



# Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 29-Jan-2018 | Report No: PIDISDSA23004



**BASIC INFORMATION**

**A. Basic Project Data**

Country	Project ID	Project Name	Parent Project ID (if any)
Mexico	P164055	Energy for Sustainable Agricultural Development	
Region	Estimated Appraisal Date	Estimated Board Date	Practice Area (Lead)
LATIN AMERICA AND CARIBBEAN	13-Dec-2017	20-Mar-2018	Agriculture
Financing Instrument	Borrower(s)	Implementing Agency	
Investment Project Financing	United Mexican States	Secretariat of Energy, Shared Risk Trust (FIRCO)	

Proposed Development Objective(s)

Promote the adoption of renewable energy and energy efficiency technologies among target beneficiaries.

Components

Investments in Renewable Energy and Energy Efficiency Technologies for Rural Production Units  
 Pilots for Renewable Energy and Energy Efficiency Technologies  
 Project Management, Monitoring and Evaluation

**Financing (in USD Million)**

Financing Source	Amount
International Bank for Reconstruction and Development	50.00
LOCAL: BENEFICIARIES	45.62
<b>Total Project Cost</b>	<b>95.62</b>

Environmental Assessment Category

**B - Partial Assessment**

Have the Safeguards oversight and clearance functions been transferred to the Practice Manager? (Will not be disclosed)

No



Decision

The review did authorize the preparation to continue

Other Decision (as needed)

## B. Introduction and Context

### Country Context

1. Mexico's economy continues to expand at a steady though moderate rate of growth. The increase in Mexico's GDP over the past three years, 2014-2016, at an annual average of 3.0% was stronger than annual average growth recorded during the previous two decades, 1994-2013, of 2.4%.<sup>1</sup> Growth is expected to moderate to about 1.9% in 2017 and strengthen in the medium-term to about 2.5% by 2019<sup>2</sup> as uncertainty regarding NAFTA and the presidential elections (July 2018) dissipates and gross fixed investment growth resumes. However, these growth rates are only about half the average growth observed in emerging market economies (5.3%) between 1994 and 2016.
2. Economic performance has been resilient in view of external shocks experienced over the past few years. During this time, Mexico's economy has experienced several external shocks, including a sharp drop in oil prices with average oil prices down by 50-60%, an additional reduction in the volume of oil and gas production by 6% annually, international financial market volatility related to a normalization of monetary policy in advanced economies, and, more recently, uncertainty over the future of U.S.-Mexico trade relations. Sensible monetary and fiscal policy responses to these shocks, within an overall sound macroeconomic policy framework including a flexible exchange rate, an inflation-targeting monetary policy framework and fiscal oversight ensuring moderate public sector deficits, has maintained macroeconomic stability in recent years.
3. Moderate economic growth over recent years has limited significant poverty reduction and improvements in shared prosperity. The most recent official poverty estimate, based on a combination of monetary and non-monetary dimensions of welfare, shows a decline in poverty from 46.2% to 43.6% and in extreme poor from 9.5% to 7.6% between 2014 and 2016.<sup>3</sup> Access to health services and access to social security and food security were the non-monetary components that most improved. Monetary poverty also declined as poverty rates at the well-being poverty line dropped from 53.2% to 50.6%.<sup>4</sup> The decline in monetary poverty has been driven by higher income growth at the lowest income distribution levels.

<sup>1</sup> Bank staff estimates based on INEGI

<sup>2</sup> Global Economic Prospects, January 2018

<sup>3</sup> CONEVAL

<sup>4</sup> CONEVAL



## Sectoral and Institutional Context

4. Mexico's energy sector has been of strategic importance to the economy and is also an important driver of economic growth. Mexico is a major oil exporter, with crude oil production being an important source of foreign exchange earnings and an important contributor to fiscal revenues. However, starting in 2004, oil production, as well as oil reserves, started to decline. This gave rise to increasing pressures on Government fiscal policy. It also started to focus attention on the need to diversify the country's energy resources away from oil towards an increased use of natural gas and the development of the country's renewable energy potential.
5. Agriculture continues to be an important sector in the economy, accounting for around 13 percent of Mexico's GDP, when considering the forward and backward linkages created through primary production, post-harvest agro-industrial processes and food production. The sector employs on average 13 percent of the formal labor force in the country, with important regional differences. Almost a quarter of Mexico's population (representing more than 24 million people) lives in rural areas and depend on agriculture for their livelihoods (45 percent of the employed rural labor force works in the primary sector). Rural poverty rate (61.6 percent) is far higher than the urban rate (40.6 percent), with rural poverty perpetuated by the low productivity of labor in the agricultural sector among other structural factors. Agricultural land represents 55 percent of the total land area of Mexico (or close to 112 million hectares of arable land) with 5.5 million agricultural units devoted mostly to the production of cereals such as maize, wheat and sorghum. Agriculture, along with energy, is one of the primary contributing factors to Green House Gas (GHG) emissions in the country.
6. Mexico's GHG emissions in 2012 were 663 million metric tonnes of carbon dioxide (CO<sub>2</sub>) equivalent (MtCO<sub>2</sub>e), making the country the 13th largest emitter globally. At the same time, per capita emissions in Mexico are lower than the world average and significantly lower than those by other members of the OECD. Mexico is, however, committed to GHG emissions reductions as demonstrated by its Intended Nationally Determined Contribution (INDC), submitted to the United Nations Framework Convention on Climate Change in March 2015. Mexico's INDC sets an ambitious GHG emission reduction target of 22 percent by 2030 with respect to a Business as Usual (BAU) trajectory, increasing to 36 percent, subject to international financial and technological support. These targets are in line with Mexico's 2013 National Climate Change Strategy. With the energy and agriculture sectors being important contributors to GHG emissions, this project will have an import role to play towards achieving Mexico's target.
7. According to the Secretary of Energy (SENER) National Energy Balance, the agricultural sector is the third largest in terms of its growth in demand for energy, after the automotive and the mining sectors. For this reason, to achieve national targets, it becomes crucial to consider renewable energy and energy efficiency resources within the sector. The increasing incremental costs of fossil fuels has implications in the Mexican food system. Increasing fuel costs augment the costs of production, which is then reflected in the cost of food to end consumers, as well as in the national inflation index. While the share of energy expenditures within the total cost of production may be low, these costs affect the liquidity and growth of agribusinesses and is a limiting factor to investment in modernization of processes or the expansion of production capacity.
8. Energy subsidies in Mexico, both for electricity and for fossil fuels, are a major concern. These subsidies do not promote a sustainable use of natural resources, hinder technology innovation, cause market



