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MEXICO

LINKING SMALL PRODUCERS OF NATIVE MAIZE TO SPECIALTY CULINARY MARKETS

(ME-T1382)

DONORS MEMORANDUM

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Mexico is the central point of origin and diversity of the world's maize. The multiple varieties of native maize grown on Mexican soil are a symbol of this crop's rich biodiversity and capacity to resist and adapt to climate change. Local and global demand for these maize varieties from the specialty culinary sector (chefs) has expanded, but missing is the structure required to link traditional farmers who have small maize surpluses to these markets. The rise in demand has led to a proliferation of intermediaries. In addition to a sales structure, there is a need to ensure: (i) that the mycotoxin content in the grain is below the maximum allowed under national and international standards, and (ii) the authenticity of the native maize.

The **objective** of the project is to help boost the competitiveness of traditional small producers of native maize, ensuring them a sustainable livelihood and better positioning in the value chain while preserving the natural capital, i.e., native maize. This initiative arises from the interest of a group of farmers, national experts, and Mexican chefs in harnessing the collective skill of small native-maize producers to supply the growing value market with a certified native maize product that ensures quality and purity—currently nonexistent in the market—with a minimal intermediation chain. A key partner is ProMaíz Nativo, A.C. [pro-native maize civil association] (AC ProMaíz), a nongovernmental organization (NGO) recently formed by recognized experts in the field. The main contribution of this NGO to date is its initiative to create a country brand, the collective trademark MILPAIZ, aimed at differentiating native maize from hybrid maize, ensuring marketing transparency, and ensuring that sale prices reflect the quality and purity of the product. This is the first global project promoting certification of the authenticity of native maize.

The project also promotes the use of smart technology, the Internet of Things (IoT), and semi-industrial technology to improve the quality and traceability of the grain and producers' productivity, primarily in terms of postharvest handling and storage. The product will be managed and controlled by collecting data through a mobile phone-based technology. The **main expected outcomes** include: 500 producers and their maize authenticated under the collective trademark (broken down by maize type and producer's gender); at least 36% of producers are women; 400 tons of native maize sold under the collective trademark; 2,500 hectares of native maize authenticated; five SMEs posting continuous sales of native maize; mycotoxin content has been analyzed in 100% of product deliveries; producer associations have been formally organized and linked to at least five buyers under the collective trademark (broken down by buyer's country and destination market (export or local).

The National Commission for the Knowledge and Use of Biodiversity (CONABIO) will be the project executing agency. The total cost of the operation is US$1,988,362. Of this, US$1,002,000 (50.4%) will be contributed by the MIF in the form of nonreimbursable technical cooperation resources, and US$986,362 (49.6%) will be contributed by the counterpart.

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ABBREVIATIONS

CIMMYT	International Maize and Wheat Improvement Center
CONABIO	Comisión Nacional para el Conocimiento y Uso de la Biodiversidad [National Commission for the Knowledge and Use of Biodiversity]
FFB	Fondo Fideicomiso para la Biodiversidad [Biodiversity Trust Fund]
GEF	Global Environment Facility
GHG	Greenhouse gas
INIFAP	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias [National Institute of Forest, Agricultural, and Livestock Research]
IoT	Internet of Things
kg	Kilogram
MSMEs	Micro, small, and medium-sized enterprises
NGO	Nongovernmental organization
SMEs	Small and medium-sized enterprises
PEU	Project execution unit
AC ProMaíz	ProMaíz Nativo, A.C. [pro-native maize civil association]

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Country and geographic location:	Mexico, specifically six municipios[1] in the state of Oaxaca, two in the state of Mexico,[2] and four in the state of Michoacán.[3]		
Executing agency:	Biodiversity Trust Fund (FFB), created exclusively to promote, finance, and support the work of the National Commission for the Knowledge and Use of Biodiversity (CONABIO) (hereinafter, jointly, FFB/CONABIO).		
Focus area:	Climate-smart agriculture		
Coordination with other donors/ IDB Group operations:	This project will supplement the efforts of the GEF project, "Mexican Agrobiodiversity" (GEF Project ID-9380), which will be implemented by CONABIO.		
Direct beneficiaries:	500 traditional small producers organized into five micro, small, and medium-sized enterprises (MSMEs)[4] linked to the culinary market, the pro-native maize civil association ProMaíz Nativo, A.C. (AC ProMaíz), and natural capital preservation.		
Financing:	Technical cooperation resources:	US$1,002,000	50%
	Total MIF contribution:	US$1,002,000	-
	Counterpart:	US$986,362	50%
	Cofinancing:	-	-
	Total project budget:	US$1,988,362	100%
Execution and disbursement period:	40 months for execution and 46 months for disbursements.		
Special contractual conditions:	The following will be conditions precedent to the first disbursement: (i) signing of the agreement between the GEF and FFB/CONABIO; (ii) signed agreement between FFB/CONABIO and AC ProMaíz setting out the roles and the financial and operational responsibilities of the parties; (iii) letter of intent to purchase from two formal buyers; and (iv) proposal for selection of a project coordinator.		
Environmental and social impact review:	This project was screened and classified as a category "C" operation on 18 April 2018 in accordance with the requirements of the Bank's Environment and Safeguards Compliance Policy (OP-703).		
Unit with disbursement responsibility:	MIF staff at the Country Office in Mexico (MIF/CME).		

