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MULTILATERAL INVESTMENT FUND

REGIONAL

ADAPTING PRECISION AGRICULTURE TECHNIQUES FOR
CLIMATE-SMART COCOA PRODUCTION

RG-T3136

DONORS MEMORANDUM

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PROJECT SUMMARY
REGIONAL
ADAPTING PRECISION AGRICULTURE TECHNIQUES FOR
CLIMATE-SMART COCOA PRODUCTION (RG-T3136)

Small and medium scale farmers are among the most vulnerable to the current and future effects of climate change because they lack the technology, knowledge and financing to implement adaptive measures. Upwards of 90 percent of the cocoa produced in Latin America and the Caribbean is produced by family-based agriculture. In many cases, this implies low yields and limited economic sustainability. Small producers that do not have access to inputs or technology that regulate the nutrition of the soil, distribution of water, or humidity on their plantations will be the most affected.

To promote climate resilience in the cocoa supply chain, Ecom Agroindustrial Corp, a global commodity merchant and the world's third largest supplier of cocoa, has begun to develop precision agriculture techniques for small producers as strategy to make better use of inputs, improve yields, and reduce vulnerability. Precision agriculture is often described as using the right inputs, in the right amounts, at the right time. It aims to manage variability by tailoring the application of water, nutrients, and other inputs to match the needs on the farm rather than applying generic solutions. These solutions can lead to improved yields, efficiency in the use of inputs, and provide cost savings over time. Although precision agriculture is being used successfully by large cocoa farms in the region, few smallholders have access to this type of customized approach.

The project will pilot precision agriculture techniques in ECOM's supply chain using specially adapted irrigation systems and fertilizer blends that deliver the right mix of nutrients and water on the farm. The systems and techniques will first be developed and tested in several regions in Ecuador after which they will be replicated in other countries with producers in ECOM's supply chain. The precision farming techniques will be accompanied by drone surveillance and satellite imaging to collect data, efficiently monitor farms, and track changes in crop health over time. The project will be executed by Agroindustrias Arriba del Ecuador, a subsidiary company of ECOM in Ecuador.

To mobilize credit for farmers, the project will make use of blended finance and a risk sharing structure. This financing will unlock credit to at least 200 farmers in Ecuador who are early adopters of the technology. Once the financing structure has been successfully piloted, it will be scaled to additional farmers in ECOM's supply chain.

The project is part of the Sustainable Agriculture Food and Environment platform which was established in 2015 under MIF leadership. The platform brings together donors, non-governmental organizations, and private sector actors to address the challenges of sustainable agriculture while including smallholder farmers in global value chains. By partnering with private companies that value sustainability, the platform aims to find new and innovative ways to help farmers adapt to climate change and foster inclusive value chains.

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AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF MIF PROJECT INFORMATION SYSTEM

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ACRONYMS AND ABBREVIATIONS

Agroarriba	Agroindustrias Arriba del Ecuador Agroarriba S.A.
ANECACAO	Asociación Nacional de Exportadores de Cacao e Industrializados del Ecuador
COSA	Committee on Sustainable Assessment
DNA	Diagnostic of Executing Agency Needs
ECOM	Ecom Agroindustrial Corp Ltd.
ICCO	International Cocoa Organization
IDB	Inter-American Development Bank
IIC	Inter-American Investment Corporation
INIAP	Instituto Nacional de Investigaciones Agropecuarias (National Agricultural and Fisheries Research Institute)
MIF	Multilateral Investment Fund
PSR	Project Status Report
SAFE	Sustainable Agriculture Food and Environment Platform
SMS	Sustainable Management Service (ECOM's technical assistance arm)

PROJECT INFORMATION

REGIONAL

ADAPTING PRECISION AGRICULTURE TECHNIQUES FOR CLIMATE-SMART COCOA PRODUCTION

(RG-T3136)