distortions, and represent a heavy burden on public finances. In addition, water is a major concern in Mexico. Of the 188 most important aquifers in the country, 80 are over-exploited. Annual water demand of around 80 billion cubic meters (bcm) is significantly greater than Mexico's sustainable supply of around 67 bcm, with the deficit met through unsustainable withdrawals. This is exacerbated by the agriculture sector in two ways: a) the low rate of compliance with the national water law (Ley de Aguas Nacionales), which regulates the perforation of wells and specifies the quantity of water that can be drawn from each; and b) the national energy subsidy for electricity to pump water for agriculture, as specified under the Energy for Rural Areas Law (Ley de Energía para el Campo).

### **C. Proposed Development Objective(s)**

Development Objective(s) (From PAD)

Promote the adoption of renewable energy and energy efficiency technologies among target beneficiaries.

The project also expects to generate a variety of co-benefits outside the scope of the PDO, including increasing agricultural efficiency, reducing production costs in the agriculture sector, reducing GHG emissions of agriculture, contributing to on-farm manure management, and generating a demonstration effect by which other farmers adopt renewable energy/energy efficiency technologies

#### Key Results

The results of the proposed Project will be measured through the following set of indicators:

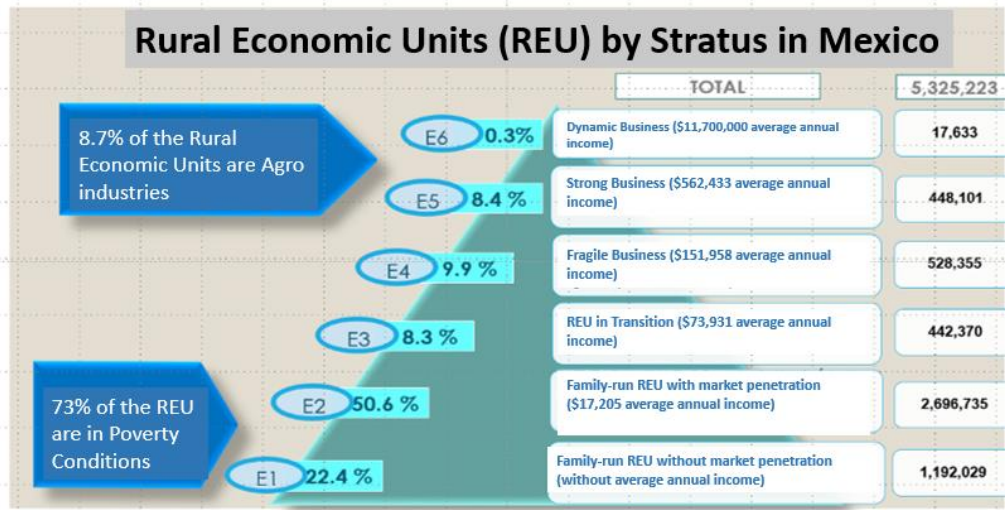
1. Farmers adopting renewable energy / energy efficiency technology, disaggregated by gender
2. Generation capacity of energy constructed or rehabilitated – Corporate Indicator
3. Net greenhouse gas emissions – Corporate Indicator
4. Average saved per month by Rural Production Units due to the off-set of other energy sources

#### ***Project beneficiaries***

9. The project will operate at a national scale, and the sub-projects will be demand-driven. The project will support 3,180 farmers with technology and training, including 810 Rural Production Units, defined as legally constituted agribusinesses, farmers' associations or farmers' cooperatives, from any state in the country that meet minimum eligibility criteria. The project will use the Food and Agriculture Organization of the United Nations (FAO) / Secretary of Agriculture, Livestock, Fisheries, Rural Development and Food (SAGARPA) definition of Rural Production Units (see Figure 1) to define the scale of target producers for each level of investment.