[1] Villa de Tututepec de Melchor Ocampo; Juquila; Santa Ana Zegache; Trinidad Zaachila; Santo Tomás Mazaltepec; and Santiago Yaitepec.

[2] Ayapango and Amecameca.

[3] Paracho, Charapan, Cheran, and Nahuatzen.

[4] For this project, MSMEs are defined as groups organized into the type of legal entity deemed most appropriate, whether a cooperative or otherwise. So far, there are two cooperatives: Yutu Cuii in Oaxaca, which groups together 22 towns, and Marku Anchekoren in Michoacán, which groups together 11 towns.

I. THE PROBLEM

A. Context and description of the problem

1.1 Mexico is the central point of origin and diversity of the world's maize. The 59 varieties of native maize grown on Mexican soil are emblematic of this crop's rich biodiversity and capacity to resist and adapt to climate change. This genetic diversity is a result of ancient agricultural practices adopted by the indigenous peoples as natural custodians of the crop, helping to preserve the cultural patrimony and the traditional Mexican cuisine now designated an Intangible Cultural Heritage of Humanity. In addition to providing food security to a country that tends to be affected by climate change, this biodiversity and climate resilience are highly important for the local communities, the scientific community that watches over the crop's preservation, and the global food industry that relies on maize processing and the maize gene bank for improvement programs.

1.2 Maize is traditionally farmed under a **milpa** production system, which makes it possible to produce other native species (bean, squash, chile, and other vegetables and legumes) that are staples of the Mexican diet. This system gives rise to beneficial ecological interactions that optimize resources (water, light, soil), and involves little or no use of agrochemicals. Maize is planted taking advantage of storm rains. If well preserved and stored, maize kernels may be consumed after several years.

1.3 The native maize **value chain** is comprised of producers, local markets, sellers, buyers, and processors. Generally, buyers purchase the product from intermediaries who buy it directly from individual producers in their communities. The purchase price is determined by the intermediary and is typically below the market price, and the purchase is generally made in cash. This intermediation chain can be extensive, supplying national or international tortilla shops and restaurants. There is no connection between the small producer and the final buyer, nor is there price transparency along the chain. Buyers with a greater social conscience have developed relationships with producers or families to be certain of obtaining greater product volume as well as to ensure that they receive better prices. There have also been cases in which the producer is never paid. Due to these low prices, small producers of native maize have no incentives to provide clean, quality maize, instead transferring the cleaning costs to the intermediaries. These producers have not managed to significantly improve prices largely because they operate individually.

1.4 Local and international demand for these maize varieties from the specialty culinary sector (chefs) has grown, but missing is the structure needed to link traditional farmers who have small maize surpluses to these markets. So far, this demand has been met through the support of native maize experts who have connected buyers with small producers at competitive prices, advising and assisting startup companies in finding producers with high-quality maize. This rise in demand has led to a proliferation of intermediaries, some of whom add value but most of whom absorb much of the profit. It has also led to the emergence of large producers, who purchase native seeds from small producers with a view to serving the new market niche.

1.5 The **problem** faced by small native-maize producers in Mexico is their weakness in coordinating with value markets on a continuous and sustainable basis.

1.6 **Profile of producers and their communities.** It is estimated that there are roughly 3.2 million maize producers in Mexico and that 65% of the total area under maize cultivation on Mexican soil is planted with unimproved, native, so-called criollo varieties, Oaxaca[5] being one of the states with the greatest diversity. Most native maize producers are low-income earners, not organized, and of advanced age. They lack working capital, financing, and financial services and have no access to technology for processing (shelling, cleaning, and sorting), postharvest handling, proper packaging, or storage infrastructure. Most of them are unaware of their cost of production. Lacking job and income opportunities, most young and adult men migrate north. These constraints affect producers' ability to formally connect with higher-value markets. Traditional producers also include women, female heads of household who process the maize into tortillas, atoles, tostadas, and other products for their own consumption, offering the surplus for sale in the local market.

1.7 **Markets.** Mexican native maize is sold in traditional (informal) local markets and in national and international (Canadian, U.S., and European) specialty markets. The latter have exhibited a greater growth and increase in final consumer prices due to the traditional (almost organic) method of native maize production and its special culinary characteristics. Thus, a comparison of local[6] prices and hybrid maize prices on the Chicago Mercantile Exchange[7] shows that native maize has a higher financial value, with prices ranging from Mex$8.5/kg to Mex$18/kg,[8] while commercial hybrid maize is valued at a mere Mex$4/kg to Mex$7.9/kg.[9] According to a price comparison performed by the International Maize and Wheat Improvement Center (CIMMYT), native maize prices rose 42.9% to 200%, depending on the maize type, between 2014 and 2018. However, not all producers have access to these *differentiated* prices due to the lack of a formal market for selling their maize. Specialty markets are willing to pay a premium price for high-quality, authentic maize with a diversity of colors, flavors, and textures, grown by small producers. The present initiative has sparked local restaurants' interest in being supplied with the grain, albeit in lower volumes but at premium prices that reflect product differentiation.

