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MULTILATERAL INVESTMENT FUND

**ECUADOR**

**EcoMICRO: AGRICULTURAL FINANCE AND SMART DATA FOR  
CLIMATE CHANGE ADAPTATION IN ECUADOR**

**(EC-T1406)**

**DONORS MEMORANDUM**

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## **PROJECT SUMMARY**

### **ECOMICRO: AGRICULTURAL FINANCE AND SMART DATA FOR CLIMATE CHANGE ADAPTATION IN ECUADOR (EC-T1406)**

Small-scale agricultural producers face adverse environmental and climate change impacts such as droughts, erosion, flooding, and crop loss or damage, among other problems, due to extreme heat, heavy rainfall, and changing rainfall patterns, which affect production capacity. The combination of high exposure to climate and environmental risks, low levels of productivity, and lack of access to technological solutions to deal with adverse impacts limits the adaptive capacity of small-scale producers, making them vulnerable to climate and economic forces.

Implementing data- and climate-smart credit methodologies will allow a fluid introduction of climate factors, agricultural practices, and production patterns, among other factors, into the credit decision-making of financial institutions. It will further facilitate the creation of findings based on Big Data management and application of artificial intelligence for better understanding of, and continuous learning about, the realities of the productive sector, allowing improvement in the design and marketing of agricultural and adaptation credits.

The project seeks to improve the availability and management of information about rural sector risks and opportunities to promote agricultural and climate-adapted financing. The project is expected to increase opportunities for small-scale producers and micro and small enterprises in the rural sector to invest in their businesses and develop resiliency in response to climate and environmental risk, as well as to increase production and reduce their risk profile. With this objective, the project will develop innovative analytical methodologies and technological tools that make it possible to obtain precise, practical, and actionable information, to generate less risky production systems with climate adaptation opportunities.

The project will identify the main climate threats and most promising responses from a growing range of production and climate technologies for micro and small agricultural producers and rural communities; as well as diversify and modernize financial product offerings in rural areas, in particular, agricultural production, with a specific focus on climate and environmental issues. It will also encourage financial institutions to digitize their credit processes with integrated climate and environmental considerations. Additionally, financial institutions should develop and implement financial products geared toward agricultural sector adaptation to climate change and have a sales force trained in dealing with such products. Lastly, end-customers will have access to information to better manage their crops and climate risks.

The project is based on three primary innovations: Network-level implementation to act as an agent of change toward more sustainable and resilient economies and finance in a more unified, concentrated, and systematic way; Use of a specialized digital platform that integrates machine learning and artificial intelligence to generate tangible and actionable findings about the country's agro-climatic reality; and services to end-customers, so that agricultural producers can receive relevant information about market prices and meteorological projections digitally from the platform used.

All together, implementation through a multiplier entity and digital platform will ensure that the unique country and regional experiences in regard to climate-smart agricultural production are documented and will allow for exhaustive Big Data analysis to ensure information flows through a broad range of interested parties, nationally and regionally. This will allow for ongoing capacity building of participating institutions and end-customers.

This project is aligned with the IDB Group country strategy with Ecuador (2018-2021) in the priority area for “support for productivity and private sector development as drivers of growth,” among the lines of action that the IDB Group will support in Ecuador: “(i) designing and executing a policy agenda that mitigates the obstacles that currently hinder an efficient reallocation of the factors of production and hold back private investment; (ii) deepening the financial markets through IDB Group operations designed to expand medium- and long-term financing by local banks as well as offer financial products to alleviate credit constraints in segments such as MSMEs, agroindustry, and the popular and solidarity-based economy; (iii) defining and implementing a market access and export promotion strategy.”

## **ANNEXES**

Annex I	Results Matrix
Annex II	Budget Summary
Annex III	iDELTA Summary

## **APPENDIX**

Proposed resolution

## **INFORMATION AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF THE MIF PROJECT INFORMATION SYSTEM**

Annex III	Itemized budget
Annex IV	Diagnostic needs assessment (DNA) of the executing agency [includes integrity due diligence analysis]
Annex V	Project status report (PSR) and fulfillment of milestones and fiduciary agreements
Annex VI	Procurement plan
Annex VII	iDELTA

## **ABBREVIATIONS**

AI	Artificial intelligence
CSD	Climate Change and Sustainable Development Sector of the IDB
DNA	Diagnostic needs assessment
ECOMICRO	Program working with microfinance institutions to develop green finance products in Latin America and the Caribbean
GAC	Global Affairs Canada
ICT	Information and communication technologies
MEbA	Microfinance for Ecosystem-based Adaptation to Climate Change
MIF	Multilateral Investment Fund
ML	Machine learning
MSME	Micro, small, and medium-sized enterprises
NDF	Nordic Development Fund
PSR	Project status report
RFD	Red de Instituciones Financieras de Desarrollo
UN	United Nations

**ECUADOR**  
**ECOMICRO: AGRICULTURAL FINANCE AND SMART DATA FOR**  
**CLIMATE CHANGE ADAPTATION IN ECUADOR**  
**(EC-T1406)**