**Figure 1: FAO/SAGARPA Definition of Rural Economic Units (or Rural Production Units) in Mexico**



#### D. Project Description

10. The overall goal of this project is to support Rural Production Units to invest in and adopt renewable energy and energy efficiency technologies. This is expected to lead to the reduction of costs of agricultural production and improving operational efficiencies of agricultural units, decreasing the demand from the agricultural sector on the national grid, reducing the national subsidies to the energy sector, reducing aquifer over-exploitation, and diminishing GHG emissions from agriculture and energy, thereby contributing to the achievement of Mexico’s Clean Energy and INDC targets. The project components support this objective through 1) investments in renewable energy and energy efficiency technologies, and accompanying technical assistance to ensure their use and sustainability, and 2) investments in pilots to identify and test promising new technologies. The combination of these factors will aim to reduce production costs for agribusinesses in the short-term, but also to ensure the sustainability of the sector and reduce the fiscal burden on the government in the long-term, while demonstrating the potential benefits of the Agriculture-Energy nexus that could later be realized at a larger scale.
11. The proposed project will have a national focus. During preparation, the team will work together with partners to specify areas with concentrations of small farmers that could particularly benefit from the project, as well as with other programs in SAGARPA, to target agribusinesses currently benefitting from electricity subsidies for water pumping. The project will also expand the mechanism used under the current Sustainable Rural Development (SRD) project to target smaller agribusinesses for national level open calls for agribusinesses to present proposals and prepare subprojects.
12. FIRCO (Spanish acronym of Shared Risk Trust Fund) field staff, based in each state of Mexico, will help to support information dissemination about the project, preparation of business plans for the sub-projects and provide technical assistance. All sub-projects will be reviewed at the national level by a team of FIRCO/SENER experts, and matching grants will be provided to qualifying subprojects (criteria for project



eligibility will be included in the Operational Manual, including things like income of the Rural Production Units and years in operation). The SENER experts will oversee the preparation and implementation of the project, and will verify both new renewable energy installed capacity and GHG emission reduction with the purpose of taking them into account towards achievement of national targets for clean energy.

**Component 1: Investments in Renewable Energy and Energy Efficiency Technologies for Rural Production Units.**

13. The objective of this component is to provide Rural Production Units, and specifically small and medium agribusinesses, with matching grants to invest in renewable energy and energy efficiency technologies. These matching-grants will be a one-time support to these technologies, and the farmer will be responsible for the Operations & Maintenance (O&M) costs after the initial support from the project<sup>5</sup>. Technologies will be selected from an approved list, comprised of technologies widely tested under the SRD project and proven effective. Technologies on the approved list will include biodigesters, solar panels, solar thermal and energy efficiency technologies (such as efficient milk chillers, among others).
14. This component will target a total of 810 Rural Production Units across Mexico. Although this is a small portion of the total Rural Production Units in the landscape, the demonstration effect is expected to be large. This demonstration effect is expected to happen in two ways: 1) *Among farmers*: the SRD project proved the cost effectiveness of these technologies among agribusinesses, and showed that even agribusinesses not receiving subsidies were eager to invest. The project assumes this will also be the case for smaller-scale Rural Production Units. 2) *At the Government level*: the project will have a demonstration effect at the national level among the concerned Ministries.
15. Because small agribusinesses have different needs than larger ones, both in terms of the scale of technologies and in terms of technical assistance and financial needs, this component will be divided into four sub-components, based on the target beneficiary of each subcomponent.
16. Technical assistance will be provided by the Government through FIRCO to make sure that Rural Production Units clearly understand the importance of developing and strictly following appropriate maintenance plans for the new equipment, which would contribute to the project sustainability after closing.
17. This component will also use the vast networks of existing FIRCO field staff to help with sub-project selection, technical support and monitoring, as well as to undertake the promotional events and information dissemination workshops necessary to generate demand for the supported technologies within the target beneficiary groups. By using FIRCO's extensive network, the project will limit the transaction costs associated with a nation-wide project. The supervision team will maintain a close engagement with both SENER and FIRCO to monitor project progress both in terms of infrastructure installation and adequate maintenance for the installed equipment.

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<sup>5</sup> For the first five years of the project, the O&M costs will be included as part of the sub-project, and the farmer will finance a portion of this – from 20%-80%, depending on the size of the Rural Production Unit. After the initial 5 years, the farmer will be entirely responsible for the O&M costs of the technologies.



**Component 2: Pilots for Renewable Energy and Energy Efficiency Technologies.**

18. This component will build on the lessons learned from the SRD project in supporting technology pilots to determine the viability of new types of technology, including pyrolysis and solar thermal for greenhouses, which were successful in determining the potential for these new technologies. This component proposes to examine the feasibility of promising new technologies, pilot them, and then evaluate them for the Mexican context. Pilots under this component will begin in the first year of the project, allowing any technology deemed “scale-up ready” to be included in the list of technologies eligible for a matching-grant investment by the project under Component 1. This component could also support a small number of investments (approximately 50) in efficient water pumping with remote metering features, which could serve the purpose of informing the Government about actual water consumption (rather than relying on estimations). At a later stage, the generated data could support the design of tighter controls of water quantities pumped, as well as the ability for reduction of electricity subsidies for water pumping.

**Component 3: Project Management, Monitoring and Evaluation.**

19. This component will finance project operations through support to the SENER and FIRCO teams for the implementation of the project. Resources will be used to develop a) a monitoring and evaluation system for the project, including new indicators for tracking gender and Monitoring, Validation and Reporting (MVR) system for GHG emissions; and b) finance a baseline evaluation and a final impact evaluation. In addition, it will pay for capacity building workshops, staff training activities and a final project workshop.