Technical barriers to sale

1.8 **High toxicity levels.** A large part of the maize produced in Mexico is not analyzed to measure mycotoxins,[10] which are carcinogens produced by fungi under stress conditions generally resulting from poor postharvest handling. Among other effects,

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5 Seventy percent of the population of the state of Oaxaca is considered poor and 26.9%, extremely poor (http://www.beta.inegi.org.mx/app/bienestar/#grafica); 65.73% of the population there is indigenous. https://www.biodiversidad.gob.mx/genes/maicesInfGest. html

6 White pozolero maize is the only one of the 59 native varieties included in the local price list.

7 The official price on the Chicago Mercantile Exchange is based on U.S. yellow dent corn #2, which is primarily used to produce cattle feed.

8 Source: CIMMYT.

9 Comparisons as of 1 August 2018.

10 Aflatoxin, fumonisin, and vomitoxin.

mycotoxin consumption inhibits growth in humans and animals.[11] Due to the high cost of these measurement tests, their use in Mexico is limited. Furthermore, since this maize is in large part consumed in informal markets, there are no records evidencing compliance with local regulations. Consequently, to ensure the quality of the native maize, it needs to be shown that the mycotoxin content is below the maximum allowed under national and international standards.

1.9 **Lack of traceability and certainty of authenticity.** There is mistrust in the markets as to the authenticity of the grains, since once the cob is shelled, it is hard to distinguish the kernels of some native maize varieties from hybrid kernels. In addition, consumers fear that the maize flour has been pigmented to simulate native grains. As a result, the markets demand grain traceability to ensure provenance (origin), quality, and specific characteristics. Since improved seed (hybrid) production has increased, the market wants to be certain of the authenticity of the maize it purchases. To date, there is no mechanism to verify and validate authenticity and inject transparency and trust into the market. While there are records of the regions in which certain varieties are produced, there are no records of the production capacity of, and varieties produced by, specific producers.

II. THE INNOVATION PROPOSAL

B. Project description

2.1 The **objective** is to help boost the competitiveness of traditional small producers of native maize, ensuring them a sustainable livelihood and better positioning in the value chain while preserving the natural capital, i.e., native maize. This initiative arises from the interest of a group of farmers, national experts, and Mexican chefs in harnessing the collective skill of small native-maize producers in order to supply the growing value market with a certified native maize product that ensures quality and purity—currently nonexistent in the market—with a minimal intermediation chain.

2.2 A key partner in implementing this project is AC ProMaíz, an NGO comprised of a multidisciplinary team of experts recognized for their knowledge in this field. One of the principal contributions of this NGO, in addition to promoting the preservation of native maize varieties, has been its initiative to create a country brand, the collective trademark MILPAIZ, aimed at differentiating native maize from hybrid maize, ensuring marketing transparency and that sale prices reflect the quality and rarity of the product.

2.3 The **main expected outcomes** include: 500 producers and their maize authenticated under the collective trademark (broken down by maize type and producer's gender); at least 36% of producers are women; at least 400 tons of native maize sold under the collective trademark (broken down by gender); five cooperatives posting continuous sales of native maize; mycotoxin content has been analyzed in 100% of product deliveries; producer associations have been formally organized and linked to at least five buyers under the collective trademark (broken down by buyer's country and destination market (export or local); and 2,500 hectares of native maize farmland authenticated.

[11] Before it is used for human consumption, the grain needs to be treated with lime (through boiling in a lime solution) to deactivate a portion of the mycotoxins. This process is known as nixtamalization.

2.4 **Innovation.** This is the first project carried out in Mexico in coordination with the culinary market and a group of experts and scientists to structurally and sustainably preserve native maize farming. Both the supply and demand markets for this product will place their trust in the collective trademark to ensure the quality and authenticity of the grain sold. The project will facilitate the use of technology to: (i) streamline the grain processing, sorting, and storage process; (ii) provide product traceability through a mobile technology platform based on the Internet of Things (IoT), which is a digital network of everyday objects or devices equipped with specialized hardware for Internet connectivity and programming of specific actions. The IoT will help in inventory management, storage logistics, and payments to producers; and (iii) accurately measure grain moisture and mycotoxin content.[12] Geographic positioning will be used to compare maize varieties in the communities against historical databases showing the potential geographic distribution of the same varieties. Digital and processing technology training will be provided, and the project will encourage youth participation as a job and income opportunity for those who see no future in remaining in their community.

2.5 This project is an excellent opportunity to test and demonstrate the feasibility of a business model based on small producers as an incentive to preserve their crops and boost their competitiveness in the chain. The project is also significant in promoting the preservation of a natural capital in the form of the native maize varieties.[13] Produced in small areas with highly variable environments and microclimates, their characteristics of climate resilience under adverse conditions and genetic diversity are completely distinct and useful in environments and economies that are unfavorable for hybrid maize. This project has received the support of the CIMMYT for its unique concept and innovative approach.

2.6 **Eligibility criteria for community participation in the project**. This initiative seeks to reward communities that: (i) have succeeded in preserving native seeds and their specific characteristics over the course of generations; (ii) produce grain surpluses (own consumption needs having been met); and (iii) satisfy quality standards for serving the market. In addition, communities will be required to meet the following criteria: (i) they grow predominantly native maize (at least 75% of the farmed area);[14] (ii) there is a documented historical record of the local native varieties (based on CONABIO and National Institute of Forest, Agricultural, and Livestock Research (INIFAP) data); (iii) they are (formally or informally) organized with at least 50 actual producers (who report production); (iv) women and indigenous people participate; (v) they have clear (free of conflict) ownership of, or beneficial rights to, the property on which they produce; (vi) they have easy access for grain transport; and (vii) they can show that they have not deforested any areas to grow maize.