Country and Geographic Location:	Regional. The project will begin implementation in Ecuador. In years two and three, activities will be replicated in two other cocoa producing countries.		
Executing Agency:	Agroindustrias Arriba del Ecuador Agroarriba S.A. (Agroarriba), a wholly owned subsidiary of Ecom Agroindustrial Corp Ltd.		
Focus Area:	Climate-Smart Agriculture		
Project Beneficiaries:	4,000 small-scale farmers who will receive training in precision agriculture techniques of which at least 20 percent are women producers.		
Financing:	Technical Cooperation:	US\$ 978,478	36%
	Equity:	-	
	Loan:	-	
	Other :	-	
	TOTAL MIF FUNDING:	US\$ 978,478	
	Counterpart:	US\$ 1,141,847	42%
	Co-financing:	US\$ 600,000	22%
	TOTAL PROJECT BUDGET:	US\$ 2,720,325	100%
Execution and Disbursement Period:	36 months of execution and 42 months of disbursement.		
Special Contractual Conditions:	Special conditions precedent to first disbursement will be: (i) selection of the Project Manager; and (ii) submission of the project's annual operating plan, to the satisfaction of the Bank. As a condition prior to the disbursement of MIF resources for any amount directed to the guarantee, a set of Guarantee Guidelines will be agreed upon, developed and approved by all three participants.		
Environmental and Social Impact Review	This operation was screened and classified as required by the IDB's safeguard policy (OP-703) October 31, 2017. Given the limited impacts and risks, the proposed category for the project is C.		
Exceptions to Bank policy	In accordance with IDB policy GN-2350-9, the project will have two sole source selections for consultancy services. COSA (up to US\$70,000) and the Grameen Foundation (up to US\$100,000) have been identified for their specific expertise and the continuation of previous work under the SAFE platform.		
Unit responsible for disbursements	MIF/CEC		

I. The Problem

A. Problem Description

- 1.1. Cocoa production contributes to the livelihoods of more than 350,000 small-scale farmers in Latin America and the Caribbean (LAC). Between 2006 and 2016, cocoa production in LAC doubled, expanding the region's share of world production from 12 percent to 18 percent. Most of this growth was due to higher production in four countries: Ecuador, Peru, the Dominican Republic and Colombia¹. However, production has also been growing steadily in Mexico, Central America, and the Caribbean reflecting the growing potential of LAC to further increase its share of world production.
- 1.2. Global demand for cocoa is forecast to increase steadily over the next decade. In this context, the key challenges facing the industry are improving farmer productivity and ensuring sustainable supply. Current yields in LAC average about 400 kilograms per hectare (kg/ha), far below the 1000 kg/ha the industry considers the minimal sustainable level of production. Furthermore, cocoa is highly dependent on climate conditions particularly on factors such as rainfall, temperature and humidity to obtain good yields. Climate change models for the region predict increased temperatures of 1 to 2 degrees Celsius and a 10 to 30 percent reduction in water availability in some areas. These long-term changes are expected to shift yield curves as well as disease and pest patterns for cocoa production.
- 1.3. Small and medium scale farmers are among the most vulnerable to the current and future effects of climate change because they lack the technology, knowledge and financing to implement adaptive measures. Upwards of 90 percent of the cocoa produced in LAC is produced by family-based agriculture. In many cases, this implies low yields and limited economic sustainability. Small producers that do not have access to inputs or technology that regulate the nutrition of the soil, distribution of water, or humidity on their plantations will be the most affected. Solutions to manage variability exist but are not readily available or adapted appropriately for the use of small farms. The main problem this project aims to address is the low productivity and climate vulnerability facing small-scale cocoa producers. This problem is rooted in the following interrelated causes:
- 1.4. **Fragility of small-scale cocoa farms.** Data collected from cocoa producers in Ecuador reveals that the average farm has 2.5 hectares (ha) of cocoa with yields averaging 400kg/ha.² Farms are characterized by

¹ Inter-American Institute for Cooperation on Agriculture, 2016 <http://www.iica.int/es/publications/estado-actual-sobre-la-produccion-y-el-comercio-del-cacao-en-am%C3%A9rica>

² This estimate is based on data collected by ECOM's Sustainable Management Services (SMS) in Ecuador.

old trees planted at a low per hectare density, without irrigation, fertilizer and minimum implementation of good agricultural practices. The lack of proper investment and maintenance makes these farms more susceptible to pest and diseases. In turn, low yields make it difficult to achieve an economically sustainable level of production. In the current context of low cocoa prices³ there is even less incentive for vulnerable producers to rehabilitate their farms.

