February 2011
Implementation End Date (actual)	Ongoing
Concrete activity/ set of activities with clearly defined spatial and temporal boundaries	EE & RE technology and practices adopted by MSMEs organized into clusters within sectors; includes training on practices, financial assistance, and advisory services through energy management cells
Direct target outcome	GHG reduction Cost savings for MSMEs

Direct social or economic indicator	Estimated annual savings vs investment (monetary + other resources) (Changes in working conditions e.g. temperature)
Baseline of social or economic indicator	Energy audits and monitoring done by project
Endline of social or economic indicator	Energy audits and monitoring done by project
Potential “without” populations	MSMEs within same clusters and receiving project support that did not adopt any EE / RE changes
Data potentially available for “without” populations	National or municipal records on specific clusters or industries BEE study on energy use of industrial sectors To be collected by this evaluation

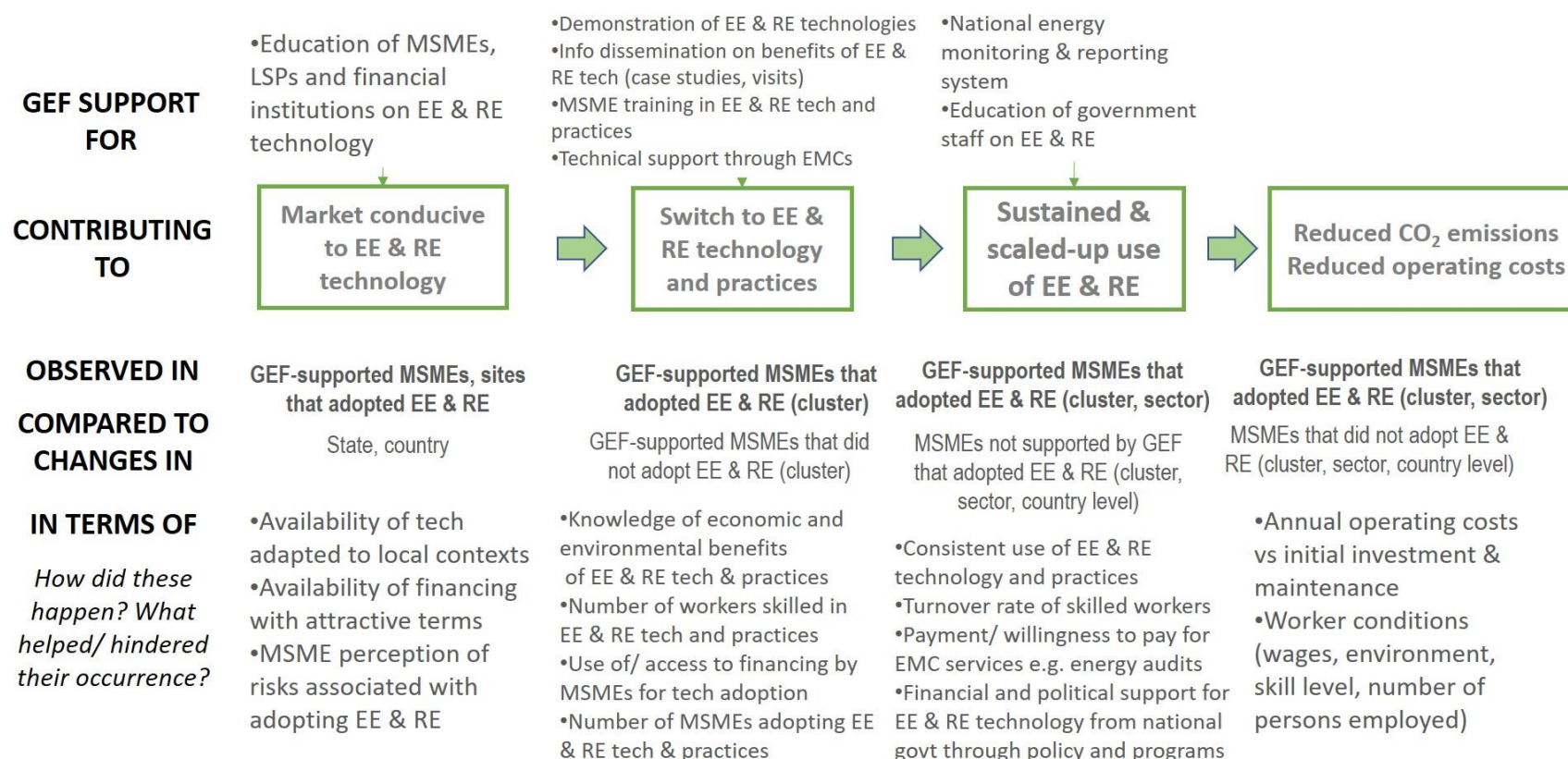


Figure 3. Initial framework for assessing extent of contribution of GEF support in reducing CO₂ emissions and operating costs among MSMEs in India

Case #2: Chemicals and Waste: Mercury Reduction in Artisanal-scale Gold Mining

The overall objective of the project was to improve the health and environment of artisanal gold mining (ASGM) communities in the Philippines by reducing mercury emissions. In particular, the project aimed to introduce mercury-free technology in two small-scale mining areas, and to supplement this effort by providing health training to rural health care workers in the proper diagnosis of mercury poisoning.