2.7 CONABIO will prepare a draft agreement between the organizations that will set out the roles and responsibilities of the parties, including the project responsibilities

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[12] Mill, meters, reagents, scales.

[13] There is some evidence from studies conducted in Guatemala showing that the native maize grown by indigenous groups contains lower mycotoxin levels than commercially grown maize. The low levels of mycotoxins in this maize may be due to its being better adapted to the local microclimates, making it less susceptible.

[14] Maize is wind-pollinated and therefore can easily be crossed with varieties grown in neighboring fields. Working with communities in which most of the farmers grow one or more local native varieties will favor the integrity of the maize and make the preservation efforts more effective.

of the beneficiary members of the organizations (see paragraph 2.11). This draft agreement will require the Bank's no objection. In turn, the cooperatives will enter into agreements with their members to secure their commitment to the project.

2.8 The **beneficiaries** are small producers located in the project's geographic intervention area who belong to any of the five benefited cooperatives, have up to 10 hectares[15] of farmland, and have committed to delivering their maize to their organization for it to be sold on a collective basis in accordance with the technical requirements of the market. The participation of women and indigenous persons as producers or in other project activities will be encouraged.

2.9 In practice, some chefs prefer to purchase from women producers as a way of supporting poor households. The project will use the collective trademark to certify processed maize products while seeking to promote the value of products prepared by women. Another beneficiary is AC ProMaíz, a recently formed entity that lacks a management and operating body to support project implementation but has the technical expertise required to provide certainty as to the characteristics of the native maize varieties to be sold and the use of the collective trademark.

2.10 **Geographic location**. The pilot project will be carried out in 43 communities located in 12 municipios in the states of Oaxaca (6), Mexico (2), and Michoacán (4), where the GEF project will also be implemented. The selected locations provide an installed base of native maize production of considerable size, ensuring the potential to attract the interest of other producers and achieve significant volumes of surplus production to serve the markets. The combination of these areas also offers a variety of climate conditions, providing product provision alternatives in the event that climate effects jeopardize production. The project will begin by selling the maize that commands higher demand.

2.11 **Component I: Organizational structure and processing equipment (MIF: US$385,429; counterpart: US$342,299).** The objective of this component is to strengthen and consolidate the administrative and commercial organizational structure of small native-maize producers in terms of the five cooperatives or other organizations (depending on which is the most appropriate type of entity) that will group them (two of which already exist and three of which will be newly formed).[16]

[15] In the country's south, small producers are generally defined as those owning up to 5 hectares and, in the north, those owning up to 10 hectares.

[16] This component will determine which is the best legal structure for the new organizations that will be created to cover areas in the Central Valley of Oaxaca, the southeast of Mexico state, and the Sierra Sur of Oaxaca.

The participating entities will sign a commitment agreement with FFB/CONABIO that will set out their roles and responsibilities. Informational meetings will be held with the cooperatives and their members, and assistance will be given throughout the entire process to legally register these entities, assemble and train their boards of directors, develop leaders, and train each entity's technical teams. Regional and local technical experts will be engaged to help organize the producers. This component will also develop administrative and accounting control systems, set up one collection center[17] per cooperative (a total of five), provide mobile equipment to facilitate maize processing[18] at the various locations (helping to standardize the product), and provide training in the use, operation, and maintenance of this equipment.

2.12 To encourage the loyalty of producers and delivery of their product to their respective organization, the MIF will provide seed funding that will serve as working capital for the entities and be used to pay an advance to each producer for delivery of his/her product,[19] the final price of which will be determined once the sale costs have been calculated. This seed funding will be granted to four cooperatives (three new ones and an existing one) that lack operating capital. This contribution will be made once the entities: (i) are legally organized; (ii) have agreed on the regulations governing the use and operation of the resources; (iii) have a registered a bank account; and (iv) have operational accounting systems in the judgment of the project accountant. CONABIO will explore partnerships with financial institutions that operate in the project's areas of coverage with a view to enabling the producers to open bank accounts, if possible at no cost to them.

2.13 The **expected outcomes** of this component are: (i) three new cooperatives legally operating with at least 50 producers each; (ii) a producer database (with geolocation records) that includes all 500 beneficiaries (disaggregated by gender); (iii) accounting information system in operation at each cooperative; (iv) at each cooperative, a registered bank account and a system for paying individual producers; (v) 100 beneficiaries with a registered bank account; (vi) regulations for use of the processing and storage equipment approved by the members and in operation; (vii) at least three persons in each cooperative trained in the following (disaggregated by gender): (a) accounting system, cost control, and seed capital management; (b) maintenance of producer database; and (c) handling and maintenance of processing equipment.

2.14 **Component II: Native maize authentication and development of the MILPAIZ collective trademark (MIF: US$130,345; counterpart: US$278,743).** The objective of this component is to create the necessary capacities and structure in the country for native maize authentication and development of a collective trademark that certifies the crop's traditional origin and production methods, quality, and specific characteristics. The collective trademark will be used for the grain and processed products. AC ProMaíz, owner of the MILPAIZ trademark, has created a logo and begun the intellectual property registration process. MILPAIZ

[17] The project will explore possible support from municipalities to provide a safe place that satisfies the technical requirements.