- 1.5. **Inadequate access to appropriate technology for small-scale producers.** Higher levels of productivity and greater capacity to manage climate variability will only be reached through access to new technology. Precision agriculture solutions to manage variability in soil nutrients, water distribution, and soil moisture levels have been commercially developed and are successfully being implemented on large cocoa farms. However, similar solutions and accompanying technical assistance are generally not accessible to small farms because inputs and machinery have not been specially adapted for their use. Since precision farming requires significant efforts in data collection and analysis to manage production variability, few service providers are able to deliver this level of personalized technical assistance effectively and cost efficiently to small-scale farmers.
- 1.6. **High risks for farmers and lenders in making climate-smart investments.** Despite the wide array of traditional financial institutions and the proliferation of specialized micro lending institutions, access to credit remains a key issue for small farms, particularly long-term financing for precision inputs like drip irrigation systems which improve productivity and resilience. In most LAC countries, agricultural lending is considered risky for banks and financial institutions which have limited capacity to assess and manage risks related to crop production, market volatility, and weather. In Ecuador, interest rates on agricultural loans are in the range of 23 percent annually with standard repayment terms and high collateral requirements. Farmers investing in new solutions often require flexible financing because they sometimes need to wait years before income and productivity gains materialize.
- 1.7. Ecom Agroindustrial Corp. Ltd (ECOM) is a global commodity merchant and the world's third largest supplier of cocoa. ECOM has been working across Latin America (in Brazil, Colombia, Ecuador, Nicaragua, Mexico, and Peru) to create a sustainable and traceable supply chain built on win-win relationships with its network of cocoa producers. It's buying operations are supported by its technical assistance arm, the Sustainable Management Services program (SMS), which works with farmers to improve productivity, quality, and economic, social, and environmental sustainability at the farm level. To promote climate resilience in its own supply chain, ECOM has begun to develop precision agriculture

³ As of September 2017, the monthly average price for cocoa was \$1,998 per metric ton, sliding steadily from around \$3,000 in August 2016.

techniques for small-scale cocoa producers as a strategy to make better use of inputs, improve yields, and reduce vulnerability.

- 1.8. The project will be executed by Agroindustrias Arriba del Ecuador Agroarriba S.A. (Agroarriba), ECOM's subsidiary in Ecuador. It will be implemented regionally but will begin activities in key cocoa producing areas of Ecuador, particularly the coastal zones of Manabí, Los Rios, Guayas, Santa Elena and El Oro. In years two and three, the project will begin to transfer the technical expertise and knowledge developed in Ecuador to at least two other countries in the region where ECOM has cocoa operations (e.g. Brazil, Mexico, Nicaragua, Peru, or Colombia). The selection of these countries will be made by ECOM in collaboration with key project partners based on early results achieved and the potential for replication. The main selection criteria will be the size of ECOM's cocoa operations, the number of producers, and the capacity of the SMS technical team in country. Activities will only be undertaken in the selected countries once a no-objection has been duly obtained from the respective government.
- 1.9. **Beneficiaries.** Overall, the project will directly benefit 4,000 family farms⁴, of which 20 percent are managed by women. All producers participating in the project will benefit from training on precision agriculture techniques as part of ECOM's farmer field school for cocoa production. At least 200 farmers in Ecuador will receive loan financing to install specially adapted irrigation systems and apply new fertilizer blends.

II. The Innovation Proposal

A. Project Description

- 2.1. The project's objective is to enhance the competitiveness of small-scale cocoa producers in ECOMs supply chain through access to precision agriculture technologies and innovative credit products.
- 2.2. Precision agriculture is often described as using the right inputs, in the right amounts, at the right time. It aims to manage variability by tailoring the application of water, nutrients, and other inputs to match the needs on the farm rather than applying generic solutions which may increase cost, harm the environment, and not necessarily lead to better production. Overall, it helps farmers improve the effectiveness and efficiency of input use and make smarter farming decisions to generate higher yields.