**EXECUTIVE SUMMARY**

<b>Country and geographic location:</b>	Ecuador, nationally with emphasis on rural areas		
<b>Executing agency:</b>	Red de Instituciones Financieras de Desarrollo (RFD)		
<b>Focus area:</b>	Climate-Smart Agriculture		
<b>Coordination with other donors/Bank operations:</b>	This project is part of operation RG-O1649, the EcoMicro Program (RG-M1205/RG-X1131 financed by the MIF, under operation RG-M1205, ATN/ME-12961-RG). This project will coordinate with the UN Environment Programme MEbA partner project, which is entering its second phase in the region, possibly with participation of institutions in Ecuador. Other EcoMicro projects in the region will also be taken into consideration, to pool know-how and lessons learned for climate-smart product design strategies.		
<b>Project beneficiaries:</b>	<ul style="list-style-type: none"> <li>• 8,500 micro and small-scale agricultural producers</li> <li>• 14 microfinance institutions</li> </ul>		
<b>Financing:</b>	Technical cooperation:	US\$990,000	63%
	<b>Total MIF contribution:</b>	US\$990,000	
	Counterpart:	US\$575,000	37%
	<b>Total project budget:</b>	US\$1,565,000	100%
<b>Execution and disbursement period:</b>	30 months execution, and 36 months disbursement		
<b>Special contractual conditions:</b>	As conditions precedent to the first disbursement: (i) evidence will be provided that the executing agency has designated a Project Coordinator; and (ii) at least 10 letters of interest will be produced from microfinance institutions committing to participate in the initiative.		
<b>Environmental and social impact review:</b>	This operation has been prescreened and classified according to the Bank's Environment and Safeguards Compliance Policy (Operational Policy OP-703) of 25 May 2018. Given that the impacts and risks are limited, the proposed category for the project is "C."		
<b>Unit with disbursement responsibility:</b>	MIF staff at the Bank's Country Office in Ecuador (MIF/CEC)		

## I. THE PROBLEM

### A. Introduction

- 1.1 **EcoMicro.** The EcoMicro Program, “Green Finance Program for MSMEs and Low-income Households,” is a US\$17 million facility created to test green finance for micro, small, and medium-sized enterprises (MSMEs), including small-scale producers and low-income households in Latin America and the Caribbean. The program objective is to facilitate green finance as a way of increasing access to renewable energies and energy efficiency products contributing to climate change adaptation. The program also seeks to encourage financial intermediaries to partner with key actors in a broader ecosystem, in order to provide new financing instruments to capitalize on new opportunities in green resources, which in turn align their risk management models concerning climate change and incorporate climate impacts into their policies and internal operations. Once the pilot has successfully concluded, the EcoMicro program supports scaling efforts by linking its activities to other IDB Group resources, including the IDB Climate Change and Sustainable Development Sector (CSD), the IDB Invest Green Finance program, and other relevant microfinance funds for possible financing at scale. Several previous projects in the EcoMicro Program framework have been successful in expanding IDB Group resources. The microfinance institution in Bolivia, Diaconía, is an example of this. Diaconía mobilized US\$7 million to significantly expand green finance products piloted under the EcoMicro Program with resources facilitated by CSD under the Climate Investment Funds, the Multilateral Investment Fund, and private investment.
- 1.2 The program is currently financed with funding from the Multilateral Investment Fund (MIF) and cofinancing from the Nordic Development Fund (NDF) and Global Affairs Canada (GAC), which provide nonreimbursable resources for project-specific grants (PSGs), as well as local counterpart funds. The MIF is tasked with program execution. The program was originally approved on 20 September 2011, and subsequently amended in 2015, to increase the MIF and NDF contributions. This is the twentieth EcoMicro project, and the first to be financed in Ecuador. It will be financed with MIF funds.

### B. Description of the problem

- 1.3 **Main problems.** Rural areas in Ecuador depend largely on agricultural production, forestry, and fishing or fish farming, representing 48.4% of rural sector economic activities.<sup>1</sup> This sector therefore plays a key role in food security and rural economies, determining the availability of cash balances.
- 1.4 Small-scale agricultural producers (less than 10 hectares) are estimated to comprise 76% of all producers, employing 56% of the country’s rural labor force.<sup>2</sup> At the same time, 56.3% of the rural population is below poverty level,<sup>3</sup> compared to 20.8% in urban areas.

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<sup>1</sup> Population Census, 2010.

<sup>2</sup> <http://www.mdpi.com/2073-445X/7/2/45/pdf>.

<sup>3</sup> Measured by the Unmet Basic Needs index.



- 1.5 Small-scale agricultural producers face adverse environmental and climate change impacts such as droughts, erosion, flooding, and crop loss or damage, among other problems, due to extreme heat, heavy rainfall, and changing rainfall patterns, which affect their production capacity and livelihoods. For example, the agricultural sector is affected by soil loss and the risk of desertification resulting from overuse: only 69% of lands used for livestock activity are suitable for grazing.<sup>4</sup> The combination of high exposure to climate and environmental risks, low levels of productivity, and lack of access to technological solutions to deal with adverse impacts limits the adaptive capacity of small-scale producers, making them vulnerable to climate and economic forces.
- 1.6 There is a large information gap in identifying proven adaptive agricultural management strategies that can be scaled to a large number of producers. While better adaptive practices exist, such as soil conditioning and restoration, crop diversification or rotation, drip irrigation, agroforestry systems or forest grazing, and others, the sector is perceived in the aggregate as high risk, which limits the financial product and service offerings. Above all, this affects project investment financing that requires the higher amounts and longer tenors than currently offered that are typical features of implementing climate and production technologies. Consequently, existing technology at the national or regional level cannot be developed or implemented on a larger scale, hindering access by the target population, and therefore resulting in a vicious circle of ongoing marginalization and exclusion.
- 1.7 The Ecuadorian financial system has confirmed its interest in better serving rural communities by providing production credits with a climate adaptation vision, but continues to focus primarily on the urban market. This is due to a lack of knowledge of the sector, a lack of appropriate risk management methodologies (production, climate, and market) and limited product development capacity. This leaves small-scale producers and micro and small agricultural production enterprises underserved, and restricts financial institutions from diversifying and innovating their offerings and ensuring the expansion of their portfolio. Even more importantly, individual customer risk profiles typically do not influence the terms of a lending product, limiting the creative potential of financial mechanisms toward a sustainable and climate-smart economy and financing.
- 1.8 **Target population.** The project is geared toward small-scale producers and micro and small agricultural production enterprises in rural areas at the national level in Ecuador. Special priority will be given to areas where there are excluded or vulnerable ethnic groups living in poverty: cantons identified in the poorest quintiles in at least 70% of the country's provinces. Another target population for the project is financial institution staff serving rural areas. Work will be done with a select number of members of the Red de Instituciones Financieras de Desarrollo (RFD) network, which are currently more involved in agricultural sector financing, or have this short-term objective.