***Green House Gas (GHG) Analysis:***

20. The project constitutes a net carbon sink of approximately 6.9 million tCO<sub>2</sub>-eq over a 20-year period. It assumes that “without project” there will be no investment in RE and EE in the agricultural sector. The beneficiaries will continue to use fossil fuels source and no energy efficiency improvements will be implemented. As such no emission reductions are expected. Therefore, the introduction of technologies themselves represent a gross emission reduction of 6.9 million tCO<sub>2</sub>-eq over a 20-year period due to the displacement of fossil fuel, methane burning and generate RE. The highest reduction in GHG emissions results from investments in Subcomponent 1.2 with 4.5 million tCO<sub>2</sub>-eq. The technology that has the highest contribution of emission reductions, 93 percent, is biodigestors. This is followed by PV and EE each contributing with 3 percent of the net reduction. The proposed project is demand driven thus the type and distribution of technologies can vary during project implementation from the assumptions made ex-ante. A sensitivity analysis assuming 30 percent less demand for biodigestors and 30 percent more demand for PV indicates that the net CO<sub>2</sub> eq reductions will be diminished by 23 percent to 5 million. This highlights the relevance of the MRV system that will be developed during project implementation to monitor GHG emissions. The MRV system will facilitate reporting and help accurately verify the emissions reductions achieved ex-post. A detailed GHG analysis can be found in PAD-Annex 5.





## E. Implementation

### Institutional and Implementation Arrangements

#### Institutional and Implementation Arrangements

21. The proposed project will be implemented jointly by FIRCO and SENER and will build on the experience of two previous World Bank projects, the Sustainable Rural Development Project (SRD) and the Integrated Energy Services Project (PSIE). With SAGARPA, the US\$100 million SRD project implemented by FIRCO, has supported the installation and adoption of 2,166 technologies, including biodigesters, motogenerators and turbines, solar photovoltaic (PV) connected to the grid, solar thermal systems and energy efficiency technologies, all of which to date have contributed to the reduction of 4.6 million tons of CO<sub>2</sub> and the generation of 412 MWh of energy produced for the agricultural sector. The SRD project benefitted from a large demand for renewable technology across medium-sized agribusinesses, and a renewable energy industry that sprung up to support the project, with the number of technology providers increasing substantially nationwide. With SENER, the World Bank supported a rural electrification project (PSIE) to target those populations outside the reach of the national grid who were either using diesel or individual PV systems to power homes and businesses for short periods of time, or who had no electricity access at all. The PSIE, implemented by SENER in collaboration with the Federal Electricity Commission (CFE) promoted the use of renewable energy technologies (solar PV and electrical storage) to reach a subset of last-mile communities, and was able to avoid the budgetary issue faced by the other line ministries through the use of a dedicated trust fund - Fund for Energy Transition and Sustainable Use of Energy (*Fondo para la Transición Energética y el Aprovechamiento Sustentable de la Energía* or FOTEASE) - within SENER for energy efficiency and renewable energy.
22. FOTEASE is a public policy instrument within SENER whose objective is to promote the utilization and development of, as well as investment in, renewable energy and energy efficiency interventions to eventually lead to the achievement of national targets on clean energy. FOTEASE grew out of the Law for the Use of Renewable Energy and Energy Transition Financing (*Ley para el aprovechamiento de las energías renovables y el financiamiento de la Transición Energética, LAERFTE*), which in 2015 evolved into the Law of Energy Transition (*Ley de Transición Energética, LTE*). In fulfilling its objective, the fund allows for access to multi-year budgets for selected proposals, and is able to channel resources from different sources. Starting in 2010, FIRCO and SENER have been working together through the bio economy program to jointly use this fund to support FIRCO's activities under the SRD project, and help SENER achieve its goals of promoting sustainable energy in the rural space.
23. Although both SENER and FIRCO have track records of successful World Bank project implementation, the coordination between the two still poses a Modest risk to the project. Given the necessity to coordinate between two line Ministries (SENER and SAGARPA), and the implementation activities divided between SENER and FIRCO, some coordination challenges may arise. In addition, the coordination of so many small sub-projects may pose a challenge to project implementation. In order to minimize these risks, the project design internalizes lessons learned from the previous SRD project where FIRCO and SENER collaborated towards common goals through the use of FOTEASE, as well sub-project management and coordination capacity built through the implementation of the SRD project.



**F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)**

24. This proposed project aims to scale-up successful projects of FIRCO/SAGARPA and SENER in terms of project’s coverage, enhancing impact and development effectiveness. The proposed project is demand-driven, and spans the entire country, increased coverage will mainly translate in the scaling-up of the most successful technologies supported to date to a larger number of beneficiaries, and the promotion of similar technologies to other subsectors and applications. In the conceptual development, the actions of the Federal Government to promote the use of renewable energies and the efficient use of energy will give special emphasis to the promotion and attention of projects generated in the South and Northeast regions. In this region, there is significant potential for the development of these activities and where there have been few support proposals received in recent years with the previous projects. The actions of the project will target the population engaged in agricultural, livestock, fishery, aquaculture activities, and that meet the requirements established by SENER. Particular attention will be given to small and medium-sized economic units, as well as to women. Given that the project is nation-wide, and beneficiaries will be selected based on demand, no additional information is currently available.

**G. Environmental and Social Safeguards Specialists on the Team**

Dora Patricia Andrade, Environmental Safeguards Specialist  
Arelia Jacive Lopez Castaneda, Social Safeguards Specialist

**SAFEGUARD POLICIES THAT MIGHT APPLY**

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>The proposed operation is categorized as environmental risk Category B. Based on the Environmental Assessment (EA) and the national scope of the project, no significant negative environmental impacts from project activities are envisaged for the majority of subprojects.</p> <p>These would all be oriented towards positive economic impacts as a result of its technical and financial support to investments in energy efficiency in selected Rural Production Units, and the project is expected to have significant positive environmental impacts. Furthermore, improved capacity for environmental management by both private and public sector would also result in a positive impact on the environment in general.</p>