⁴ Participation in the project does not preclude farmers from selling some of their cocoa to other buyers, which is a common hedging practice for many small producers.

- 2.3. ECOM is working to develop a specially adapted precision agriculture package for its producers with the help of Yara International, a leader in climate-smart crop nutrition, and Netafim, the world's largest drip irrigation company. First, the package includes specially created fertilizer blends to provide the right mix of nutrients based on soil and leaf analysis from specific cocoa growing regions. In field tests, the application of the specialized blends increased yields by 25 to 35 percent overall and more than doubled yields for producers who did not previously invest in fertilizer. The package also includes a drip irrigation system designed for small-holder farms, which uses up to 40% less water than flood irrigation. Most drip irrigation systems are designed for large farms but Netafim's system is flexible and modular so that it can be scaled up or down to accommodate farms ranging in size from half a hectare to ten. The kits are simple to install, operate and maintain, and save labor as they do not require digging irrigation ditches or frequently moving heavy hoses and pipes. The kit is able to better distribute water and nutrients on the farm by dripping precise quantities right at the root zone. The result is a highly effective distribution of water, leading to improved crop quality and increased year-round yields.
- 2.4. Digital and geospatial technologies are revolutionizing agriculture by giving farmers new ways to monitor crops and reduce losses. The project will make use of GIS systems, drone surveillance and satellite imaging to efficiently monitor farms and track changes in crop health over time. Because drones can survey the crop every week or even every day, this type of monitoring is expected to generate time series data that can be used to reveal problems and opportunities for better crop management.
- 2.5. **Financing model.** Making the initial purchase of a drip system or buying fertilizer blends is the main barrier for smallholder farmers in the supply chain. To overcome this challenge, the project will pilot a financing program in Ecuador with, Agroarriba , ECOM's Ecuador subsidiary. Under the pilot, Agroarriba will provide direct financing to 200 farmers in Ecuador to implement the new technologies. The average loan size is expected to be US\$4,000 (ranging from \$1,000 to \$10,000), with terms of up to five years, a grace period, and minimal collateral requirements. The exact terms will be determined in the first year of the project, once the specialized loan products have been designed. Farmers selected for loans will be carefully evaluated based on the history of the buyer-supplier relationship, a technical assessment of the farm, and their capacity for repayment. Repayments will be made in the form of cocoa harvests sold directly to Agroarriba.
- 2.6. Oikocredit International (Oikocredit), a social investor that facilitates access to credit for agricultural enterprises, will lend to Agroarriba \$600,000 in capital for the loan program. Under this arrangement, Agroarriba will be responsible for repayment of the loan to Oikocredit. However, a tripartite loss sharing arrangement has been structured

whereby MIF, Oikocredit, and Agroarriba will share losses prorata on the portfolio 25 percent, 25 percent, and 50 percent respectively. The MIF has set aside as part of the technical cooperation, an amount of US\$150,000 for the payout of its share of the loss guarantee mechanism, which will only be used in the case of a default. As a condition prior to the disbursement of MIF resources for any amount directed to the guarantee, a set of Guarantee Guidelines will be agreed upon, developed and approved by all three participants. It is expected that these guidelines will be developed in the first six months of the project. At a minimum, the guidelines will include: (i) the contractual conditions upon which the farmers enter into default; (ii) the frequency over a period of time on which the guarantee will be executed; and (iii) the procedures to be utilized to verify the default condition. MIF resources to cover the losses on the portfolio will be disbursed to a specific account which the executing agency will propose. Pay outs against losses will only be made in cases where (a) the loan was made in accordance with the tools and credit methodology established by the project; and (b) Agroarriba has made reasonable efforts to restructure or recover the loan. Detailed eligibility criteria for payouts will be developed with ECOM and Oikocredit. Any unused funds under the risk sharing arrangement will not be disbursed.