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<sup>4</sup> Ministry of Agriculture and Livestock (MAG).

## II. INNOVATION PROPOSAL

- 2.1 The Red de Instituciones Financieras de Desarrollo (RFD) network of development finance institutions is the leading network of financial institutions in Ecuador, bringing together 47 institutions serving 1.5 million microentrepreneurs and small-scale producers. As of June 2018, the microcredit portfolio in Ecuador was US\$6.255 billion, US\$3 billion of which corresponds to the microcredit portfolio of RFD member institutions, so RFD represents 48.63% of the market. RFD will implement the project and allow for the creation of synergies to help lower implementation costs, as well as increase potential replication within the network itself, beyond the pilot proposal in the current project. As a result, RFD will become a knowledge hub for smart agriculture finance and will fill a role as key player in knowledge transfer to members.
- 2.2 RFD members forming part of the project will apply modern technologies to improve risk measurement and management and strengthen new product offerings. Implementing data- and climate-smart credit methodologies will allow a fluid introduction of climate factors, agricultural practices, and production patterns, among other factors, into the credit decision-making of financial institutions. It will further facilitate the creation of findings based on Big Data management and application of artificial intelligence for better understanding of, and continuous learning about, the realities of the productive sector, allowing improvement in the design and marketing of agricultural and adaptation credits.
- 2.3 Rural communities and small-scale agricultural producers will benefit from information services about best practices, meteorological projections, and market prices, and so will better be able to take advantage of more sophisticated credit product offerings, increasing access to production and climate technologies, allowing them to invest in their own climate resilience.

### A. Description of the project

- 2.4 **Objective.** The project seeks to improve the availability and management of information about rural sector risks and opportunities to promote agricultural and climate-adapted financing. The project is expected to increase opportunities for small-scale producers and micro and small enterprises in the rural sector to invest in their businesses and develop resiliency in response to climate and environmental risk, as well as to increase production and reduce their risk profile. By applying modern data management methodologies, like machine learning or artificial intelligence based on Big Data, the project aims to differentiate end-customer risk profiles, improve technological and financial product offerings, and adjust financing terms to the individual reality of different customer segments. The project aims to identify and analyze the economic feasibility of climate technologies and other production solutions by analyzing data originating from financial institutions and their partners, climate databases, agricultural practices and prices, in accordance with current scientific findings.
- 2.5 A long-term expected **impact** of the project is to create economic incentives to adapt to climate change by introducing risk-adjusted prices. In other words, the individual cost of credit (typically the interest rate) is determined based on the customer's individual risk profile. Therefore, an end-customer's investment in

proven climate and production technology should result in lower interest rates, reflecting the reduced risk.

- 2.6 **Proposed model/solution.** Achieving the proposed objective and generating the desired impact will require a financial system with access to innovative analytical methodologies and technological tools that make it possible to obtain precise, practical, and actionable information allowing differentiation between production systems of greater productivity and the riskier ones. The respective concepts and methodologies have been developed in other projects, such as EcoMicro and Microfinance for Ecosystem-based Adaptation to Climate Change (MEbA), which will form the basis of project activities.
- 2.7 Given that the large amount of data required to carry out the proposed objective and impacts often exceeds financial institutions' capacities, the project aims to implement a tool to facilitate decision-making and implementation of appropriate concepts and methodologies. Smart use will be made of information and communication technologies (ICTs) to improve the data gathering and analysis methodology, with the goal of being able to identify modern production and climate technology needs.
- 2.8 The application of artificial intelligence (AI) and machine learning (ML) will be used to improve the effectiveness of participating institutions,<sup>5</sup> yielding significant findings to inform and guide interested parties.<sup>6</sup>
- 2.9 Resulting anonymized data<sup>7</sup> will be shared among platform actors, such as data regarding interdependence among geolocalization, applied agricultural practices, and payment behavior. Information services to end-beneficiaries will also be developed, and they will also be able to take advantage of data generated in the project and use it for investment decisions and plans.
- 2.10 The strategy is to combine work at the sector level, to strengthen the financial sector in general, with individual work by each institution to improve their individual capabilities.
- 2.11 Accordingly, the project will:
- (i) Identify the main climate threats and the most promising responses from a growing range of production and climate technologies for micro and small agricultural producers and rural communities.
  - (ii) Diversify and modernize agricultural financial product offerings, and in particular, agricultural production, with a specific focus on climate and environmental issues.