		<p>To date, the project is expecting to support the installation of 2,398 energy efficiency technologies. These include: (a) autonomous photovoltaic systems and interconnected to the grid; (b) biodigesters; (c) solar thermal systems; (d) energy efficient technologies; and (e) efficient water pumps, among others, and are expected to have positive environmental impacts.</p> <p>According to the analysis, it was determined that the greatest negative environmental impacts could be related to: 1) the increase in water demand and the overexploitation of aquifers, due to the reduction of the cost of pumping water; 2) environmental impacts related to improper waste management; and 3) the emission of methane by a malfunction of the biodigesters. These impacts were carefully examined in the ESMF and the project's financial / economic analysis. Other negative impacts are very unlikely, indirect or of a low degree of impact, which can be avoided and mitigated mainly with the restricted list of supports and with the application of good management practices. In all cases, a greater probability of impact was determined while the subproject was larger, so a lower probability of impact on stratum E2, E3 and E4 agribusiness is expected than on E5 strata. That is, the greater the agribusiness and subproject dimensions, the greater the environmental impact of these activities. However, for these cases, and in the case of scale up the pilots specific EMP will be drawn up in accordance with the provisions of the ESMF.</p> <p>Based on the EA and SA, an ESMF, and IPPF was elaborated, which includes an exclusionary list to screen out Activities Category A , sub-projects that would have required the triggering of 4.12., involve land use change, expansion of the agricultural frontier, areas of water closure, restriction of extraction of aquifers, located in international waters zone or activities that could affect natural protected areas, as well as areas with dense and abundant forests of high biological vulnerability.</p>
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		<p>The ESMF included selection criteria as well, legal requirements, preventive and corrective mitigation measures and good environmental practices to avoid potential negative impacts for all subprojects and the procedures follow by the subprojects that will be integrated into the MOP .</p> <p>The Bank should provide careful supervision of sub-projects and ensure fulfillment of Bank safeguards. The project is one of national scope, with a special focus on the south and southeastern Mexico. This would also be verified for each particular sub-project considered for funding.</p>
Natural Habitats OP/BP 4.04	Yes	<p>This policy is triggered given the need to consider the project’s potential impacts (positive and negative) on natural habitats from investments in the agricultural sector. While the objective is to invest in renewable energy and energy efficiency technologies, this may trigger changes in some pilots in the irrigated areas of the sub-projects, with the possibility of expanding agricultural production on natural habitats. The ESMF includes an exclusionary list to screen out all sub-projects that involve activities that could affect natural protected areas, as well as areas with dense and abundant forests of high biological vulnerability, and would ensure that proposed actions are consistent with the policy OP/BP 4.04</p>
Forests OP/BP 4.36	No	<p>No forests or forest land will be involved in this project. This safeguard is therefore not activated.</p>
Pest Management OP 4.09	Yes	<p>This policy is triggered given the EA and the ESMF foresee that one of the potential impacts of the project is that having a higher efficiency in the use of water may lead to a greater cultivated area or a higher intensity of production, which in turn can increase the potential use and the exposure of farmers to pesticides. This aspect was pointed out in the consultations carried out among the key actors. Therefore, within the ESMF, an annex of a pest management plan is included, which promotes integrated pest management, the selection, application and careful disposal of pesticides and the use of personal protective equipment to avoid the negative effects on environment and population.</p>



Physical Cultural Resources OP/BP 4.11	Yes	<p>This policy is triggered even though no major construction work is expected to take place with project financing. The assessment of this project indicated that it is highly unlikely that any activity may have any negative or positive impact on objects, sites, structures, natural features or landscapes with archeological, paleontological, historical or any other aspect of cultural significance. However, given the cultural history in Mexico, this safeguard will be triggered in the very unlikely instance that a cultural resource be discovered unexpectedly on the site of a sub-project. A chance finds procedure were included in the ESMF. The ESMF has been developed and consulted prior to Appraisal</p>
Indigenous Peoples OP/BP 4.10	Yes	<p>The project will operate at a national scale, for this reason this Policy is triggered given that indigenous people are present in the Project's area of influence and could benefit from Project activities.</p> <p>During Project preparation, a Social Assessment was carried out to identify any potential positive and negative impacts on indigenous groups. An Indigenous People Planning Framework (IPPF) was developed by the client in coordination with the Bank, to review the eligibility rules, and identify eventual barriers of access to the project by indigenous people. This framework proposed measures to amplify the positive impacts on indigenous people and help to mitigate any possible negative impacts. The social assessment and the IPPF also provide guidelines to improve outreach and consultation with indigenous beneficiaries, particularly the Component C1 Investments in PESA clients (E2): (e.g. language provisions, participatory approaches, capacity building for the use of technologies, and training in management and administration issues). For this component, the IPPF includes a Plan for the Development of a Social Assessment with an appropriate action plan of measures to avoid, minimize, mitigate, or compensate for these adverse effects, with a focus on mainstreaming and optimizing the Project's benefits for indigenous peoples.</p>