- 2.7. **Innovation.** This project showcases a number of innovative elements that leverage technology, enhance resilience, and facilitate inclusion of small producers into value chains. First, it addresses a gap in the market for agricultural technologies by testing and adapting precision agriculture techniques for small cocoa farms. It will introduce more efficient and modern methods for farm monitoring and surveillance through the use of geographic information systems, drone technology and satellite imaging for better farm management. Second, the project provides a model for using blended finance to mobilize capital and reduce risk for investments in smallholder agriculture. In this case a blend of private capital, a risk sharing arrangement, and grant resources for technical assistance are being deployed.
- 2.8. Even for a large company such as ECOM, supply chain investments of this nature can be risky and costly to undertake. Piloting a new solution with small-scale producers carries uncertain risk/return expectations that are difficult to accomplish on a purely commercial basis. With the right range of partners co-investing, companies and donor organizations can effectively leverage their resources to test solutions that can be replicated and scaled. In this context, the project is part of the MIF's

Sustainable Food Agriculture and the Environment platform (SAFE)⁵, a multi-stakeholder group of companies, non-governmental organizations (NGOs), and donors working to address the challenges of creating sustainable agricultural value chains with smallholder coffee and cocoa producers. Together, partners in the platform pool resources to pilot projects that improve climate resilience, access to financial services, and promote efficiency and professionalization of smallholder farms. As the first cocoa project under SAFE, this project will generate new learning for members of the platform.

- 2.9. **Component I: Adapting precision agriculture technologies for small scale cocoa farms (MIF: US\$283,060; Counterpart: US\$431,000).** The objective of this component is to test and validate the precision agriculture technology and to develop technical packages and protocols for small-scale farms. The technology will be validated first in Ecuador using demonstration farms equipped with drip irrigation kits and the new fertilizer blends. SMS will lead the activities and will conduct analytics to help farms weigh the costs and benefits of adopting the package. The validation and testing activities will be replicated on farms in two other cocoa producing countries in years two and three. The testing and analysis will also incorporate a climate change vulnerability assessment to determine the expected changes in climatic conditions, the implications for production, and what steps can be taken to reduce impacts.
- 2.10. The expected outputs of this component are: (i) 12 demonstration plots established in Ecuador; (ii) a productivity and cost-benefit analysis of new precision agriculture technologies completed; (iii) 5 technical packages developed (2 in irrigation; 3 in fertilizer); (iv) 16 SMS technicians trained in precision agriculture technologies; (v) a climate vulnerability assessment for cocoa production completed; and (vi) 10 demonstration plots established in two other cocoa producing countries.
- 2.11. **Component II: Strengthen business and technical capacity for farm management (MIF US\$180,200; Counterpart US\$196,900).** The objective of this component is to improve the productivity and business skills of farms through training on precision agriculture, extension services, and business advisory services. The activities under this component will provide an integrated approach to improve the business focus of farmers and to increase their exposure and knowledge of precision agricultural technologies and proper farm practices. This will be done through farmer field schools, peer to peer learnings, workshops

⁵ Members of the SAFE platform include Keurig Green Mountain Inc., ECOM, Starbucks Coffee Company, Hans R. Neumann Foundation (part of the Neumann Kaffe Gruppe), Root Capital, Catholic Relief Services, Solidaridad Network, Rainforest Alliance, S&D Coffee & Tea, Farmers Brothers Co., Hivos, the Grameen Foundation, the Coalition for Coffee Communities (CCC), the Sustainable Commodity Assistance Network (SCAN), and the Committee on Sustainability Assessment (COSA).

in financial literacy, and specialized advisory services on business planning and loan management.