[18] Shellers, cleaners, sorters, harvesters, individual silos, sacks – Cocoons for volume storage.

[19] Due to negative experiences, some producers prefer to store their harvest on their land. Thus, this funding will help give producers some financial breathing room and streamline quality verification and delivery logistics.

will serve as a symbol, attesting to the fact that a committee of recognized experts has authenticated that: (i) the maize sold under this trademark is native maize originating in areas where such maize has a historically documented distribution; (ii) the producer is a small native-maize producer who plants, selects, and stores his/her own seeds for own consumption and sowing; and (iii) the maize sold by the producer is truly surplus produce. The collective trademark is expected to reduce the risk of dislocation of the maize, help preserve the native varieties, and similarly preserve the processes that create their diversity. Thus, certification will be performed at three levels: in respect of the grain that is stored and planted, in respect of the producer, and in respect of the grain that is sold (in properly identified sacks).

2.15 A (geolocation) register or database will be created, identifying certified producers by maize variety and production capacity. This database will be used by the traceability system and operated by AC ProMaíz. This system will allow each cooperative to more accurately estimate the potentially available surplus grain for current and future deliveries.

2.16 The collective trademark certificate[20] will be delivered with the product.[21] The collective trademark will ensure that the benchmark sale price for each maize type considers the production costs for the producer and the cooperative as well as the quality and cultural value of the product. It will also ensure that the sale process is transparent and inclusive. To this end, this component will finance production cost studies in the designated areas with information on yield ranges, which will determine investment recovery price ranges for each maize variety in a given area. These benchmark prices will be collective (rather than individual) sale prices, will be based on the maize variety, rarity, and characteristics, and will be posted on the collective trademark's website.

2.17 The project will help to: (i) define the rules for use of the collective trademark; (ii) develop and implement the marketing and dissemination strategy; (iii) develop an information system that combines information from the database of authenticated producers with information on maize varieties, geographic locations, and product supply and demand; (iv) develop and execute the implementation plan (validation and verification by plot, producer, and origin); (v) sharing experiences with, and learning from, other collective trademarks; (vi) develop the website; and (vii) provide any legal and accounting support required to establish the authentication process.

2.18 The **expected outcomes** of this component are: (i) fully registered collective trademark in operation; (ii) well-defined accreditation rules; (iii) accreditation of 500 native maize producers (disaggregated by gender, maize variety, and location); (iv) technical information from the experts on the definition and properties of maize varieties, systematized into classification manuals approved by the committee of experts; (v) manuals on the operating procedure of the laboratories; (vi) manuals on the producer authentication process approved by the committee of

[20] The trademark seal will be placed on the product's sack or other packaging. The certificate will be given to the producers based on their practices and track record with their seed. Producers who change seeds will be required to notify their organization and the authentication committee. These changes will be monitored by the organizations.

[21] Grain buyers and intermediaries through the chain may not sell or use any material as seed, pursuant to the 2007 seed law which prohibits this practice.

experts; (vii) information system in operation; and (viii) operational website listing the amount of maize warehoused and available for sale (broken down by location, variety, moisture, and mycotoxins), as well as technical information on, and culinary properties of, each native maize variety being sold.

2.19 **Component III: Sales process (MIF: US$374,704; counterpart: US$123,484)**. The objective of this component is to define collective sales procedures and launch price, inventory, sale, collection, and producer payment information systems.

2.20 The regional and local technical experts will assist in training on issues related to postharvest management improvement; pest control to prevent weevils and mycotoxins; cleaning, sorting, silage and storage; the use of control systems; and the new procedures. The cooperatives and producers will be trained in keeping control of their production costs with a view to determining their sale prices and ensuring sustainability once MIF participation in the project comes to an end. The public benchmark sale price will be at the cooperative level since producers will not sell individually to the market.

2.21 AC ProMaíz will promote native maize through the collective trademark and the sale of grain to specialty businesses, chefs, high-end and medium-level restaurants, and if possible the export market. Traceability will begin with the producer and extend to the delivery of the product to the buyer. Three mobile laboratories for mycotoxin measurement and quality control will be set up and will be operated by technicians under the supervision and monitoring of AC ProMaíz.[22] To encourage the sale of native maize, AC ProMaíz and CONABIO will assist in planning and carrying out consumer awareness campaigns to foster the consumption of native maize and other biodiversity products.

2.22 AC ProMaíz, either directly or through its website, will put suppliers (cooperatives) and buyers (restaurants, tortilla shops, exporters, etc.) in contact with one another to ensure that the suppliers build customer service and fulfillment capacities. In addition, AC ProMaíz will encourage and help cooperatives at the places of origin to participate in fairs, festivals, and tourism and service activities. The cooperatives will adopt modes of participation that conform to their interests and capacities.

2.23 Sales under the collective trademark model will be facilitated by developing a standard contract that provides incentives over the current market prices in order to motivate producers to certify their product. The expected increase in sales by cooperatives will depend on the extent to which a relationship of stable and reliable supply is established between the producer and the market. The market needs to be certain it is purchasing a quality product and will be keen to ensure access to the best suppliers.

2.24 The project will finance consulting services to help: (i) develop a market strategy; (ii) explore project sustainability options (through a trading company); and (iii) design and implement a communication and dissemination strategy for the project/product.