The project supported information dissemination activities that made miners aware of the hazards of mercury to both health and environment, which increased their willingness to use mercury-free technology. The project supported the piloting of mercury-free technology using low-cost, locally available materials through training on techniques and cofinancing from local governments to build mercury-free facilities. It also supported the creation of a national-level ASGM institution to allow ASGM associations to formalize their sector and gain access to government support for social and technical services.

Table 4. Profile and Conditions of CW Case

GEF ID	5216
Project Title	Improve the health and environment of artisanal gold mining communities in the Philippines by reducing mercury emissions
Country/ Countries	Philippines
GEF Agency/ Agencies	UNIDO
GEF grant amount (actual)	USD 550,000
Co-financing total (final committed)	USD 1,631,070
Implementation Start Date (actual)	March 2013
Implementation End Date (actual)	June 2016
Concrete activity/ set of activities with clearly defined spatial and temporal boundaries	Gravity-based, mercury-free technology for ASGM piloted in 2 communities in Diwalwal, Compostela Valley and Labo, Camarines Norte; included awareness-raising on health risks of Hg and formalization of sector at local and national levels
Direct target outcome	Reduction in mercury use, emissions and exposure

Direct social or economic indicator	Mercury levels in blood and hair Other health concerns (Income level)
Baseline of social or economic indicator	Collected by project
Endline of social or economic indicator	Collected by project Municipal or village health records To be collected by this evaluation
Potential “Without” cases	Nearby communities in same provinces that have not adopted the technology Community of Pasil, Kalinga, initially selected as pilot site but LGU withdrew support due to entry of large-scale mining
Data potentially available for “without” cases	Baseline for Kalinga collected by project Provincial, municipal or village health records To be collected by evaluation