- 2.12. The expected outputs of this component are: (i) 300 farmers trained in financial literacy; (ii) 30 early adopters/lead farmers trained in operation of the new technology; (iii) 4,000 farmers trained in precision agriculture techniques; and (iv) 300 farmers receiving technical assistance for the implementation of detailed farm management plans.
- 2.13. **Component III: Improve access to affordable finance for technology adoption (MIF US\$318,550; Counterpart US\$662,300).** The objective of this component is to promote access to affordable finance for small-scale farmers who will be implementing the new precision agriculture technologies in Ecuador. The project will strengthen Agroarriba's financial monitoring capacity by establishing a credit department and developing a mobile agricultural risk evaluation tool to evaluate borrowers and manage credit risk. With support from Grameen Foundation, the activities will focus on strengthening Agroarriba's financial and credit capacities for managing loans to small farmers, including setting up a structure for loan origination, disbursement, monitoring and recovery. This will include the development of a credit manual and credit regulations. The project will adapt and deploy a mobile agricultural risk assessment tool which will create risk profiles for potential borrowers based on information collected from ECOM's farmer information systems. In addition, two new credit products will be developed for short and long-term financing that meets the needs of ECOM's farmers, which may include a leasing product.
- 2.14. A critical element of the project is the testing of a lending model with participation of a financial agent (Oikocredit), an anchor company (Agroarriba) and the MIF. To test the model an amount of US\$150,000 has been budgeted with MIF funds for the payout of its share of loan losses as described in para 2.6. This amount would only be used in the case of default by the farmers and in accordance the Guarantee Guidelines established with the executing agency and Oikocredit. The risk sharing arrangement is being used as an instrument to promote lending for precision agriculture, a market in which few lenders are participating.
- 2.15. The expected outputs of this component are: (i) an agricultural risk and assessment tool developed; (ii) 2 new credit products developed (iii) 10 ECOM staff trained in credit processes and the risk assessment tool.

B. Project Results, Measurement, Monitoring and Evaluation

- 2.16. The project's indicators are aligned with the Bank's Corporate Results Framework and the aspirational indicators for Climate-Smart Agriculture. The project is expected to achieve the following results by the end of the three-year implementation period: (i) 2,800 farms adopting sustainable production practices (230100); (ii) 5,600 hectares under improved farm management (240100); (iii) 300 producers with access to new technology packages (230100); (iv) 200 producers accessing credit (230500); (v) \$600,000 in credit deployed for adaptive technologies (230700); and (vi) average yields of one (1) metric ton/hectare for farmers who apply the new precision agriculture technology.
- 2.17. **Monitoring.** The project will use ECOM's SMSi software to collect baseline data on individual producers. During project implementation, this software will be enhanced to track information on farm management, credit monitoring, and will serve as the one-stop monitoring and evaluation information system for the project. All data will be dis-aggregated by gender to allow ECOM to identify any gaps between men and women in service delivery and to make adjustment accordingly. Data analytics will also be made available to individual farmers so that they have access to key performance indicators and can compare their farm's performance against other farms in the program on average.
- 2.18. The Committee on Sustainable Agriculture (COSA), a SAFE partner, will provide support to Ecom in measuring the project's impact on farmers and on Ecom's supply chain using industry metrics. This information will help the company to refine its approach in working with farmers to ensure sustainable sourcing and more stable long-term relationships. COSA is recognized by both practitioners and global food companies, as an expert in agricultural impact assessment. COSA has developed easy to use simple procedures to capture, evaluate and use data for projects of this nature. As a result, COSA has been identified for a sole source contract to provide monitoring and evaluation services to the project.
- 2.19. **Evaluations:** The project will produce a mid-term evaluation and a final evaluation to assess efficacy of the model and its replication. The mid-term report will assess among other issues: (i) the adoption rate of the technology among farmers; (ii) the implementation of the loan program with Agroarriba; and (iii) replication of the projects activities in additional countries. Final project results will be assessed and documented in a final evaluation. Key questions for the review of results and impacts in the final PSR may include: (i) How effective was the precision agriculture technology in terms of yields, income and resilience? (ii) How successful was the loan program?; and (iii) How can

the model be replicated in other supply chains, particularly with SAFE partners?

III. Alignment with IDB Group, Scalability, and Risks

A. Alignment with IDB Group

- 3.1. The project is aligned with the IDB institutional strategy by supporting the insertion of small-scale farms into value chains and by addressing cross cutting issues such as climate change and environmental sustainability. It is aligned with the country strategy for Ecuador (2012-2017), which supports rural development and is specifically aligned with the objective of “fostering productive activities that improve the living conditions of the rural population and promote the generation of added value”. The project aligns with IIC’s priority business areas of improving access to finance and technical assistance for micro, small, and medium enterprises, supporting innovation, and green growth. It also focuses on improving market links with agricultural value chains, a key IIC business sector.