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<sup>5</sup> Anonymized to protect the intellectual property of the institutions.

<sup>6</sup> According to the degree of relevance to decision-making, artificial intelligence or machine learning methods will be applied to more efficiently and effectively guide the internal processes of financial institutions. Additional benefits will include the creation of relevant findings for end-customers and other interested parties, such as donors, investors, and civil society.

<sup>7</sup> Sensitive customer data that would allow for unique client identification, for example, will remain in possession of the institutions that own these data.

- 2.12 The Red de Instituciones Financieras de Desarrollo (RFD) network of development finance institutions, which will be the project's executing agency, is the premier network of the development finance sector in Ecuador, representing nearly 55% of the total existing small-scale entrepreneurs in the country. In the past, RFD has demonstrated its excellent positioning through sector building capacity and will play a key role in the project as a knowledge multiplier and in ensuring the sustainability of the solutions developed. As a main project activity, RFD will build internal capacity to train members in the use of risk measurement and management technologies, as well as the creation of financial products for production and climate technologies. Therefore, at the conclusion of the project, RFD will serve as a center of expertise in inclusive climate finance in Ecuador with a technical assistance unit to provide specialized services to its members.
- 2.13 RFD has selected YAPU Solutions, a German consulting and software company for rural and climate finance, as sole-source partner/subcontractor, because this firm has some of the most prominent subject-matter experts in the region. YAPU Solutions also offers a digital platform based on the identified requirements and lessons learned from reference projects, such as MEbA or prior phases of EcoMicro.<sup>8</sup> The project will not pay YAPU Solutions for technology acquisition costs. Nevertheless, the company will transfer management capabilities in data- and climate-smart finance according to international best practices adapted to the Ecuadorian context and, even more importantly, will empower RFD to pursue continuous development of solutions customized to the requirements of the network and members.
- 2.14 The project funds will be used to provide technical assistance to financial institutions and to train RFD to perform its role as a climate finance center of expertise. Accordingly, the following services and training will be provided: data collection and structuring on climate threats and technologies, credit risk management techniques and methodologies (including climate), and the creation of lending products, as well as institutional capacity building and institutional development methodologies.
- 2.15 Consequently, RFD members participating in the project will adjust their financial products and disburse US\$17 million in loans intended for a line of credit to finance climate adaptation technologies, and RFD will become a knowledge and training center on the subject in the future.
- 2.16 **Innovation.** The project is therefore based on three primary innovations:
- a. **Network-level implementation.** The implementer role of RFD, the leading network of microfinance institutions in Ecuador, ensures the sustainability and scaling of the project and empowerment of the microfinance sector as an agent of change toward more sustainable and resilient economies and finance in a unified, concentrated, and systematic way.

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<sup>8</sup> Past projects, including the EcoMicro project with Diaconia (BO-X1011), have shown that incorporating climate data can open new markets for financial institutions and lower interest rates: <https://ftp.fomin.org/website/publications/aeb256d2-dc22-4d8f-b72b-49541ba1b028.pdf>.

- b. **Use of specialized digital platform.** The effectiveness of data- and climate-smart finance will be achieved through a specialized digital platform integrates machine learning and artificial intelligence to generate tangible and actionable findings about the country's agro-climate reality.
  - c. **Services to end-customers.** By digitizing processes and combining them with other sources of data, it will be possible to automate the delivery of customized information services to end-customers. Agricultural producers will therefore receive relevant information about market prices and meteorological projections digitally from the platform used.
- 2.17 All together, implementation through a multiplier entity and digital platform will ensure that the unique country and regional experiences in regard to climate-smart agricultural production are documented and will allow for exhaustive Big Data analysis to ensure information flows through a broad range of interested parties, nationally and regionally. This will allow for ongoing capacity building of participating institutions and end-customers.

**Component I: Mapping and consolidation of production/climate databases; and institutional evaluations of institutions participating in the project**

- 2.18 Climate risks cannot be correctly calculated without considering the climate reality of a particular place (exposure), the vulnerability of crops/animals (sensitivity), and implemented agricultural practices (adaptive capacity).
- 2.19 Accordingly, Component I activities will serve as a basis for project implementation, beginning with (i) mapping of available databases in the country, (ii) identifying main suppliers (nationally and regionally) of relevant production and climate technologies, as well as (iii) an institutional analysis of each of the pilot institutions.
- 2.20 Mapping will focus on maps of climate, soil, and slope of the land, as well as data about the production reality by different types and varieties of crops and animals. Where appropriate, other types of agricultural production enterprises will be assessed for possible vulnerabilities to adverse climate impacts. A system of reference data by agricultural activity will be created, resulting in data sheets by crop, animal, and other relevant activities, detailing production cycles and the corresponding costs and income potential.
- 2.21 RFD and its members will also identify climate adaptation technologies already offered in the country, whether in the pilot, expansion, or maturation phase. The distribution structure tied to these technologies, executed by specific distributors and suppliers will be evaluated. Lessons learned from other EcoMicro and MEbA projects will be incorporated into the project, to identify the best climate solutions in the region. The results will be documented in a centralized database that will serve as a jumping off point for Component III activities (product design).
- 2.22 Lastly, pilot institutions will be evaluated with regard to the degree of maturation in view of the introduction of data- and climate-smart finances. The group of structures and documents defining the operational framework of each institution will be analyzed, including policies, procedures, processes, and existing tenors of their range of products and services. When possible, agricultural credit portfolios will also be analyzed for climate vulnerability. Based on the evaluations, individual

work plans and the conceptual basis for agricultural/green/climate financial risk management tools will be tailored to the needs of each institution.