2.25 The **expected outcomes** of this component are: (i) model standard native maize purchase contract made official under the project; (ii) manuals of procedures to follow in the sales process; (iii) each cooperative with four members technically

[22] Tests normally performed prior to making payment for a maize shipment: thousand kernel weight, density by volume, grain hardness by pounding, grain hardness by abrasion, pericarp removal, flotation index.

trained in sales; (iv) three measuring laboratories operating, each with three technicians trained in its operation (disaggregated by gender); and (v) determination of the business model that will be implemented to ensure the sustainability of the project.

C. Project outcomes, measurement, monitoring, and evaluation

2.26 The key indicators for measuring the expected project outcomes are the following: 450300 number of producers who adopt new practices or technologies; 450600 number of markets or sectors that have arisen with MIF support; production of 400,000 kg of authenticated native maize; and 340100 greenhouse gas (GHG) emissions avoided (in tons of CO_2e).

2.27 The project will design and implement a **baseline and a monitoring and evaluation system** to semiannually measure and record the advances and degree of achievement of the outcome indicators at the purpose and component level established in the project Results Matrix. The project will be subject to a **midterm evaluation**, once 60% of the execution period has elapsed or 60% of the contribution resources have been disbursed (whichever occurs first). CONABIO undertakes to cooperate with the evaluation, provide any information requested, and facilitate any access required by the Bank and any persons it designates. This evaluation will be financed with contribution resources to determine the effectiveness of the model and of its reproduction. It will examine, among other things: (i) evidence of the producers working together and selling as a group and their commitment to doing so; (ii) the rate at which the small producers adopt the collective trademark; (iii) AC ProMaíz's ownership of the business model and its efficiency in providing authentication services and to take the lead in the operation in the future; (iv) the market's acceptance of the authenticated maize and validation that purchase prices are competitive; (v) adoption of the IoT to facilitate product traceability; and (vi) areas of potential improvement in the model and lessons for its expansion or replicability.

2.28 At least three months prior to the conclusion of the project execution period, CONABIO and the Bank will organize a **closing workshop** to jointly evaluate the outcomes achieved, determine the additional tasks required to ensure sustainability of the actions financed by the project, and identify the lessons learned.

III. Alignment with the IDB Group, Scalability, and Project Risks

A. Alignment with the IDB Group

3.1 The project is aligned with the IDB's Institutional Strategy by supporting the insertion of small producers into value chains and addressing crosscutting issues such as climate change, environmental sustainability, and biodiversity. It is also aligned with the Bank's country strategy with Mexico 2013-2018 (document GN-2749), which supports rural development, specifically with a view to fostering productive activities designed to improve the living conditions of the rural population and promote the creation of value added. The project is similarly aligned with the IDB initiative for Mexico aimed at boosting productivity in relation to the Mexican government's "México próspero" program, by fostering value chains and providing a means of improving the quality of life of indigenous populations. The Bank approved loan operation ME-L1268 Land Management to Achieve

Results under the Climate Change Agenda, in which the Bank focuses on promoting GHG emissions mitigation and climate change adaptation measures, and this project supplements these efforts through an innovative approach of boosting resilience to climate change through biodiversity management.

B. Scalability

3.2 For the scalability of this project, there is a clear understanding and agreement between CONABIO and AC ProMaíz that, during project execution, AC ProMaíz will need to gain the institutional readiness required not only to take responsibility for monitoring the project but also to determine an economic model that will allow the project to be sustainable. To this end, the project will provide AC ProMaíz with mechanisms for obtaining resources, such as in the setup of the mobile laboratories, the operation and dissemination of MILPAIZ, and the linkage of cooperatives to the market. In addition, the project will finance consulting services to explore and guide its sustainability options; for the moment, a possible option is a trading company. It is clear that the key is to generate economic benefits for the producer organizations and their members, so that the existing organizations and the new ones to be added lay the groundwork for the project's expansion. This project will serve as a vehicle allowing AC ProMaíz to become more familiar with the markets and their potential for growth. There are plans for a second phase of the project focusing on the sale of processed products as another potential line of business.

3.3 The project should create a relationship of trust between the producers and their respective organizations and between the market and these organizations, creating a sustainable commercial flow and turning the adoption of the collective trademark into a market requirement. The organizations will receive support to allow them to obtain financing by showing their formal legal status, accounting records, and production and sale capacity. Relationships with the markets, restaurants, and internationally renowned chefs are expected to solidify in the context of this operation. AC ProMaíz has members that will be able to assist with various issues.

C. Project and institutional risks

3.4 The project will test a new business model with last-mile producers who for the first time will attempt to serve a value market that assures them of continuous business and to trace their product through the use of technology. The project's outcomes and execution could be affected by the following risks:

3.5 **Limited capacity of AC ProMaíz to produce results for the project.** This civil association has been newly formed and its leadership and governance are still weak. It lacks administrative and operating staff. **Mitigation**: The project will finance the hiring of qualified staff to operate and consolidate AC ProMaíz and acquire the required knowledge and control to lead the association when the MIF financing concludes. The disbursement milestones include indicators that will be used to determine whether AC ProMaíz is attaining the institutional and financial readiness needed for the operation to remain on course. Consulting services will be contracted to help AC ProMaíz explore sustainability scenarios. For the moment, the idea being examined is to create a business arm in the form of a "trading company" under a model that would be incubated during project execution.