		<p>The IPPF establishes actions and strategies in accordance with Social Safeguards in the studies developed under Component 2: Pilots for Renewable Energy and Energy Efficiency Technologies, to be sure that the pilots include analysis to identify potential positive and negative aspects. The IPPF establishes criteria to develop new IPPs in case it becomes necessary for Components 1 and 2.</p> <p>The IPPF also identifies the social criterial to include in the Monitoring and Evaluation of the project (Component 3).</p> <p>Consultations for the IPPF with Indigenous Peoples were undertaken in October, 2017. The consultations covered three key regions of Mexico (Chiapas, Sonora and Puebla), chosen on the basis of: (i) relative density of Indigenous Population (&gt; 40 percent of the total population); and: (ii) indigenous communities that could potentially benefit from the project. In addition, a presentation of the IPPF at national level was carried out with representatives of governmental organizations and NGOs who are development practitioners working closely with indigenous people beneficiaries. The consultations were specifically focused on Subcomponents 1.2 and 2.1, which the Social Assessment determined are the ones with the highest potential benefit on indigenous communities.</p> <p>Feedback obtained during the consultations focused on: (i) improving the eligibility criteria of indigenous beneficiaries, so that in municipalities and localities with EBU in strata 2 and 3, those with more than 40% indigenous population are prioritized ii) strengthening the dissemination of the project in an accessible and culturally appropriate way for the indigenous population and in as many languages as possible and though mechanisms tailored to their needs, like oral presentations and experimental learning; (iii) ensure that co-financing requirements consider the level of poverty of indigenous communities and are properly fixed to ensure participation of indigenous populations; (iv) incorporate into the portfolio of eligible activities,</p>
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		<p>not only agricultural or livestock, but others from the rural sector such as ecotourism or handicrafts, which are activities closely linked to indigenous skills and which also require energy-efficient technological inputs (v) improving the guidelines and the procedures of call for proposals and selection process (vi) strengthening the capacity of the project technicians (vii) strengthening project supervision of activities performed in the communities, as well as the transparency and accountability of the processes, and (viii) establishing a strategy gender for the project. The results from the consultation process are incorporated into the final ESMF and IPPF.</p> <p>During the implementation of the project, a platform will be developed to continue with the consultation and participation processes to maximize incorporation of women and indigenous people in the project, and will be executed together with representatives from the Consultative Council of the National Commission for the Development of Indigenous Peoples</p>
Involuntary Resettlement OP/BP 4.12	No	<p>Physical relocation or land acquisition will not be required for project activities. All of the sub-projects to be financed under this operation will be carried out on private land, owned by the ultimate beneficiaries. Since the project will be investing in solar, solar thermal, biodigesters, energy efficiency technologies and water pumps, located either on roofs or small plots of owned land, there is no risk of displacement or land acquisition. The ESMF and IPPF were elaborated with an exclusion list screening out any installations in places where informal occupants or tenants may be planting crops or trees, have temporary businesses such as kiosks, or any other conditions that would trigger OP 4.12.</p>
Safety of Dams OP/BP 4.37	No	<p>No dams will be constructed or rehabilitated in this project. Given the scope of the project (to invest in renewable energy and energy efficiency technologies), there will be no activities that impact major waterways or dams. Although sub-projects will support some energy efficient water pumps, these will replace existing inefficient pumps with no</p>



		impact on dams or waterways. This safeguard is therefore not activated.
Projects on International Waterways OP/BP 7.50	No	Given that the majority of investments will be in solar panels, biodigesters and energy efficiency technologies, there are no actions in international waterways. Although the project plans to invest as a pilot in energy efficiency / renewable energy water-pumps, these pumps will replace existing low-efficiency or diesel pumps, with no perforation of additional boreholes. In addition, the project will be collaborating with the Ministry of Environment (SEMARNAT) and the associated commission for water (CONAGUA) to assess the scale up of this pilot. The project will disallow any subprojects proposing to work on internationally shared aquifers.
Projects in Disputed Areas OP/BP 7.60	No	There are no areas in dispute in the territory proposed for project interventions. This safeguard is therefore not activated.

**KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT**

**A. Summary of Key Safeguard Issues**

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

No significant negative environmental impacts from project activities are envisaged for the majority of subprojects. Overwhelmingly, sub-projects will be oriented towards positive economic impacts as a result of its technical and financial support to investment in both improved energy-efficiency in selected agri-businesses, and the project is expected to have significant positive environmental impacts.

The project is also expected to have positive social impacts on the target population. The investments in subprojects will improve productive processes that will help i) enhance the productivity of Rural Production Units ii) improve competitiveness in the rural sector, and iii) improve the energy efficiency of production processes, all specifically targeting small and medium agribusinesses, which contain higher instances of indigenous people and woman.

The main problem identified in the Environmental Impact Analysis was the probability that there could be an increase in demand for water at the pilot of water pumping technology. The National Water Law imposes a maximum water limit per producer - however, the lack of effective supervision of water concessions often allows producers to use government energy subsidies to pump quantities of water well above what is allowed. Low payments for water use and weak compliance with the National Waters Law, can cause overexploitation of water and inefficient use of water. The water consumption of agribusinesses is important, and the impact on aquifers will depend on the location of the intervention. Special care must be taken with groundwater, since its exploitation causes the abatement of groundwater levels, the sinking of the land and the drilling of deeper wells. The ESMF has included preventive and corrective measures for this impact, in case of the scale up this pilot, . The project will carefully screen proposal





requests, and will not support those requests that promote increases in water demand, requiring each of the beneficiaries to use a remote monitoring system to track water extraction in realtime to ensure compliance. SENER will be responsible for overseeing all safeguards implementation and compliance, and will rely on its solid experience with previous projects in order to do so. The project will also work closely with FIRCO to do data-collection in the field.