- 2.23 Upon completion of component I, RFD will be in a position to:
- a. Identify the primary climate threats and technologies in the pilot members' areas of operation based on comprehensive mapping, as well as develop their future improvement and expansion.
  - b. Define pilot institutions' needs in terms of institutional capacity for data- and climate-smart finance, and perform respective institutional evaluations autonomously in the future with more network members and other interested financial institutions.

**Component II: Digitization of credit processes with integrated climate and environmental considerations**

- 2.24 Based on the evaluations from project Component I, RFD will implement the agreed work plans for each institution. This will include: (i) customized consulting for each institution to adjust the internal regulatory framework and make the respective adjustments to policies, procedures, and tools through staff interviews, field visits, recommendations, and workshops; (ii) training involved personnel in different phases of implementation (from pilot to rollout) through classroom and field training and training-of-trainers; and (iii) piloting of the developed operational framework and preparation for rollout after the relevant adjustments are made based on lessons learned.
- 2.25 Component II seeks to integrate agro-climate data into participating financial institutions' processes and risk management and digitize their processes to adapt the platform to each institution. Specifically, the following factors will be added to the credit evaluation for each institution: land parcel data, climate maps, crop and agricultural practices data, environmental risk, and others.
- 2.26 RFD will rely on a generic toolbox developed for this purpose in Component I, which will be adjusted to meet the needs of each institution.
- 2.27 Upon completion of component II:
1. Financial institutions' credit processes will be digitized, with integrated climate and environmental considerations.
  2. RFD will be in the position to perform the respective technical assistance activities autonomously for more members of the network and other interested financial institutions in future implementations.

**Component III: Design and implementation of agricultural credit products geared toward climate change adaptation**

- 2.28 Climate-smart financial products are understood as financial products designed to finance investments in climate technologies. While such technologies can often be financed with existing financial products, many times they require adjustments, especially to the maximum necessary tenors, payment plan, and, through access to specific refinancing, applicable interest rates. The climate technologies to be financed are solutions to be provided to agricultural producers and rural

communities to increase their climate and socioeconomic resilience and build more solid agricultural markets.

- 2.29 Based on an initial survey in Component I of the project, for each of the technology options, RFD will identify primary success factors, such as primary production benefits (increased production, lower costs), influence on climate resilience, primary challenges, and others. Data sheets will include information for each solution, including a profitability analysis per solution. These sheets will form the basis for designing the respective financial products.
- 2.30 Providers of these solutions will connect with financial institutions, integrating the delivery of solutions automatically into financial institutions' processes. This will allow for end-customer data integration from several sources into a single profile, as well as promote learning and product development.
- 2.31 Products will be developed based on the data analysis performed for each platform. The features of each product will be included in the platform, adding a verification and monitoring form. Financial institutions will allocate a portion of their credit line to pilot the financing of these adaptive solutions.
- 2.32 Upon completion of component III:
  - a. Financial institutions will have developed and implemented financial products geared toward agricultural sector adaptation to climate change and have a sales force trained in managing such products.
  - b. RFD will be trained to replicate such technical assistance activities with more members of the network to create climate-smart financial products.

#### **Component IV: Communication and knowledge management**

- 2.33 A low-cost information service for end-beneficiaries on WhatsApp and SMS platforms, chats with small-scale producers, printed informational material, and institutional websites are expected to be developed. This service can adjust the information to be sent automatically to the customer profile, for example, according to crop grown or inputs purchased.
- 2.34 The platform allows for search findings to be automated, machine learning and artificial intelligence algorithms will be developed, where applicable, which will be trained during the project phase with the objective of running independently in later phases. This information about climate change concepts and climate technologies will be incorporated into the institutional communications of pilot institutions.
- 2.35 Events will also be organized in the form of four workshops with RFD members at the strategic and technical levels, and a final conference to disseminate lessons learned and project outcomes to other interested financial institutions in Ecuador, such as donors, investors, representatives from the country's civil society and public policy, and, as applicable, other countries of the region.
- 2.36 An important aspect of the EcoMicro Program is the exchange of knowledge and experiential lessons of financial institutions developing and implementing green finance products throughout the Latin American and Caribbean region. RFD, with the support of YAPU Solutions, will be responsible for capturing and synthesizing the knowledge generated under this project, including lessons learned, best practices, and key success factors. Key reports and other knowledge products

generated under the project, capturing these experiences, will be disseminated in coordination with the Bank's Country Office in Ecuador and the EcoMicro team,<sup>9</sup> via the [EcoMicro](#) website, EcoMicro [bulletins](#), and/or knowledge exchange workshops/events organized under the EcoMicro Program.

2.37 Upon completion of component IV:

- a. End-customers will have access to information to better manage their crops and climate risks.
- b. The financial sector, and other interested parties, in Ecuador and the region will have received training and informative materials about climate finance and project outcomes.

**B. Project results, measurement, monitoring and evaluation**

2.38 **Results Matrix indicators**

2.39 The main project indicators distinguish between key indicators of the project objective and the indicators for each component (presented in the respective sections). A summary is provided in the Results Matrix in Annex I of this document.