3.6 **Conflict of interests on the part of AC ProMaíz in supporting only its member merchants. Mitigation:** The agreement between CONABIO and AC ProMaíz is to seek the best markets for the organizations, and in the case of local markets, to abide by the provisions of paragraph 1.7.

3.7 **The model has not yet gained credibility.** Maize has not improved the living conditions of the communities, and there is pressure to introduce other products that will change the use and ownership of the land. The project faces the major challenge of showing, in a limited span of time, that the *native maize sales model* is beneficial and profitable for small producers. **Mitigation**: The project will start with those organizations that provide the greatest chances of success so as to extract lessons that can serve to fine-tune the model before it is launched with the new organizations to be created. Thus, the project hopes to show early results that can encourage other producers and buyers.

3.8 **Contamination of native maize** with hybrid maize. There are areas in which government programs have promoted the introduction of hybrid maize. **Mitigation**: These areas will have to be more carefully examined to determine the authenticity of the maize. The selection and preservation of local varieties will form part of the training to be provided to the cooperatives and their members.

3.9 **Theft of the processing equipment and product. Mitigation:** Safe storage places will be selected for the machinery and sacks of maize, and insurance will be obtained, in order to create a climate of confidence and security between the organizations and the communities for delivering their product.

3.10 **High migration**: Young people migrate in large numbers, and agricultural activities are no longer attractive for many of them largely because the pay is low. **Mitigation**: This operation will provide training, technology use, and job opportunities to young people not only to encourage them to stay in their communities but also to foster the stability of the business.

IV. INSTRUMENT AND PROPOSED BUDGET

4.1 The project has a total cost of US$1,988,362. Of this, US$1,002,000 (50%) will be contributed by the MIF in the form of nonreimbursable technical cooperation resources, and US$986,362 (50%) will be contributed by the counterpart. The MIF project will be complemented by the GEF project, “Securing the future of global agriculture in the face of climate change by conserving the genetic diversity of the traditional agro-ecosystems of Mexico” (GEF Project ID-9380), currently in execution, and will create synergies in two of the GEF project’s components: Component II, “Strengthening of local capacities,” and Component IV, “Valuation of agrobiodiversity and market linkages.” The counterpart resources will come from this GEF operation.

Project categories	MIF (US$)	Counterpart (US$)	Total (US$)
Component I: Organizational structure and processing equipment	385,429	342,299	727,728
Component II: Native maize authentication and development of the MILPAIZ collective trademark	130,345	278,743	409,088
Component III: Sales process	374,704	123,484	498,188
Project execution unit	76,706	241,836	318,542
Evaluation	12,000	-	12,000
Baseline and monitoring and evaluation system	-	-	-
Ex post reviews	12,000	-	12,000
Contingences	10,816	-	10,816
Grand total	1,002,000	986,362	1,988,362
% of financing	**50%**	**50%**	**100%**

V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

A. Description of the executing agency

5.1 The Commission for the Knowledge and Use of Biodiversity (CONABIO) is an interministerial commission comprised of nine Mexican ministries. It was created by presidential decree dated 13 March 1992, published in the Mexican Federal Official Gazette on 16 March 1992. CONABIO coordinates activities related to the acquisition of knowledge, conservation, and sustainable use of biodiversity for the benefit of society. It is the sole beneficiary of the Biodiversity Trust Fund (FFB), a private trust created on 18 May 1993 at Nacional Financiera, S.N.C. as trustee and funded with cash resources to promote, finance, and support the activities of CONABIO. CONABIO is the ideal executing agency for this project in its pilot phase due to its great interest in the issue of biodiversity and preservation of native maize. Since its inception more than 25 years ago, CONABIO has been working with scientists from different areas to develop a National Biodiversity Information System (SNIB) as the primary source of information and knowledge for appropriate decision-making focused on building a society that is well-informed on biodiversity.

5.2 Absolutely all resources that reach CONABIO arrive through the FFB. Conversely, the FFB exists solely for CONABIO. The FFB has the legal capacity to enter into agreements and manage the resources of CONABIO, which has no legal capacity. In accordance with the provisions of the contract dated 18 May 1993 that created the FFB, as amended, the technical committee of the FFB is responsible for approving and authorizing the project before the legal documents for its execution may be signed.

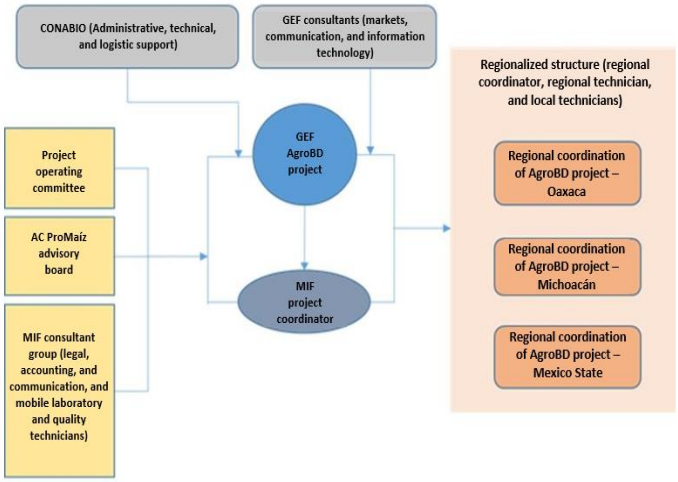
B. Implementation structure and mechanism