B. Scalability

- 3.2. Working with a leading global supplier of cocoa such as ECOM is part of the project’s strategy to achieve scale and impact. The program will be piloted in Ecuador with the objective of replicating the model throughout ECOM’s Latin America supply chain. Looking beyond the company’s supply chain, other large cocoa and coffee traders such as Starbucks and Keurig Green Mountain, who are members of the SAFE platform, could leverage the project’s model and learnings to improve climate resilience in their own supply chains in partnership technology providers and financial institutions by using blended financing structures.
- 3.3. As part of the activities to strengthen stakeholder engagement and scalability, the project envisions: (i) an educational training video on precision agriculture for small holder cocoa farms; (ii) case study on the project’s financing model and the use of blended finance to reduce risk; and (iii) participation in stakeholder events (e.g. World Cocoa foundation, ICCO, SAFE) to share the results of the project and engage interested audiences.
- 3.4. The design of this project takes into account lessons learned and good practices from projects focusing on financing and technical assistance for small-scale producers. First, a review of the MIFs agricultural portfolio found that the type of technical assistance that best complements lending was focused on improving farm productivity and yields. Second, financing for producers must be flexible. Project that were

successful in providing long-term finance made efforts to adapt loans to the individual needs of each producer. Third, projects are most successful when a value chain approach is taken and accompanied by training and supervision by the lender.

C. Project and Institutional Risks

- 3.5. The project is a pilot to test new technologies and financing mechanisms. The following risks could affect the project's results and implementation:
- (i) Under performance of the technology.** ECOM's SMS technical staff will test and validate the technology under a variety of conditions, but there is a risk that the technology does not produce the expected yields. To manage this risk, SMS and dedicated staff from the technology providers will work closely with farmers to monitor farms and resolve issues.
 - (ii) Market volatility.** In 2017, the world price for cocoa dropped 30 percent due to favorable weather conditions which led to higher than expected global production. Further price volatility could have an impact on producers and their ability to repay loans. Although the project does not have tools to directly mitigate price risk, promoting practices and technologies that will improve yields and operational efficiency are expected to make producers are less vulnerable to price swings. The implementation of new risk management tools and credit methodologies at Agroarriba will help to manage the risk of price swings in the loan portfolio.
 - (iii) Climate risk** is inherent in agriculture and farmers could experience extreme weather patterns or events during the project implementation. Mitigating action: The SMS team will monitor long-term weather forecasts and has the capacity to deliver emergency kits to farmers in the event of an outbreak of pests or diseases.
 - (iv) Changes in public sector programs** such as new subsidies or credit programs could change the willingness of farmers to implement the technology. To mitigate this risk, ECOM will coordinate with key public sector actors in the cocoa sector to anticipate changes to government policy and facilitate coherence between the project and new public policies.

IV. Instrument and Budget Proposal

- 4.1. The project has a total cost of US\$2,720,325, of which US\$978,478 (36%) will be provided by the MIF through a technical cooperation grant, and US\$1,741,847 (64%) by the counterpart. The counterpart funding will be provided by Ecom, Oikocredit, and the technology providers Yara International and Netafim.
- 4.2. The instrument to be used is a non-reimbursable technical cooperation grant. Grant resources are justified due to the intensive need for training

and capacity building among farmers. The grant funds are part of a blend of resources which will mobilize and complement investment capital from Oikocredit.

Project Categories	MIF	Counterpart	Total
Component 1: Adapting precision agriculture technologies for small-scale cocoa farms	283,060	431,000	714,060
Component 2: Strengthening business and technical capacity for farm management	180,200	196,900	377,100
Component 3: Improving access to affordable finance for technology adoption	318,550	662,300	980,850
Scaling and Knowledge Activities	34,000	-	34,000
Project Administration (Executing Unit costs)		441,647	441,647
Monitoring, Mid-Term and Final Evaluation	85,000	10,000	95,000
Ex Post Reviews	25,000	-	25,000
Contingencies	52,668		52,668
Grand Total	978,478	1,741,847	2,720,325
% of Financing	36%	64%	100%