2.40 The project objective indicators are as follows, focusing on the impact on target population resilience and the adoption of data- and climate-smart finance by the participating institutions:

Percentage of financial institutions' agricultural credit portfolio with climate adaptation analysis	75%
Number of financial institutions' agricultural credits with climate adaptation analysis	8,500
US\$ in agricultural credit financing geared toward climate change adaptation	17,000,000
Number of MSMEs implementing climate change mitigation/adaptation technologies or practices	2,000

**Monitoring and evaluation**

2.41 Digitization of financial institutions' operational processes is an integral part of the project that will allow for automated reporting and monitoring of certain project rubrics, even in real time. Other activities will be supported by their respective documentation and analysis. Consequently, the project information will be reported according to the three main rubrics:

- **Digital information**

2.42 Based on the YAPU Solutions platform, the project will conduct continuous monitoring, with monthly reports of the following rubrics such as credit disbursements (agricultural/climate adaptation), performance of strategic partners (as applicable), and information provided to end-customers for the service to be introduced.

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<sup>9</sup> The EcoMicro team includes the Project Team Leader (based at Headquarters) and the program coordination team (based at the Bank's Country Office in Barbados).



- 2.43 Creating standard reporting formats automatically generated from the platform will not only facilitate better report quality but significantly reduce the time required to create and verify them.

- **Physical information**

- 2.44 Regular reporting will be established for additional activities, such as events, workshops, training, media campaigns, etc., to support them with the appropriate documentation. When possible, digital media will be applied to registration and confirmation of participation.

- **Project information**

- 2.45 **Reports.** Together, these three different types of reports will serve as inputs for the regular project status reports (PSRs). The executing agency, RFD, in close collaboration with the consulting partners, will be responsible for delivering the PSRs within 30 days after the end of each six-month period, or more frequently, as determined by the MIF with at least 60 days advance notification to RFD. The PSR will contain information on project execution, milestones met, and completion of project objectives as stated in the Results Matrix and other operational planning instruments. The PSR will also describe project issues encountered during execution and outline possible solutions. Within 90 days after the end of the execution period, the executing agency will deliver a final PSR to the MIF that highlights results achieved, project sustainability, and lessons learned.

- 2.46 The executing agency and YAPU Solutions will also prepare a project final report. This report will review the correct implementation of the project and determine whether the expected outcomes were achieved. The report will include an analysis of the results of the pilot, lessons learned, and recommendations for future scaling of the pilot. The final report will serve as the project completion report (PCR).

- 2.47 **Ex post final evaluation.** A project evaluation will be conducted at the conclusion of the green finance pilot project during the rollout period, which will include the identification of necessary key factors to build a sustainable business case for green finance, to increase the climate change resilience of MSMEs in Ecuador. The evaluation will also include the following: (i) analysis of the experience, impact, lessons learned, and best practices derived from this project and the postpilot rollout; (ii) details regarding the real scale achieved after the pilot; and (iii) evaluation of project commitments and development to scale through broader agricultural finance. The MIF will commission an evaluation of the resources contributed under the EcoMicro Program (operation RG-M1205). The EcoMicro projects may be evaluated individually or grouped with other projects.

### **III. PROJECT ALIGNMENT WITH THE IDB GROUP, SCALABILITY, AND RISKS**

#### **A. Alignment with the IDB Group**

- 3.1 This project is aligned with the **IDB Group country strategy with Ecuador (2018-2021)** in the priority area for “support for productivity and private sector development as drivers of growth,” among the lines of action that the IDB Group will support in Ecuador: “(i) designing and executing a policy agenda that mitigates the obstacles that currently hinder an efficient reallocation of the factors of production and hold back private investment; (ii) deepening the financial markets

- through IDB Group operations designed to expand medium- and long-term financing by local banks as well as offer financial products to alleviate credit constraints in segments such as MSMEs, agroindustry, and the popular and solidarity-based economy; (iii) defining and implementing a market access and export promotion strategy.”
- 3.2 This project is also aligned with the National Development Strategy of the Government of Ecuador, as reflected in the **“Good Life” National Plan (PNBV) 2017-2021**, specifically strategic objective 6: “develop productive and environmental capacities to achieve food sovereignty and comprehensive rural development.”
  - 3.3 This project is also aligned with the **Update to the Institutional Strategy 2016-2019**, contributing to two of the three major development challenges identified for the region: (i) social exclusion and inequality; and (ii) low productivity and innovation. The project aims to improve the productivity of small-scale agricultural producers by implementing climate-smart best practices, so they become more resilient. It also contributes to the strategy update’s crosscutting thematic area of climate change and environmental sustainability.
  - 3.4 Specifically, the project is aligned with the **IDB Climate Change Strategy and Action Plan (approved in 2017)**, with the goal of developing innovative financial models and promoting new technologies to address climate change problems in the private sector.
  - 3.5 In terms of the current MIF strategy, the project is aligned with the focus area of **“Climate-Smart Agriculture,”** since through the YAPU platform and an internal knowledge area at the RFD it seeks to promote climate-smart lines of credit, especially targeting small-scale agricultural producers as a last-mile population. The project will also help to categorize, standardize, and systematize information about climate technologies that the Ecuadorian market demands.
  - 3.6 The project will draw lessons from prior **MIF EcoMicro** facility projects, and their partner UN Environment Programme MEbA, which have developed loan and climate risk analysis tools, as well as nondigital products. That project will take an additional step: through a digital platform, sharing the primary solutions developed and findings from previous projects that will be combined with local knowledge. YAPU Solutions will promote regional replication through RFD and its network of partners. The project will be disseminated within the EcoMicro network for replication at other program institutions.
  - 3.7 According to the **priority business areas (PBAs) defined by IDB Invest**, the project aligns with the objective to support innovation and technological development. The success of the proposed project will increase the demand for green lines of credit among RFD members and in the region, which could be serviced by loans in the new IDB Invest line of green loans, consistent with the goal of the IIC’s 2017-2019 Business Plan to increase access to green finance and MSMEs through the channel of financial institutions.
  - 3.8 Approximately 100% of IDB operation resources are invested in climate change adaptation activities, according to the [Joint Methodology of the Multilateral Development Banks for Estimating Climate Finance](#). These resources contribute to