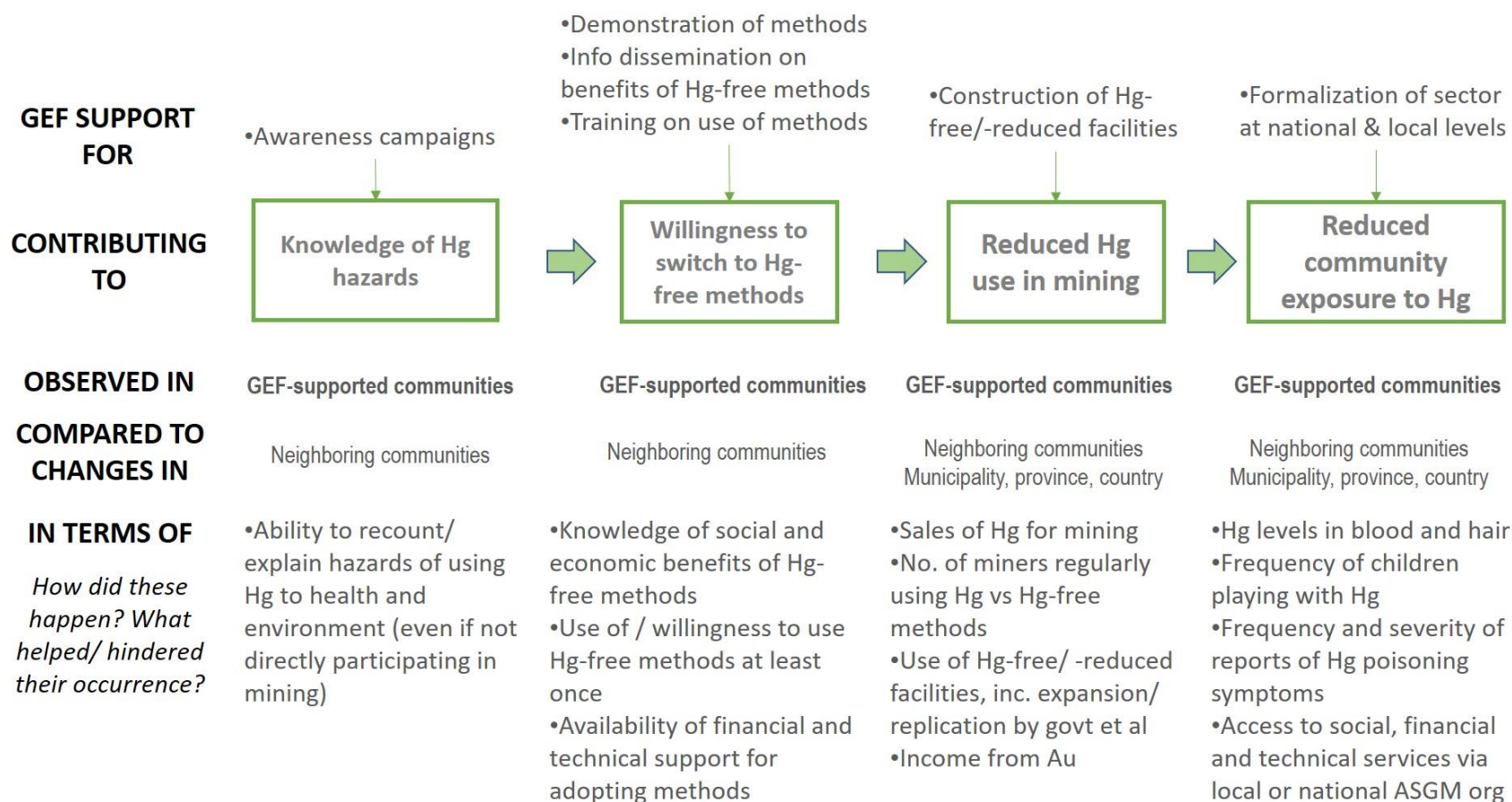


Figure 4. Initial framework for assessing extent of contribution of GEF support in reducing community exposure to Hg in ASGM communities in the Philippines

ANNEX 3: Impact evaluation methods in the GEF IEO

Impact evaluations previously undertaken by the GEF IEO have used a mixed methods approach (i.e., combining quantitative and qualitative analyses, Bamberger 2012) to assess the environmental results of GEF support. In some sectors such as health and development economics, evaluating impacts of interventions is typically equated with the use of experimental methods. In essence, this entails randomly designating comparison and treatment groups within the target population prior to implementation, implementing the intervention only in the treatment group, and then measuring the difference in outcomes between the comparison and treatment groups after implementation. This difference is considered the “net impact” of the intervention, as it is presumed to be the only difference between the two statistically similar groups.

Where it has not been possible to designate treatment and comparison groups *ex ante*, quasi-experimental analyses are used to measure outcome differences between treatment and comparison groups created *ex post* using statistical methods (White and Sabarwal 2014).

Quasi-experimental analyses, while not often used due to the lack of statistically viable samples and quantitative data, are not new to the GEF IEO. In 2008, three quasi-experimental studies assessed the socioeconomic effects of biodiversity-related interventions on populations living in protected areas and agricultural landscapes. The case studies were done in collaboration with the GEF’s Scientific and Technical Advisory panel (STAP) as part of a series of impact evaluation papers (GEF EO 2008). Advancements in open-access geospatial technology have allowed the GEF IEO to do more sophisticated, lower-cost quasi-experimental analyses, such as through spatial propensity score matching to create treatment and comparison groups. Pixels of satellite images at 30-m resolution were matched based on similarities on nine socioeconomic and biophysical variables, with the only difference being their classification as protected area (treatment) or not (comparison); the outcome assessed was avoided forest cover loss (GEF IEO 2016).

Most recently, the GEF IEO matched socioeconomic data from the World Bank’s Living Standards Measurement Survey (LSMS) with satellite data to determine correlations between changes in household assets and the implementation of GEF-supported sustainable forest management interventions in Uganda over a two-year period (GEF IEO 2019b). The method used, quasi-experimental geospatial interpolation (QGI), builds on spatial propensity score matching methods by iteratively testing the extent to which effects can be detected at increasing distances from the intervention; the maximum distance and intervals to be tested are specified *a priori* (Runfola et al 2020).

One limitation of quasi-experimental methods, apart from statistical assumptions requiring large homogeneous populations, is that they normally do not account for the causal mechanisms between interventions and observed effects (IIED 2017). In the coupled human and natural systems that the GEF seeks to influence, differences in outcomes often cannot be directly and wholly attributed to GEF support, as many other actors and factors are also at play at multiple interacting scales (Zazueta and Garcia 2014; Garcia and Zazueta 2015).

Since 2010, GEF IEO impact evaluations have built on theory-based approaches and methods more appropriate for such complex systems (Vaessen et al 2016); instead of using a single comparison group statistically similar to the treatment group, the former of which often does not exist, multiple units of analysis with respective comparison and treatment units are assessed for various outcomes along an

intervention's theory of change (GEF EO 2012). This approach then triangulates results from the different units of analysis to better assess the extent to which GEF support has indeed influenced the outcome. To contrast with the concept of a statistically similar comparison group being conventionally defined as the "counterfactual", or what would have happened without the intervention, these alternative comparison units are dubbed as "creative counterfactuals" (Garcia and Zazueta 2017).

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