Another of the significant impacts identified in the analysis is the occurrence of inadequate waste management in projects. The analysis specifically identified those subprojects that include: a) construction and/or installation activities of the various technologies promoted, which can generate special handling waste such as demolition materials (gravel), empty containers; b) Operation and Maintenance of the equipment and machinery, which may generate waste considered hazardous by national legislation, such as rags with oil, used oil filters, cleaning materials for oil and fuel spills, paints, etc; c) change of pumping equipment, where all the equipment removed should be treated as waste of special handling; and d) generation of other waste from agricultural or livestock activities. In order to mitigate these risks, the ESMF requires the project to support the beneficiaries with the necessary advice to develop and implement a comprehensive waste management plan, from the start of activities, based on knowledge of the type and volume of waste generated (according to the provisions of Mexican law), and include actions of segregation, reduction, reuse, recovery, recycling, collection, storage and final disposal or, where appropriate, the destruction and elimination thereof. Likewise, the use of organic waste for the generation of energy will be promoted.

A third impact that, despite the low probability of occurrence, must be considered is the emission of methane into the atmosphere, due to a malfunction of the biodigesters. This gas is considered a Green House Gas (GHG) emission, with a global warming potential much higher than carbon dioxide, and with a time of permanence in the atmosphere of 9 to 15 years. Although the purpose of the installed technologies is to reduce the amount of methane, given the size of some agribusinesses, a malfunction in the biodigester technology could present adverse effects. The MGAS considers the inclusion of a certified technician in the use and management of biogas systems to supervise the installation, as well as the elaboration of Environmental Management Plans for such systems that integrate activities of management and care of technology, inspections and periodic maintenance.

The other impacts are very unlikely, indirect or of a low degree of impact, which can be avoided and mitigated mainly with the restricted list and with the application of good management practices.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area: The ESMF recognized the idea of cumulative effects as potentially relevant to project interventions. The idea is that multiple investments in a specific project area, which in themselves do not have an impact, may cause a cumulative impact. For example, in places where there may be a high concentration of project-supported installation of energy efficient pumps, the could be the risk of affecting the aquifer or surface water supplies. In these cases, the MGAS foresees it necessary to develop an analysis of cumulative impacts, on surface water and aquifers, and determine whether it becomes necessary to have an environmental management plans together with the beneficiaries.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts. No alternative project design was considered. However, during the design process, the team agreed that all energy efficient and renewable energy water meters installed by the project would be accompanied by remote monitoring systems, to allow the project to ensure that the pumps will not extract water in excess of the allowable quotas under CONAGUA's concessions.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.



The SENER and FIRCO teams identified the need to pair rural energy needs with productive uses of electricity to improve cost-efficiency. FIRCO's model targets renewable energy and energy efficiency for productive uses among agricultural producers, directly, and rural areas, indirectly, with SENER supporting the investments through a dedicated trust fund to earmark resources and avoid budget limitations in a tight fiscal space, as well as providing technical oversight of the investments.

SENER's General Directorate of Clean Energy (Dirección General de Energías Limpias) will be responsible for project implementation, and would be supported by an existing Responsible Project Implementing Unit (Unidad Responsable Ejecutora del Proyecto, UREP). SENER would rely on the UREP's in-depth experience implementing Bank-financed projects to handle all procurement and financial management (FM) issues and would be strengthened to have sufficient capacity in technical issues, safeguards compliance, and monitoring, if needed. UREP will be the liaison between SENER and FIRCO for operational aspects of the project. SENER will ensure that all appropriate implementation arrangements are in place and that all activities are being developed in accordance with project design and Bank policies.

The project will include targeted mechanisms to: i) ensure that the project will be inclusive and include direct benefits for indigenous people and women, ii) strengthen the participation of the indigenous population and women and iii) strengthen capacity building for indigenous people and women in sustainable use of technological resources, financing and sustainable agricultural development.

During the implementation of the project there will be a continuous process of development and strengthening of capacities and skills among operators and beneficiaries of the project. For technical personnel (operators) and officials of FIRCO and SENER, as well as project stakeholders, the training will focus on: policies of environmental and social safeguards, strategies for the promotion of renewable energies, technologies and applications of renewable energies, identification of energy saving opportunities and practices, monitoring and evaluation systems. These trainings will be implemented in the first six months of the project.

For beneficiaries, trainings will focus on such established topics as: induction and preparation for the use of technologies, knowledge and management of technologies, sustainable agricultural practices; sustainable use of water and good irrigation practices; integrated pest management and use of biofertilizers; identification and implementation of measures to mitigate negative environmental impacts with good environmental, social and hygiene and safety practices; productive uses of electricity; Financing and productivity; and gender equality. These trainings will be done with beneficiaries throughout the life of the project.

Finally, for the suppliers of goods and services in the development of the project, a series of workshops will be given during the preparation of the project with the technical specifications required of systems supported under the project. This training program will be given to FIRCO development agents, so that they are trained in the subject and can transfer the knowledge. The project safeguards team will be responsible for establishing the training program, as well as planning and following up on its application as the ESFM established.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

Three consultation meetings were held in three different states (Sonora, Chiapas, and Puebla), both for the Environmental and Social Evaluation and safeguards instruments. The locations of these consultations were determined according to the criteria of presence of indigenous population in the state. Potential beneficiaries of



eligible Rural Production Units were invited to participate, and the invitations of the beneficiaries were characterized by producer, community and indigenous organizations and associations. The consultations were conducted to ensure full participation, and specifically targeted women and youth. In addition, a meeting was held at national level (Mexico City) with representatives of governmental organizations and NGOs who are development practitioners working closely with indigenous people beneficiaries.