the IDB Group's goal of increasing the financing of climate change related projects to 30% of total approvals by the end of 2020.

## **B. Scalability**

- 3.9 The project has unique scaling opportunities across three main focus areas, promoting the expanded use of project solutions, platform, and innovative climate products:
- a. Within the portfolio of institutions participating in the pilot phase;
  - b. With other financial institutions not participating in the pilot phase, incorporating other financial institutions in Ecuador;
  - c. Replicating the project in other countries of the region with other national and regional multiplier institutions.
- 3.10 As part of the project, RFD gathered information from its interested members (22 institutions, 10 of which sent project commitment letters), verifying there was considerable interest in participating in the project and its activities.
- 3.11 The project will create an important database enabling RFD and YAPU to offer the services developed under the project at affordable prices in later project phases.
- 3.12 RFD expects to coordinate with IDB and MIF representatives in Ecuador, in the region, and with the Washington headquarters, to disseminate project outcomes, lessons learned, and principal findings to an interested audience.

## **C. Project and institutional risks**

- 3.13 **Climate** (low): Weather disasters may create reservations on part of the pilot institutions to expand their exposure in rural and agricultural areas; however, better understanding of the environment is sought, facilitating the identification of opportunities resulting from possible disasters (credits for adaptation, emergencies, multirisk insurance, among others).
- 3.14 **Economic** (low): General deterioration of the Ecuadorian economy may limit resources available for the project, refocusing the efforts of pilot institutions; one of the main project objectives is to improve risk management, understood as an additional benefit to general risk management.
- 3.15 **Political** (low): Political and regulatory changes may affect attention to the project pilot institutions; Ecuador enjoys political stability, so this risk is limited.
- 3.16 **Technological** (low): Since the project will rely on the most-used operating system in the world (Android) and most data will be managed in the Cloud, this risk is limited; new functionalities that are developed will be tested with the appropriate processes.
- 3.17 **Data** (low): Limited access to data by third parties may minimize the power of the platform; the risk is reduced by integrating free-access global databases (such as the UN and FAO) to create the desired findings. Even more important, the platform is flexible in integrating new databases that will be made available during or after the project.

#### IV. INSTRUMENT AND PROPOSED BUDGET

- 4.1 The total project cost is US\$1,565,000. Of that amount, the MIF will contribute US\$990,000 (63%), and the counterpart will contribute US\$575,000 (37%) in cash and in kind. The expected execution period for this project is 30 months, and the disbursement period is 36 months. The project budget does not allocate resources for the project final evaluation, as these are covered in the budget of the broader program (operation RG-M1205/RG-X1131).<sup>10</sup>
- 4.2 This project is part of the EcoMicro Program Facility (RG-O1649). The instrument to be used is nonreimbursable technical cooperation, given that most of the knowledge generated by this project will generate a public benefit.

	MIF	Counterpart	Total
<b>Component I: Mapping and consolidation of production/climate databases; and institutional evaluations of institutions participating in the project</b>	US\$203,000.00	US\$65,000.00	US\$268,000.00
<b>Component II: Digitization of credit processes with integrated climate and environmental considerations</b>	US\$261,000.00	US\$190,000.00	US\$451,000.00
<b>Component III: Design and implementation of agricultural credit products geared toward climate change adaptation</b>	US\$169,000.00	US\$166,000.00	US\$335,000.00
<b>Component IV: Communication and knowledge management</b>	US\$180,000.00	US\$50,000.00	US\$230,000.00
<b>Project administration (executing agency's costs)</b>	US\$135,000.00	US\$80,000.00	US\$215,000.00
<b>Ex post review</b>			
<b>Audited expenditure statements</b>			
<b>Contingencies</b>	US\$42,000.00	US\$24,000.00	US\$66,000.00
<b>Total</b>	US\$990,000.00	US\$575,000.00	US\$1,565,000.00
<b>% of Financing</b>	63%	37%	100%

#### V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

##### A. Description of the executing agency

- 5.1 The Red de Instituciones Financieras de Desarrollo (RFD) network of development finance institutions will be the executing agency of this project and will sign the agreement with the Bank. RFD is a nonprofit civil corporation established under private law and operating in Ecuador since 3 June 2000. RFD is focused on facilitating and strengthening access to financial services to the most vulnerable sectors of the economy, working toward the objective of expanding them toward

<sup>10</sup> At the end of project execution, consideration will be given to whether an evaluation should be done of the outcomes and impacts for this project individually or grouped with other similar projects of the EcoMicro Program. The costs of such evaluation will be financed with resources of the EcoMicro Program (operation RG-M1205/RG-X1131).