5.3 CONABIO will establish a project execution unit (PEU) and the necessary structure to carry out the project's activities and manage the project's resources efficiently and effectively. The PEU will report directly to the GEF Agrobiodiversity (AgroBD) Project Office, which will in turn report to the CONABIO National Coordination Division. The purpose of this reporting structure is to seek linkages and synergies between the two projects and provide the MIF project with administrative, logistic, legal, and technical support. The PEU will consist of a project coordinator, regional coordinators, regional and local technical coordinators, the technicians in the mobile labs, and a group of issue-specific consultants. The largest part of the

PEU's structure will be located at the CONABIO facilities in the three territories covered by the project. The PEU will be responsible for comprehensive execution of the project, planning and operational management, administration of resources, risk assessment, and preparation of project status reports.

5.4 Each territory will have an MIF regional project coordinator, who will be the person currently coordinating the GEF AgroBD project in the respective Mexican state. The MIF regional project coordinator will be assisted by a regional technical expert and several local technicians, depending on the number of communities being served since a local technician can be responsible for several communities.

5.5 There will be a project operating committee, comprised of an official appointed by the CONABIO national coordinator, a permanent representative of AC ProMaíz, the GEF AgroBD project director, and the MIF project coordinator, who will serve as committee secretary. The committee may invite special guests as advisors, depending on the issue to be addressed. The duties of the committee will be the following: approve the annual work plan and budget; monitor project status; suggest solutions for any problems that may arise; review and validate project reports; and support the project director and coordinator in their decision-making process. The committee will meet semiannually, and special meetings may be called when required.



5.6 There will be an advisory board comprised of the various AC ProMaíz specialists advising the project on all aspects of native maize sale, marketing, kernel quality, authentication, social, and economic issues, communication strategies, and other matters. These advisors may not receive any salary from the operation's resources. In addition, they will help to define the terms of reference for the consultants contracted by the GEF project to ensure that they are consistent with the MIF project and that these consultants address the specific aspects of the MIF project as landing zones for issues of markets, valuation, and dissemination of agrobiodiversity products in Mexico. In support of the MIF project, the GEF project consultants' group will assist in aspects such as market studies, communications and promotion, and information technology, as in the design of the database and its linkage to the CONABIO information system.

5.7 Funding for the PEU will be mixed. CONABIO will either directly or through the GEF AgroBD project be responsible for the project director, the territorial structure, and the administrative, technical, and logistic support for execution of the MIF project. The PEU will be responsible for hiring the project coordinator and the MIF consultants' group, subject to the Bank's no objection. AC ProMaíz will provide scientific and technical assistance and be responsible for providing operational support to the advisory board.

VI. Fulfillment of Milestones and Special Fiduciary Arrangements

6.1 **Disbursements by results and fiduciary arrangements**. The executing agency will commit to the standard MIF arrangements relating to disbursements by results and the Bank's procurement[23] and financial management[24] policies specified in Annex V. The Bank will carry out annual ex post reviews of disbursements and an audit of financial statements at the end of the project, which will be contracted directly by the Bank. The Bank will engage the services of an auditing firm to perform semiannual ex post reviews based on the results of the diagnostic needs assessment. The scope of the auditing services will include: (i) sample ex post reviews of the disbursement requests and procurement processes, including the support documentation for both; (ii) the project's financial statements, pursuant to agreed-upon procedures, for the period under review; and (iii) the evaluation and recommendations on internal control findings.

6.2 The project disbursements will be contingent on verification of fulfillment of milestones, in accordance with the means of verification agreed upon between the PEU and MIF; failure to fulfill the milestones will entail cancellation of the undisbursed contribution amount. Fulfillment of the milestones does not release the executing agency from its responsibility to fulfill the indicators in the results matrix and the project objectives. Under the risk- and performance-based project management modality, the project disbursement amounts will be determined in accordance with the project's estimated liquidity needs for a maximum period of six months. These needs will be agreed upon by the MIF and the executing agency and will reflect the activities and costs programmed in the annual planning exercise. The first disbursement will be contingent on fulfillment of the conditions precedent, and the successive disbursements will be made provided that the following two conditions are met: (i) the MIF has verified that the milestones have been achieved as agreed in the annual planning exercise; and (ii) the executing agency has provided supporting documentation for at least 80% of the cumulative advances of funds.

VII. Access to Information and Intellectual Property**

7.1 **Access to information.** In accordance with the Bank's Access to Information Policy, this document is available to the public.

7.2 **Intellectual property.** The executing agency will hold the intellectual property rights over all work performed and outcomes obtained under the project, and will give the Bank a perpetual, worldwide, non-exclusive, irrevocable, and royalty-free license in respect of all work performed and outcomes obtained under the project, including the rights of dissemination, reproduction, and publication in any medium of any product owned exclusively by the executing agency resulting from the project. Accordingly, the Bank will have the right to use, copy, exhibit, distribute, disseminate, reproduce, and publish on a nonprofit basis any report or evaluation related to the work performed and the outcomes obtained by the executing agency in connection with the project.

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[23] Link to the Policies for the procurement of works and goods financed by the IDB.

[24] Link to the Financial management guidelines for IDB-financed projects.