The main topics, comments and suggestions discussed in the three state consultations are summarized below. All were integrated into the criteria, mitigation measures and training needs of the MGAS:

- Need for continuous and specialized technical assistance for each technology.
- Stakeholders demonstrated interest in renewable energy efficiency technologies: they also mentioned other technologies that could be used, such as wind energy, and solar greenhouses for livestock, mills and bioenergy.
- They requested training in biofertilizers and pesticides, since they recognize the damage that is being done to natural resources due to the indiscriminate use of pesticides and fertilizers.
- Efficient irrigation systems in crops to avoid wasting so much water.
- Greater promotion of reforestation and restoration activities.
- Support for beneficiaries to expand to other activities besides agricultural and livestock.
- Need to include adequate and differentiated activities that encourage the participation of women (for example, including the participation of women technicians), taking into account local customs and traditions.
- Need to hold meetings and communicate the project in the language of each community, to encourage greater participation.
- Include activities for the transformation of products, differentiating rural production in the field of transformation in households.
- Use information dissemination through state committees that know local problems better.
- Prepare a risk matrix that facilitates the evaluation of projects.
- Necessary to include land management and protection techniques within the activities and good practices.
- Training in waste management
- Need to implement more regulation and technologies such as water desalination in areas where there are scarce resources.
- Make the counterpart funding required lower, as well as provide credits that allow them to pay it.
- Use adequate means to transmit information, such as the internet, Facebook, radios and television stations of the communities, in the language of the communities and according to local customs and traditions.

**B. Disclosure Requirements (N.B. The sections below appear only if corresponding safeguard policy is triggered)**

**Environmental Assessment/Audit/Management Plan/Other**

Date of receipt by the Bank	Date of submission for disclosure	For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors
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2017/11/30	Disclosure 12/07/2017 Re-disclosure 2018/01/22 <a href="http://documents.worldbank.org/curated/en/321501512636842999/Marco-de-planificación-para-pueblos-indígenas">http://documents.worldbank.org/curated/en/321501512636842999/Marco-de-planificación-para-pueblos-indígenas</a>	
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**"In country" Disclosure**

Mexico

SENER

2017/11/17

Re-disclosure

2018/01/20

<https://www.gob.mx/sener/documentos/marco-de-gestion-ambiental-y-social-y-evaluacion-de-impacto-ambiental-paes?idiom=es>

Re-disclosure

2018/01/20

<https://www.gob.mx/firco/documentos/proyecto-de-agroenergia-para-la-sostenibilidad?idiom=es>

Comments

**Indigenous Peoples Development Plan/Framework**

Date of receipt by the Bank	Date of submission for disclosure	
2017/11/30	Disclosure 12/07/2017 Re-disclosure 2018/01/22 <a href="http://documents.worldbank.org/curated/en/321501512636842999/Marco-de-planificación-para-pueblos-indígenas">http://documents.worldbank.org/curated/en/321501512636842999/Marco-de-planificación-para-pueblos-indígenas</a>	

**"In country"**

Disclosure

Mexico

SENER

2017/11/17

Re-disclosure

2018/01/20

<https://www.gob.mx/sener/documentos/marco-de-gestion-ambiental-y-social-y-evaluacion-de-impacto-ambiental-paes?idiom=es>

Re-disclosure

2018/01/20

<https://www.gob.mx/firco/documentos/proyecto-de-agroenergia-para-la-sostenibilidad?idiom=es>



Comments

**Pest Management Plan**

Was the document disclosed prior to appraisal?

2017/11/30

Date of receipt by the Bank  
Disclosure 12/07/2017

Re-disclosure 2018/01/22

<http://documents.worldbank.org/curated/en/321501512636842999/Marco-de-planificación-para-pueblos-indígenas>

Date of submission for disclosure

**"In country" Disclosure**

Mexico

SENER

2017/11/17

Re-disclosure

2018/01/20

<https://www.gob.mx/sener/documentos/marco-de-gestion-ambiental-y-social-y-evaluacion-de-impacto-ambiental-paes?idiom=es>

Re-disclosure

2018/01/20

<https://www.gob.mx/firco/documentos/proyecto-de-agroenergia-para-la-sostenibilidad?idiom=es>

**If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.**

If in-country disclosure of any of the above documents is not expected, please explain why:



**C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting) (N.B. The sections below appear only if corresponding safeguard policy is triggered)**

**OP/BP/GP 4.01 - Environment Assessment**

Does the project require a stand-alone EA (including EMP) report?

Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?

Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?

Yes

**OP/BP 4.04 - Natural Habitats**

Would the project result in any significant conversion or degradation of critical natural habitats?

No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?

No

**OP 4.09 - Pest Management**

Does the EA adequately address the pest management issues?

Yes

Is a separate PMP required?

Yes

If yes, has the PMP been reviewed and approved by a safeguards specialist or PM? Are PMP requirements included in project design? If yes, does the project team include a Pest Management Specialist?

Yes

**OP/BP 4.11 - Physical Cultural Resources**

Does the EA include adequate measures related to cultural property?

Yes

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?

No

**OP/BP 4.10 - Indigenous Peoples**

Has a separate Indigenous Peoples Plan/Planning Framework (as appropriate) been prepared in consultation with affected Indigenous Peoples?



Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

If the whole project is designed to benefit IP, has the design been reviewed and approved by the Regional Social Development Unit or Practice Manager?

Yes

### **The World Bank Policy on Disclosure of Information**

Have relevant safeguard policies documents been sent to the World Bank for disclosure?

Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

Yes

### **All Safeguard Policies**

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Yes

Have costs related to safeguard policy measures been included in the project cost?

Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

Yes

<b>CONTACT POINT</b>
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**APPROVAL**

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**Approved By**

Safeguards Advisor:		
Practice Manager/Manager:		
Country Director:		





**The World Bank**

Energy for Sustainable Agricultural Development (P164055)

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