- the rural and urban populations as a sustainable alternative in the fight against poverty.
- 5.2 RFD member institutions, clients serviced, and their coverage increase from year to year. RFD has been implementing development projects and deepening financial services in Ecuador since 2001. These include (i) HIVOS-Holanda: Institutional strengthening to expand services; (ii) CAF: Design of social performance indicators; (iii) IICD: Improve the quality of credit information; (iv) IDB: Development of second-tier associative credit products for the rural sector (SP/SF-02-13-EC; ATN/SF-8101-EC); (v) CITI Foundation: Good customer protection practices in microfinance; (vi) Seep Network: Strengthening microfinance networks globally to deepen financial services; (vii) Fundación Repsol: Deepening financial services in the rural sector in Orellana and Sucumbios; (viii) USAID: Regulatory framework and strengthening the microfinance sector in Ecuador; (ix) USAID: Mobile banking project for financial inclusion, (x) Fundación Rabobank: Financial services design project focused on the value chain.
  - 5.3 Twenty-one percent of RFD member organization customers are engaged in agriculture and livestock activities. The project seeks to encourage increased portfolios of member organizations in this niche market and to generate new opportunities for the sector. RFD's current portfolio of services includes (relevant for the project): specialized technical assistance, specialized training, microcredit methodology development, development of livestock credit products, Web banking and mobile app.
  - 5.4 RFD will contract YAPU Solutions for the project on a sole-sourcing basis. YAPU Solutions GmbH is a German software and consulting company with a global presence, which incorporates international best practices in the area of data- and climate-smart inclusive finance in Latin America and the Caribbean, as well as globally. YAPU Solutions will be the sole source for technical assistance for the project. The RFD has selected YAPU's technology as best-suited for the project, and YAPU is the only institution able to provide the consulting services relating to their platform.
  - 5.5 The RFD project will contract YAPU exclusively for their consulting services with regard to data collection, mapping data for Ecuador, creating institutional capacities and to implement data- and climate-smart credit methodologies, and the development and implementation of new adaptation products for financial institutions. YAPU Solutions will train the RFD using training-of-trainers and field training/practice methodologies based on generic, standardized materials for future application in similar implementations beyond the project.
  - 5.6 The YAPU Solutions platform has been developed by model project leaders such as the UN Environment Programme MEbA, implementation of the EcoMicro Diaconia project in Bolivia, as well as multiple implementations in other settings, such as Haiti for the [Swiss Development and Cooperation Agency \(SDC\)](#) or East Africa with Mobisol (solar technology solutions provider for low-income families). Members of the YAPU Solutions team also have supported innovative technologies for climate and sustainable agriculture technologies with Blacksoil (technology company that offers innovative solutions for climate-smart agriculture)

in Paraguay, Uruguay, Argentina, Brazil, and implemented credit methodologies for leading financial institutions in LAC.

- 5.7 YAPU Solutions will ensure an adequate flow of information about experiences and lessons learned in other parts of the region and the world, thus ensuring the creation of a community of knowledge and continuous learning, for example by executing phase II of the MEbA project that will be implemented with the participation of YAPU Solutions. This knowledge transfer will form part of the business model of the company and will benefit project members.

## **B. Implementation structure and mechanism**

- 5.8 RFD will establish an execution unit and the necessary structure to implement project activities and manage project resources effectively and efficiently. The RFD will also be responsible for delivering status reports on project implementation. Details of the executing agency structure and the requirements of the status reports can be found in Annex V in the technical files of this operation.
- 5.9 For implementation, the RFD will contract YAPU Solutions to support capacity building and will also oversee project implementation, issuing weekly and monthly implementation reports according to earned value method. The executing agency will review the project execution at weekly project committee meetings consisting of the RFD Executive President, Commercial Manager and the Operations Manager, as well as the Team Leader and Project Controller for YAPU Solutions. At the project committee meetings, progress will be reviewed, as well as possible necessary adjustments to implementation in the event of negative variances in implementation. Each meeting will be documented with a protocol. The executing agency will also be responsible for delivering status reports on project implementation. Details of the executing agency structure and the requirements of the status reports can be found in Annex V in the technical files of this operation.<sup>11</sup>

## **VI. FULFILLMENT OF MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS**

- 6.1 **Results-based disbursements and fiduciary arrangements.** The executing agency will commit to the standard MIF arrangements regarding results-based disbursements and the Bank procurement policies<sup>12</sup> and financial management policies<sup>13</sup> specified in Annex V.

## **VII. ACCESS TO INFORMATION AND INTELLECTUAL PROPERTY\*\***

- 7.1 Information disclosure: The information contained in this document is classified as public under the Bank's Access to Information Policy (document GN-1831-33).
- 7.2 Intellectual property: All materials designed with resources from this project will be the intellectual property of the Bank.

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<sup>11</sup> Project committee: Weekly/biweekly/monthly meeting where activities and execution will be reviewed according to the earned value method. YAPU will prepare the reports and will transmit the methodology to the RFD, in other words, project administration, among other coordination, planning, and structuring activities will be from this party.

<sup>12</sup> Link to [Policies for the procurement of goods and works financed by the IDB](#).

<sup>13</sup> Link to [Financial management guidelines for IDB-financed projects](#).

- 7.3 It should be noted that individual customer information will remain the intellectual property of each institution contributing to the project, and there will be no transfer of intellectual property. Similarly, the source code of the YAPU Solutions platform will remain the intellectual property of YAPU Solutions.