V. Executing Agency (EA) and Implementation Structure

A. Executing Agency Description

- 5.1. Agroindustrias Arriba del Ecuador Agroarriba S.A. will be the Executing Agency of this project and will sign the agreement with the Bank. Agroarriba is a locally incorporated subsidiary of ECOM Agroindustrial Corporation, a leading global supplier of commodity raw materials such as cocoa, coffee and cotton. Agroarriba has been operating in Ecuador since 2011 and buys cocoa from producers, provides primary processing, and exports cocoa to branded manufacturers through a fully traceable supply chain. The company maintains a focus on investing in producers to help them become better farmers and improve the livelihoods of their families.
- 5.2. ECOM, the parent company, is one of the leading suppliers of commodity raw materials and related services to coffee roasters, cotton textile mills, and chocolate manufacturers worldwide. It is the third largest cocoa supplier in the world. ECOM's portfolio of clients includes brand product manufacturers such as Nestlé, Starbucks, Hershey, Mars, Sara Lee, Kraft, and Folgers.
- 5.3. **Other stakeholders.** The project has mobilized a diverse range of partners and relationships to undertake this pilot. Oikocredit, one of the leaders and pioneers in social lending to small farmer cooperatives, will provide \$600,000 in capital to Agroarriba to support lending to small-

scale farmers. It has also committed to a risk sharing agreement to share losses on the loan portfolio.

- 5.4. Ecom has engaged technology providers Yara International and Netafim, who will participate in the validation of the technology and in the training of SMS technicians and farmers. Other SAFE partners such as COSA and Grameen Foundation will provide support in monitoring and evaluation and building financial capacity at Agroarriba. The project will also coordinate with key public-sector partners such as the Ministry of Agriculture, INIAP, and ANECACAO, who are key audiences for the project.

B. Implementation Structure and Mechanism

- 5.5. Agroarriba will establish an executing unit and the necessary structure to execute project activities and manage project resources effectively and efficiently. Agroarriba will also be responsible for providing progress reports on project implementation. Details on the structure of the execution unit and reporting requirements are in Annex V in the project technical files.
- 5.6. Agroarriba will implement the project out of its Sustainable Management Services department in Ecuador. The project will be managed by the ECOM Regional SMS Manager, who is based in Ecuador and coordinates the company's technical assistance programs across several countries. The Regional SMS Manager will report to the General Manager of Agroarriba. She will be supported by ECOM's team of technical experts, extension officers and investigations staff in the selected cocoa origin countries. The project will establish a small credit department within Agroarriba to manage the loan program which will have a credit manager and a full-time accountant based in Ecuador.
- 5.7. A Steering Committee will be established to provide strategic oversight and guidance on project implementation. Its role will involve overseeing the delivery of the project outputs and the achievement of results. The committee will consist of representatives from MIF, OikoCredit, and ECOM/Agroarriba. Other members may be invited to participate on an ad - hoc basis. The committee will meet semi-annually to align with the milestones and reporting schedule of the project.

VI. Compliance with Milestones and Special Fiduciary Arrangements

- 6.1. **Disbursement by Results, Fiduciary Arrangements.** The Executing Agency will adhere to the standard MIF disbursement by results, Bank

procurement policy⁶ and financial management⁷ arrangements as specified in Annex V and VI.

- 6.2. In accordance with IDB policy GN-2350-9, the project envisions two sole source selections for consultancy services in which COSA (up to US\$70,000) and the Grameen Foundation (up to US\$100,000) have been identified for their expertise in working with on impact metrics and risk assessment tools in the context of the SAFE platform.

VII. Information Disclosure and Intellectual Property

- 7.1. **Information Disclosure.** This project is categorized as public for the Bank's information disclosure policy.
- 7.2. **Intellectual Property.** The IDB will own relevant intellectual property rights related to the project with the exception of shared rights for the specially adapted agricultural risk assessment tool which is being developed for the purpose of assessing credit risk related to farmers in ECOM's supply chain.

⁶ Link to the Policy: [Procurement of Works and Goods Policy](#)

⁷ Link to the document [Financial Management Operational Guidelines](#)